Chapter- VIII

FINDINGS, CONCLUSION AND RECOMMENDATIONS

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Stock market plays a vital role for the growth of an economy. At present in the globally integrated scenario, huge change in information technology has made the information easy & readily accessible which produces more efficient market. Now, investors can have better access to required information and act in accordance to changes in environment. Although, there are more possibilities to attract larger chunk of investors for investment in the stock market to expand the market by providing the better investment options to potential segment of investors. For this purpose, the study comprised analysis on the behaviour of selected Sensex stocks. To achieve the objectives of the study, various factors affecting stock price were analysed. The performance of economy, industry and company were also analysed and compared to find out the best and least performing industry/company among all selected options. Eventually, different strategies have been suggested to industry/company for improving investment in their stocks. Investors' opinions on the decision of investment were also analyzed and problems & suggestions to develop the improved picture of investment have been highlighted. This chapter exhibits the findings and recommendation of the study along with further research scope.

8.1 SUMMARY OF FINDINGS

It is obvious that investment in stock market is a matter of choice of everyone and lack of understanding of the behaviour of stock price is the reason because of that only, small portion of the population invest in the stock market. Therefore, it is demand of the time to enrich the understanding about the bahaviour of stock price for more rational investment. This section of the chapter consists of the findings on the issues like economic, industry and company environment, impact of various macroeconomic indicators, industry/ company specific indicators on stock returns in India. It also includes nature of volatility of Indian stock market to direct or forecast the risk involve in stock market, trends of stock price to suggest buy/sell strategies for the individual stock, perspectives of investors on investment decision and the groups of the investors based on their characteristics. Major findings of the current study are as follows:

8.1.1 Findings based on the Impact of Macroeconomic Indicators on Stock Price

The movement of stock market is sensitive to the movement of economic indicators of an economy and serves as risk factor. The investigation of macroeconomic environment is an essential part to determine the behaviour of stock prices and formulating an effective investment strategy which has been investigated thoroughly in the current study. The findings of the macroeconomic environment and impact of macroeconomic variables on stock price behaviour under the current study are as follows:

- While analysing the performance of selected macroeconomic indicators from 2004-05 to 2013-14, it was found that all macroeconomic variables showed robust and continuous growth over the period of the study. Highest growth was observed in case of gold rates and only exchange rate showed downward trend in few years. There is continuous growth in index of industrial production which expresses the growth of industrial/manufacturing sectors of the economy. Money supply and foreign exchange reserve also showed positive trend. The study indicates an improvement in the health of Indian economy in terms of monetary management and capital flows within the country. Therefore, there are opportunities for investment in Indian economy because of high export orientation, strong economy fundamentals and manufacturing/service sector framework.

- This part of study has made an attempt to examine the impact of macroeconomic indicators on stock prices by considering Sensex as a proxy of stock price. Results indicate that 23.22% of the variations in Sensex was explained by selected macroeconomic variables under the study. Vector error correction model was employed to establish short and long-run relationships between the dependent (Sensex return) and independent variables (macroeconomic indicators) in the present study. Results of co-integration test revealed that Sensex has significant short and long-run relationships with macroeconomic variables (index of industrial production, inflation, exchange rate, money supply, gold price and foreign exchange reserve).
- Significant and positive impact of index of industrial production, money supply & exchange rate and negative impact of inflation on Sensex was observed in long-run. On the contrary, gold price showed insignificant and positive impact on Sensex during the study period, whereas foreign exchange reserve revealed negative and insignificant impact. Moreover, exchange rate and foreign exchange reserve significantly caused Sensex in short-run and other variables (foreign exchange reserve, gold price and index of industrial production and inflation) were not proved significant determinant of Sensex in short-run.
- On the basis of estimated coefficients of the error correction terms, the study revealed that stock prices respond significantly for equilibrium if deviation occurs and the speed of adjustment of Sensex for equilibrium is approximately 21% per month. Hence, there is an evidence of long run relationship.

8.1.2 Key Findings based on the Extent of Volatility of Market

The present study has researched the volatility of Indian stock market extensively in an attempt to carry out the behaviour of stock price on the basis of daily Sensex returns. Volatility has been measured by using various GARCH family models. The summary of the results obtained based on the volatility models are as follows:

- The findings of the study are very useful to the investors because results depicted evidences of volatility clustering and time varying nature of volatility of Indian stock market. This indicates large change in returns follows large change and vice-versa in Indian stock market. Before making a plan of higher profit and less risky investments, there is a need to analyse volatility of Indian stock market which is heavily affected by many factors.
- Analysis of ARIMA disclosed an evidence of impact of news on Sensex return volatility and highlighted that news about returns is one of the reasons of volatility in Indian stock market. However, persistence of volatility showed more impact on returns volatility and indicates that any shock to the market makes the returns volatile for a long time and die out slowly. This draw the finding that effect of previous day's volatility of Sensex returns is more than the effect of previous day's Sensex returns information.
- Another interesting fact about the nature of volatility of Indian stock market is that there is an existence of leverage effect in returns which has been proved from EGARCH and TGARCH models. In other words, Sensex return volatility has an asymmetric effect which means positive and negative surprises affect returns differently. It was also found that negative news have more impact on returns' volatility than positive surprises and hence, market response more to negative news and less to positive news.

- While applying and comparing the performance of symmetrical and asymmetrical ARCH models, it was diagnosed that asymmetrical models, viz., EGARCH and TGARCH are better fitted models to capture the time varying volatility of Sensex. Hence, these models are better predictor of stock market volatility with normal distribution.
- Investors willing to obtain higher return and less risky investment, need to analyse stock market volatility. Although, results of the study proved that higher returns in Sensex were not due to higher volatility during the time period of the study which revealed that period of high volatility does not cause high returns always.

8.1.3 Findings on Industry analysis and factors causing divergence in industrial stock returns

The study investigated the performance of selected industries and identified the specific performance variables which cause divergence in industrial stock returns based on CAGR and fixed effect model. Main findings of this section of the study are summarized as follows:

- It was clear from the results of annual growth rate of employee cost to total cost that Metal, Metal Products & Mining and Automobile industries are not labour oriented which is the point of consideration while making an investment. Overall, Metal industry was found one of the best option for investment on the basis of employee cost to total cost. Results showed that Information Technology has comprised more than 50% employees cost in its total cost. This study provided conclusive picture of high employee cost in Information Technology, Healthcare and Oil & Gas industries as these industries showed comparatively higher percentage of employee cost during the whole study period.

- Information Technology industry was found the best in terms of dependency on fixed assets for sales with 22.93% fixed assets to total sales ratio followed by Automobile and Metal industries as these industries are less capital intensive for better earning. This shows that Information Technology industry is capable to earn high revenue with less capital investment in fixed assets. Automobile industry showed low degree capital intensity in the beginning years of the study and its capital intensity was measured around 20% in most of the years. This industry has succeeded to reduce its capital investment in fixed assets. On the other hand, fixed assets for sales ratio of Healthcare and Oil & Gas industries were found to be in the range of 90% - 100% during the study period. However, capital dependency on fixed assets was reduced in Healthcare industry which means this industry is improving its efficiency for using funds. Analysis showed that Oil & Gas industry depends on high capital in fixed assets for better earning. Investment was found more risky in Oil & Gas industry. Therefore, this industry was on the last rank in the sample industries in terms of fixed assets for sales ratio.
- Results of mean value of export earning to sales ratio concluded that Information Technology industry is most exposed to foreign markets with export earning to sales ratio of 79.30% than other industries of the study but highest CAGR was recorded in case of Oil & Gas (32%) and Healthcare (12%) industries. Metal industry was found next in this race. Overall, export earning to sales ratio explored that Information Technology, Oil & Gas and Metal industries are good in export earning and depend on foreign market for revenue, whereas Healthcare and Automobile industries were found in the last

ranks in the sample but a continuous enhancement in EES ratio showed their efforts for export earning.

- While analysing the results of current ratio, it was found that the liquidity conditions of the sample industries were not consistent over the time period. Information Technology industry was found in the best liquidity condition as this ratio was highest (1.78) and this is the only industry in which current ratio remained almost equal to 2 throughout the study period. It can be understood that Information Technology industry has maintained a sensible & excellent level of liquidity. Current ratio remained more than one in Healthcare industry with highest CAGR (8%) which was proved better than other remaining industries of the study. Overall, Information Technology and Healthcare industries are comparatively safe in terms of liquidity condition, whereas Metal industry exhibited an average liquidity position but Automobile (0.70) and Oil & Gas (0.57) industries were noticed weak in terms of liquidity condition.
- It is important to note that burden of borrowed fund which was measured with debt equity ratio was found highest (1.12) in Metal industry and lowest in Information Technology industry (0.16) followed by Oil & Gas and Automobile industries, while Healthcare and Metal industries were more risky in comparison with other industries of the study but still the condition of these industries was observed within the range of safety.
- The study concluded that profitability of Information Technology industry was highest (22.53%) among the sample industries but a huge growth in profitability was obtained by Healthcare industry (13%). Information Technology industry was observed superior in rewarding its shareholders followed by Oil & Gas, Automobile and Metal industries, whereas Healthcare

industry was found to be on the last position in terms of profitability during the study period.

- On the basis of financial results, it can be concluded that Information Technology industry is in better condition in terms of export earning, liquidity, capital intensity and profitability. It was observed that leverage position of this industry is also comparatively better which indicates financial strength of this industry. However, Information Technology industry showed highest employee cost. Further, average price and volatility in IT index were least among all industries under the study and showed more consistency in the market and less possibility for investors to lose their money. Nonetheless, financial performance parameters proved Information Technology industry as best performer.
- The study of investigation on correlation showed that all the selected variables have relationship with the selected industries. However, fixed assets to total assets ratio was found negatively and export earning to sales ratio positively correlated with all industry indices of the study. On the basis of fixed effect model, it was revealed that export earning to sales, liquidity and profitability affected industrial stock returns positively, whereas leverage affected negatively. It was also observed that liquidity affects 55.30% and proved as the most important factor. It was also proved that employee cost to total cost and fixed assets to total sales ratios were not important determinants of industrial stock returns. Overall, 55% variation in returns was observed due to the selected financial performance variables under the study.

8.1.4 Findings on Company analysis and factors causing divergence in Company stock returns

The study investigated the performance of selected companies to identify the best performing company and identified the specific performance variables which cause divergence in stock returns. Main findings based on this analysis are summarized as follows:

- Financial performance analysis of Infosys Ltd. showed that earning per share (108.01), price to book value (7.47), book value per share (386.50) were highest during the last ten years. However, price to earning ratio of Infosys Ltd. found to be reduced. Results reflected large average value of market capitalisation with 12% CAGR for this company. On the contrary, no growth or decline was observed for stock price and returns of these companies were observed highest as compared to other companies. Overall, financial performance of Infosys Ltd. was found satisfactory. While, earning per share was found least in case of Wipro Ltd. and price to earning ratio was found to be reduced. It is worth to note that mean value expressed least book value per share (88.52) in Wipro Ltd. in comparison with other companies and this company failed to improve its book value which shows weak performance. Hence, investment in the stocks of this company is not profitable. Further, positive growth in returns was observed but beta value was found close to 1 during the study period. It can be reasonably concluded that average risk is involved for the investment in stocks of Wipro Ltd.
- It is valuable to note that highest growth (29%) in earning per was made by Dr. Reddy's Laboratories Ltd. share over the ten years, but price to earning ratio was found to be reduced. However, market capitalization, beta and dividend yield were found least in case of Dr. Reddy's Laboratories Ltd.

Further, stocks were proved under risk but risk has been declined over the period. This makes investment less risky with high possible earning in Dr. Reddy's Laboratories Ltd. Hence, this company was found better option for investment, while the results depicted that Sun Pharmaceutical Industries Ltd. has achieved highest CAGR (33%) in market capitalization with an increasing annual growth rate during the whole study period which proved that Sun Pharmaceutical Industries Ltd. is accelerating its market value for creating more temptation of the investors. However, stocks of Sun Pharmaceutical Industries Ltd. were found to be least risky as indicated by beta value. It is valuable to note that Sun Pharmaceutical Industries Ltd. has least dividend, book value per share and highest price to book value ratio in comparison with other companies which shows weak performance of this company. Hence, there is less chance to get good future returns and investment in the stocks of this company may not be profitable.

- Mahindra & Mahindra Ltd. was found almost steady in price earning ratio and earning per share with low dividend yield. It was observed that stocks of Mahindra & Mahindra Ltd. have been more volatile during the last decade as its beta value is greater than 1 and risk was increased over the period. On the contrary, no growth or decline was observed in returns of stocks of Mahindra & Mahindra Ltd. during the whole study period. However, the returns were highest as compared with other companies that provide better opportunity to invest. On the contrary, price earning ratio of Tata Motors Ltd. confirmed that the position of this company is comparatively not good in the market as mean value was highest. It was observed that stocks of Tata Motors Ltd. have been more volatile during the last decade as its beta value was greater than 1.

Hence, analysis depicted that there is less chance to get good future returns and investment in the stocks of this company is not profitable.

- Results concluded a negative trend in dividend yield with low price to book value ratio, and constant price earning ratio in case of GAIL (India) Ltd. Although, Gail (India) Ltd. was found under risk but risk has been declined over the period of time. Overall, satisfactory performance was observed in comparison with other companies under the study. However, study concluded that dividend yield (3.44) of Oil and Natural Gas Corporation Ltd. has been highest throughout the ten years, while low price to book value was observed low with price earning ratio. It can be summarized on the basis of results that the average of market capitalisation was highest. Oil and Natural Gas Corporation Ltd. may offer better opportunities for investment in comparison with rest of the companies under the study due to its large size. Hence, there are more chances of liquidity and marketability for the investors. The beta value was found close to 1 during the study period, hence it can be reasonably concluded that financial performance of this company is good but more risk is involved for the investment.
- Mean value (2.92) of dividend yield was highest in Tata Steel Ltd. and ranked first in terms of positive CAGR, while achieved second rank in case of price to book value ratio and book value per share but price earning ratio has been found least throughout the study period. Therefore, the level of safety in the investment of this company is good. It was also observed that Tata Steel Ltd. was highest volatile as its beta value was greater than 1 and the risk associated with this company was increased over the period. However, the returns of this company were better as compared with other companies, hence, it showed an average financial performance. On the other hand, dividend yield ratio (1.72)

and price to book value ratio (1.14) of Hindalco Industries Ltd. were found lowest during the study period. The results showed that P/E ratio of Hindalco Industries Ltd. was almost constant over the period with least market capitalization which showed least performance of this company. Further, average of returns was proved low, while growth in returns (5%) was highest in this company. It was observed that stock price of Hindalco Industries Ltd. has been more volatile as its beta value was greater than 1 and risk was increased over the period. Overall, financial performance and stocks performance were not found satisfactory but it may offer good returns in future for Hindalco Industries Ltd.

- Results disclosed that all companies have shown growth in earning per share except Oil and Natural Gas Corporation Ltd., Sun Pharmaceutical Industries Ltd., Hindalco Industries Ltd. and Tata Motors Ltd. over the last ten years. But highest growth in earning per share (11%), price to book value ratio (-10%), book value per share (16%) and market capitalization (16%) was observed in case of Infosys Ltd. followed by Dr. Reddy's Laboratories Ltd. and Wipro Ltd. which is a signal of sound financial strength of these companies and creates a positive mark for investment in these companies. Results suggested these companies as the best investment options. It is noteworthy that the risk was found low in case of Dr. Reddy's Laboratories Ltd., Oil and Natural Gas Corporation Ltd., Wipro Ltd. and Infosys Ltd. with better returns on investments, whereas Hindalco Industries Ltd., Mahindra & Mahindra Ltd., Oil and Natural Gas Corporation Ltd., Tata Motors Ltd. and Tata Steel Ltd. were proved to have more risky stocks and their risk has been increased over the last decade. Overall, Infosys Ltd. and Dr. Reddy's Laboratories Ltd. were proved to be the most attractive choice to consider while taking any decision of investment among all selected companies.

- While analysing the relationship between financial performance parameters and stock returns, beta value and dividend yield were found negatively related, while other variables were positively related with stock returns in most of the companies. Further, fixed effect model presented an evidence of significant and positive impact of book value per share, earning per share, market capitalisation and price to earning ratio on stock returns. Out of these, earning per share and price to earning ratio were observed as highly affecting factors, while book value per share showed very weak effect. This suggests, an increase in book value per share, earning per share, market capitalization and price to earning ratio will positively change the stock returns. It was also found that beta, dividend yield and price to book value are not important determinants to affect of stock returns. Overall, 85 percent variability in the stock price of companies was calculated due to the selected variables.

8.1.5 Findings based on Market trend of Stocks (Technical Analysis)

Stock price movements of Sensex representative companies were analysed by using monthly closing stock price through various indicators of technical analysis to determine the trends of the market and to convey the message regarding sell/ buy strategy. The major findings on the basis of technical analysis are given below:

- Moving average convergence and divergence of Dr. Reddy’s Laboratories Ltd. gave the bearish signal in the stock price from July 2014 to August 2015, so the stock prices will go down in near future. It shows the sell signal in the market. The stock price of this company has been decreasing consistently after November 2014 as per the analysis of RSI. During such period, investors are advised to sell their holdings and re-enter in the market. Bearish trend was observed most of the times for this company during the whole study period, whereas trend line showed an upward trend in the stock price and volume was almost found to be the same, this indicates no strong movement in price. So, it is suggested to hold the stocks of this company.

- MACD of Sun Pharmaceutical Industries Ltd. showed bearish trend in the stock price of the company from January 2015 to August 2015 and sell signal was found. On the basis of RSI, the presence of bearish trend was seen from July 2015. On the basis of this; investors are recommended to sell their holdings as the stock prices of Sun Pharmaceutical Industries Ltd. are expected to touch its bottom. Therefore, investors can choose this stock to invest in near future. On the other hand, trend line showed a downward trend in the stock price of this company. The price of the stock was declining but volume was increasing, this indicates that this trend will remain in force and prices will continue to decline.
- According to MACD, stock price of GAIL (India) Ltd. showed bullish trend from October 2013, whereas, bullish trend was observed from April 2015 to May 2015 in RSI analysis. Therefore, there is buy signal upto the overbought situation in the market. However, RSI reached to its extreme point in June 2015 and bearish trend was found from July 2015. On the basis of this, investors are suggested to sell their stock. However, it was found that there has been upward trend in the stock price of Gail (India) Ltd., while volume remained very low throughout the study period; hence, no strong movement in stock price was noticed.
- MACD of Oil and Natural Gas Corporation Ltd. indicated bullish trend in the stock price from August 2012 to July 2015; hence, buy signal was observed but it started to decline in August 2015 which is an indication of the initiation

of bearish trend. Therefore, investors are recommended to sell their holdings as there was an expectation of decline in the stock price. So, investors can select the stock of this company. On the basis of RSI, bearish trend was observed from October 2014 to June 2015 but oversold situation was seen from July 2015 which presents buy signal for the stocks of this company, whereas trend line of stock price of this company showed downward trend with low volatility in volume; hence, this trend will not follow the same pattern for the longer period of time.

- MACD of Hindalco Industries Ltd. showed bullish trend in the stock price from January 2012 to February 2015 and buy signal was observed but from March 2015. MACD showed bearish trend in the market; hence, stock price of this company has been coming down consistently which presents sell signal for the stock. In RSI analysis, same bearish trend was observed from July 2014 to June 2015 but oversold situation was found in the market from July 2015. So, investor may hold the stock of this company. On the other hand, trend line showed downward trend in the stock price of this company with decreasing volume which expressed decline in stock price is not the actual condition for the stock of this company. Therefore, sell signal will remain in force in the near future.
- MACD of TATA Steel Ltd. gave the bullish signal in the stock price from October 2013 to November 2013 but there was bearish signal from December 2014 and the stock price of this company will go down in near future. It showed the sell signal in the market. The stock price of this company has been coming down consistently after July 2014 which was observed from RSI. Investors are advised to sell their holdings and re-enter in the market whenever price reach to oversold situation. However, trend line showed that the

movement of the stock of this company is constant with small change in volume of the stock. Therefore, these stocks were found to be less volatile in the market.

- The MACD of Infosys Ltd. showed bullish trend from June 2015 after the oversold situation in May 2015. Therefore, the prices of the stocks are expected to increase. On the basis of this; investors are recommended to buy the stock of this company as the stock prices of Infosys Ltd. are expected to touch its extreme and may enter in overbought situation. Therefore, investor can choose to invest in this stock. RSI analysis revealed that the stock price of this company was in bullish phase upto January 2015, but situation of oversold was also observed in August 2015 which gave buy signal, whereas trend line showed an upward trend in the stock price of this company. Volume showed growth in trading, hence, this trend will remain in force and prices will continue to increase.
- According to MACD, stock price of Wipro Ltd. showed bullish trend from June 2013 to February 2015 and reached to the situation of overbought in March 2015 and started to decline from April 2015 which expressed sell signal for the stock. However; according to RSI analysis, bullish trend was observed from May 2015 to June 2015 and stock price reached to oversold situation in August 2015. Therefore, there was buy signal for the stock. On the basis of this, investors are suggested to hold/sell the stock as it was found that there has been downward trend in the stock price of Wipro Ltd. with huge volatility in the volume throughout the study period.
- MACD of Mahindra & Mahindra Ltd. indicates bullish trend in the stock price from April 2014 to July 2015; hence, buy signal was observed but it reached to overbought situation in July 2015 and started to decline in August 2015

which is an indication of the initiation of bearish trend; therefore, stock price are expected to decline. Thus, investors are suggested to sell their stock of this company. On the basis of RSI, bearish trend was observed from November 2014 which generated sell signal for the stocks of this company. On the other hand, trend line of stock price of this company showed an upward trend with low volume. Hence, trend will change the situation and investors may hold the stocks of this company in this situation.

- MACD of Tata Motors Ltd. showed bullish trend in the stock price from April 2013 to May 2015 due to which buy signal was observed but from June 2015 MACD showed bearish trend in the market; hence, stock price of this company has been coming down consistently which indicates sell signal for the stock of this company. From RSI analysis, same bearish trend was observed from March 2015, hence; investors are advised to sell their holdings. However, trend line showed downward trend in the stock price of this company with decreasing volume which means decline in stock price will not remain in force.
- Investors are advised to take a decision of buy or sell on the basis of supportive movement of trend line of stock price with oscillators. It was obvious from the analysis of stocks that only stocks of four companies are in the condition to buy i.e. Dr. Reddy's Laboratories Ltd., GAIL (India) Ltd., Infosys Ltd. and Mahindra & Mahindra Ltd. Out of these, GAIL (India) Ltd. and Infosys Ltd. showed bullish trend and there was an upward momentum for stock price of these companies Another two companies i.e. Dr. Reddy's Laboratories Ltd. and Mahindra & Mahindra Ltd. showed bearish trend with upward movement of stock prices. The current study advised to buy or hold the stocks of these companies. However, stock price of remaining companies

of the study showed downward movement with bearish trend. Therefore, it is advisable to investors to sell the stocks of these companies.

8.1.6 Findings based on Investors' Perspectives towards investment in Stock market

Various issues related to fundamental and technical analyses were analysed towards the investment in the stock market, differentiation of the groups of the investors based on their characteristics and identification of the factors which influence the investors for taking investment decisions. Main findings based on investors' perspectives for the investment in the stock market are as follows:

- it is essential to know the disposable income of the respondents in the stock market to recognize investors' attitude towards stock market, hence disposable income of investors was examined and current study depicted that majority of the respondents (37.8%) were having disposable income of 0-10% and second major group (35.1%) was having the disposable income of 21-30%. Only, 18% of respondents were having disposbale income of 11-20% and 9.1% respondents were having the higher disposable income in comparison with other respondents of the study that showed these 9.1% respondents were more interested to invest in the stock market. It was also recorded that 42% respondents trade on daily basis, while 30% respondents trade weekly. A small portion of respondents expressed that they trade monthly or quarterly. Results also conveyed the experience of respondents in the stock market and it was observed that majority of the respondents (84%) have the experience of more than 5 years of investment in the stock market. Negligible proportion of the sample respondents were having less than one year of experience in the stock market. Frequency of trading and experience of stock market clearly explored that the sample of respondents was adequate enough to be study as these respondents trade quickly and have good experience of investment.

- As there was a requirement to analyse industries carefully, the respondents ranked the industries as per their opinions. The purpose was to know the preference of investors towards different sample industries. Study revealed that first preference of respondents was information technology industry with highest weighted average score (3.98). This industry was the preference because of the growing business of e-commerce and government initiatives taken towards ‘Digital India’ approach. Respondents showed very optimistic approach prior to select IT industry as an investment decision. Oil & Gas industry with a weighted average score of 3.71 was found to be the second preference. The major reason for investors’ preference in this industry was due to the agreement of Gail (India) Ltd Global USA LNG LLC and US-based WQGL Midstream incorporation. Next preferred industry was Healthcare and third rank was given by respondents to this industry with weighted average score of 3.39. According to investors of the study, they prefer this industry due to its huge revenue and universal health plan for India which will provide guaranteed medical benefits to citizens of India soon. This industry is one of the growing industries of India as it has significant scope for enhancing services related to healthcare and hence became the third choice of sample investors. The fourth rank was given to Automobile industry with weighted average score of 2.87. This industry has proved as an integral part of the GDP of India. Hence, became the fourth choice of investors of this study.
- For determining the best performer, different companies under five selected industries were ranked on the basis of investors’ opinions. While analysing the preference of the companies for investment, Infosys Ltd. was found on the top

among all companies of this study with weighted average score of 7.26. On the other hand, Mahindra & Mahindra Ltd. has achieved the second rank with weighted average score of 6.99, while Dr. Reddy’s Ltd. was on the third preference of the respondents with weighted average score of 6.34, while Hindalco Industries Ltd. obtained the last ranks.

- Another interesting finding is that respondents were accepted that they have better understanding of both the appraisal techniques because 94% respondents agreed that they have understanding of fundamental analysis, while 89% agreed with the understanding of technical analysis. Therefore, respondents of study were found to be eligible enough for the study of investors’ perspectives towards fundamental and technical analyses. Further, majority of respondents were agreed with the value of these appraisal techniques and elaborated the more significance of fundamental analysis in comparison with technical analysis while assessing the stocks for investment. Therefore, first rank was given to fundamental analysis with weighted average score of 4.2. Findings clearly depicted that 64% respondents agreed with the importance of technical analysis for assessing the stock of a company for investment. Further, significant difference was observed in the perception of investors for two appraisal techniques. Nonetheless, both the techniques were proved to be valuable appraisal techniques, while assessing the stocks of the company.
- Findings suggested the importance of various approaches of fundamental analysis. Opinions of the respondents were asked for the comparative analysis regarding the usefulness of various approaches in relation to fundamental analysis. Respondents have given first rank to ratio analysis approach of fundamental analysis and they were found more comfortable with this

approach with highest weighted average score (3.87). Study proved that financial statements for determining the long-term security of a firm was also preferred by the respondents and they gave second rank to this approach with weighted average score of 3.77. Beta analysis was ranked third which is an appropriate approach to portray the dependency of individual stock movements on overall market. Discounted cash flow and dividend discount model were observed last two approaches according to the preference of respondents which clearly indicate that sample respondents of the study take more help of ratio analysis, analysis of financial statements & beta analysis and these approaches are more useful as per their opinion. Although, significant difference was observed among the approaches in relation to fundamental analysis but weighted average scores of all the approaches clearly depicted that all approaches were important to the respondents of the study.

- As a result of the comparative analysis of the usefulness of various approaches in relation to technical analysis, it is confirmed that investors like more to analyse the stock's performance through MACD histogram and gave first rank with weighted average score of 4.08 to this approach of technical analysis which is an important technique to measure the distance between MACD and its signal line. Second rank was given to relative strength index with weighted average score of 4.04, while third and fourh rank was given to trend line and Elliot wave approach with weighted average scores of 3.86 and 3.77 respectively. Although, charting was the least preferred approach of technical analysis with low weighted average score (3.02). Further, significant difference was observed in the perception of investors for the usefulness of different approaches of technical analysis, although all approaches were found important for the respondents of the study.

- On the basis of exploratory factor analysis, four factors having eigen values greater than one were extracted to better explain the investors' perspectives in the present era of competition and variables together represent 76.74% of total variance which is good enough to investigate the investors' perception towards the factors which influence their investment decision and these factors are capital gain, advices & government regulations, market information and stock information with 47.96 %, 14.19%, 9.09%, 5.49% of variance before rotation respectively. Hence, capital gain was proved to be most important factor and finding of the current study suggested companies to improve it for attracting more investors towards their stocks.
- ***Capital gain*** was found to be the most important factor to affect the investors' decision for investment and persuade investors to invest in the stocks of a particular company. This factor consists the consideration of systematic and unsystematic risk, earnings per share, company which issue bonus share, more dividend for investors, net present value of expected cash flow, net operating profit & liquidity condition of the firm, product strength and market value added. This was observed as the most pertinent factor for investment decision with the highest eigen value of 11.991. ***Advices and Government Regulations*** was extracted as second most important factor with the eigen value of 3.54. This factor includes information related to the regulations of the government authority, any information covered by newspaper/magazines/media, opinion of family members/ friends, expert/agent advice and personal decisions.
- ***Market information*** was investigated as the third major factor with the eigen value of 2.27 and includes six measures which are: overall growth of the firm, impact of economic variables over a particular firm, attraction due to the profile of the board members, status of a company, level of credit rating of the

firm and the comparison of performance of one company with other related companies. ***Stock information*** was found as fourth factor with the eigen value of 1.37 and included the role of past movements of share price, price earning ratio of stock, market capitalisation and volume/turnover of a particular stock.

- In the current study, various different groups of investor were identified and to differentiate these diverse groups, differentiation was done on the basis of the criteria of factors which influence investors' decision for investment and problems faced by the investors as per their nature of investment. Three-cluster solution was applied to identify the homogeneous clusters. Analysis disclosed three clusters of the investors which included: traditional, impulsive and well-informed investors for making a decision of investment in stock market.
- It was found that first cluster consists 29.33 percent investors of total respondents and it is a group of the investors who have no interest in the past movements of shares, amendments in the regulations taken by the authority, price earning ratio, external/internal risk, market capitalisation, value of firm, liquidity condition, net operating profit, earning per share, market value added, bonus shares, credit rating, dividend, economic variables, volume/turnover, profile of the board members, announcements in the newspapers/media and comparative analysis of the performance of other related companies. It is noticeable that this is a group who believes in advices of others like advices of friends/family, experts & agents. It was observed that investors of this group are traditional because they feel problem in online trading, not having enough accessibility of technology and feel problem of communication network. The results clearly emphasized issues related to the neutral behaviour of traditional investors. It is also clear that this group of investors does not believe in

fundamental as well as technical appraisal techniques and just do investment on the basis of different advices which make them traditional investor of stock market.

- The second cluster constitutes with 27.56% investors out of total investors of the study who take decisions of investment spontaneously, feel technical analysis important, always investigate the past movements by using various approaches of technical analysis, prefer to invest in a company having higher price earning ratio, believe in market capitalisation and value of the firm. They also consider the status/turnover of the company, updated profile of the board members, advices of friends/family members/experts, credit rating of companies and compare firms of the same industry. However, they are neutral about the regulations of government authority towards the various market issues while do not focus on bonus shares, dividend, net present value of expected cash flow, net operating profit of company, liquidity conditions, products strength of the firm and economic variables that presents their ignorance towards financial fundamentals for investment and thus gives impulsive responses towards stock market investment. Generally, these investors take their investment decisions on the basis of easily available information by employing technical analysis; hence, this cluster is named as impulsive investors.
- The largest chunk of the respondents of this study was of well-informed investors regarding various issues of stock market. The investors belong to this group always consider past movements of the share prices, amendment in the regulations of government authority, systematic/unsystematic risk, price earning ratio, market capitalisation, earning per share, bonus shares, dividends, macroeconomic variables, net present value of cash flows, liquidity condition,

market value added. They also analyse the product strength of the firm, net operating profit, turnover of the company, newspapers/magazines/media, advices of experts/stock agents and advices of friends/family members. They are long term investors with full of information; hence, they judge the investment on the basis of fundamental and technical analyses which make them well-informed investors and this cluster consists 43.11 percent investors of the total respondents. This cluster was observed biggest in size which has almost every source of information related to stock market for taking rational decisions; hence, this cluster is a cluster of prudent investors.

- While investigating about the problems which affect investors' decision to invest in the stock market, it was revealed that there are probabilities of fraud in stock market and hence, they ranked this problem as the main problem which is observed with highest weighted average score (3.29) and this problem discourage them the most to invest in the stock market. Next major problem felt by the respondents was the lack of accessibility of technology which was ranked second serious problem. Third problem marked by the respondents was the communication network, while the least highlighted issue of concern was the problem due to online trading. Results of the study suggested to illuminate these problems with additional care for increasing the interest of respondents towards the investment.
- Various suggestions of respondents were considered under this study for increasing their confidence towards the investment in the stock market. Findings displayed that investors suggested that companies should launch more plans to increase the awareness of investors regarding various issues of investments and hence, first rank was given to this suggestion which obtained weighted average score of 4.09. Strategies related to the launching of more

awareness plans definitely strengthen the confidence of the investors to invest in the stocks. Investors also suggested to develop a proper procedure regarding grievance handling of the investors for increasing the confidence of the investors and hence, this suggestion was ranked second with weighted average score of 3.94. Third rank with weighted average score of 3.79 was given to the suggestion of providing return related measures on regular basis.

8.2 LIMITATIONS OF THE STUDY

It is the responsibility of researcher to mention the limitations of the study, if any, as it may give base for the extended research work to other researchers. This study has also few limitations which are mentioned below:

- A survey has been conducted in five major cities of national capital region of India with limited number of respondents, which is not comprehensive to apply the consequences of the study for the whole nation.
- This study is limited to six macroeconomic indicators for the data of ten years. These macroeconomic indicators and years of study can be extended.
- The study is restricted to price behaviour of Sensex stocks only which can not generalise on overall Indian stock market. Hence, other indices can be studied to track comprehensive and closer behaviour of stock price of Indian stock market.
- The study has applied limited GARCH family models to analyse the nature of volatility that can also be analysed with other GARCH family model too. Daily data has been taken to determine the volatility; though weekly, monthly or quarterly data set may be used.
- Limited oscillators were employed to recognize the market trend shown by selected Sensex stocks.

- Some selected parameters of financial performance were taken into consideration of only selected industries/companies for measuring the performance.
- Majority of the objectives of the current study depends on secondary data. Therefore, results of the study may be affected by error of data provided by data sources.

8.3 SCOPE FOR FUTURE RESEARCH

Although, this study is comprehensive in nature, pertinent for the study of stock price behaviour and has given broader dimensions to understand the contemporary issues prevailing currently but still following scope for the future research work has been recognised:

- This study was conducted basically in the cities of NCR region and study can be extended in the various parts of India. As, respondents of the study belong to the cities of India; hence, further research can be done for the respondents of rural and semi urban areas.
- Selected macroeconomic variables explained only 23.22% of the variations in Sensex under the study which depicts that there are some other macroeconomic variables which may affect the variation in Sensex. Inclusion of more macroeconomic variable may inculcate some new findings.
- This study is limited to ten years with selected macroeconomic indicators; hence, inclusion of more years and variables may improve the results. Another logical area of the extension of research can be the analysis of relationship between sector-wise stock price and macroeconomic indicators.
- The current study has proved higher volatility of Sensex has not been the only reason for higher returns. There may be other reasons which are responsible for higher returns that can be studied further.

- The study has determined the volatility of Sensex and there is a scope to measure the volatility of stock price of individual companies and volatility of Indian stock market can be compared with international stock markets too.
- Market trends of only ten stocks of Sensex have been analysed in the current study which gives an opportunities to other researchers to analyse the stocks of other Sensex representative companies.
- Financial performance of only five industries and ten companies has been investigated with limited variables of performance which can be extended to get a picture of other dimensions of the performance of these industries/companies. Further, more industries/companies may be considered to analyse the performance of other sectors in India.

8.4 CONCLUSION

This research work concluded the importance of the study of the price behaviour of Sensex stocks and it is obvious from the results that **Capital Gain** is the foremost important factor to influence the investors for formulating their strategy of investment. Hence, fundamentals of a company really matters a lot to the investors. Although, a company can not be investigated in vacuum and economic environment certainly affect the growth of a company and survival of the company depends on different elements of the economy. Movement of Sensex also depends on the various macroeconomic factors and due to this reason co-integration between selected macroeconomic variables and Sensex was observed. Results of the study revealed that money supply, exchange rate and index of industrial production have positive impact on Sensex, whereas inflation have negative impact and overall, 23.22% of variation in Sensex was explained by these variables. It was also concluded that stock prices respond significantly for equilibrium if deviation occurs and speed of adjustment for equilibrium was calculated approximately 21% per month. Therefore, it is quite obvious that macroeconomic variables have a clear relation with the fluctuation in Sensex and investors need to identify the nature of relationship prior to invest for the fruitful return on investment.

Macroeconomic variables do not only affect Sensex stocks, indeed, volatility also hugely affects the movement of Sensex and hence, pattern of volatility in the stock market of India was analysed under this study. The analysis of volatility in Sensex returns exhibits, the presence of volatility clustering, mean reverting behaviour of returns, and persistence of conditional volatility. However, persistence of volatility showed more impact on returns volatility. It was found that asymmetrical GARCH models performed better than symmetric GARCH models for Sensex volatility. Out of asymmetrical models, TGARCH model has performed best which was proved on the basis of information criteria and it was revealed that negative surprises affect returns more. Investors, who want profitable investment should analyse the volatility of stock market certainly as it is a measure of market risk for the entire portfolio they frame.

The success of an investment also depends on the economic significance of the industry and sound performance of the companies under the industries that have chances to go further. There may be several reasons for the growth of industry/company and a prudent investor investigates the factors of growth before taking any decision of investment. Results of the study concluded that export earning, liquidity and profitability positively and significantly cause divergence in industrial returns, whereas inflation cause negatively. Overall, 55% variation in industrial stock returns was observed from these variables. On the other hand, book value per share, earning per share, market capitalization and price to earning ratio are found as the reason of divergence in company stock returns which gave a concluding remark of investigating these performance variables for making profitable investment decisions.

These variables together make 85% variation in stock returns. On the basis of the comparative analysis of the sample industries/companies, it was convincingly deduced that Information technology industry has comparatively more consistency in comparison with other industries. Thus, this industry was observed as best performer and opens the avenues of more profitable and less risky investment.

Study also explored the prediction for the short run price movements by studying prices and volume of trading of stocks. Investors may take a decision of buy or sell on the basis of supportive movement of trend line of stock price with oscillators. It was obvious from the results that only four companies i.e. Dr. Reddy's Laboratories Ltd., Gail (India) Ltd., Infosys Ltd. and Mahindra & Mahindra Ltd. showed upward momentum for stock price of these companies with bullish trend. The current study advises to buy/hold the stocks of these companies. The largest chunk of the respondents of this study was observed as the well-informed investors who have almost every source of information and use fundamental & technical analyses for taking rational decision. This research work will certainly assist the market and companies by revealing the vital information to the companies for formulating their strategies to attract wider range of investors.

8.5 RECOMMENDATIONS

The current study of price behaviour of selected sensex stocks explored various dimensions of price behaviour for the investment in the stock market. It was observed that there are number of possibilities for the improvement of the companies/market; hence, this study provides some suggestions for discovering more investment in the stocks of these companies and market. Brief summary of recommendations based on the current research work is as follows:

- Results of the study revealed that money supply, exchange rate and index of industrial production have positive impact on Sensex, whereas inflation showed negative impact. Therefore, it is suggested to investors to consider these variables while analysing the economic environment of stock market.

- It is advised to investors to go through the nature of volatility of Indian stock market because of the presence of volatility clustering and time varying nature of volatility in Indian stock market as this can generate an investment of less risk and more return. Investors need to analyse many other factors along with stock market volatility as study proved volatility of Sensex do not always cause high returns.
- Investors/analysts should understand the previous day’s volatility of Sensex return as it affects more than the previous day’s Sensex return information and they should also go through the negative news because it has more impact on returns’ volatility. EGARCH and TGARCH models were proved as the better fitted models to capture the time varying volatility of Sensex. Hence, it is suggested to employ these GARCH-family models while investigating the time varying volatility in India stock Market.
- Investors may opt Information technology industry for investment as it showed best performance, they may also invest in Healthcare and Oil & Gas industries which were found on an average performance. However, it is not suggested to invest in Automobile and Metal industries as these industries performed least.
- Investment in the stocks of Infosys Ltd., Dr. Reddy’s Laboratories Ltd., Gail (India) Ltd. and Wipro Ltd. are suggested as better investment options because these companies showed sound financial strength which create a positive mark for investment.
- While selecting an industry, investors should look forward on liquidity condition of that industry as it was examined as most important factor which

affects 55.30% change in industrial stock returns. On the other hand, earning per share should be the base for selecting a particular company for investment which was proved to affect 76.56% change in stock returns. Therefore, industry/companies should focus on improving the condition of these parameters to attract more investors.

- It is recommended to impulsive investors to take decisions on the basis of fundamental information along with the approaches of technical analysis because this will provide broader outlook for the investment and the possibilities of losses will be reduced by considering fundamental information.
- It is strongly recommended to companies that they should launch more plans to increase the awareness of investors regarding various issues of investments; hence, they should launch online trading programme/information related to investment opportunities in a DVD/ kit materials to brief the regular performance of companies. Study also suggested companies to develop a proper procedure regarding grievance handling of the investors. These strategies of awareness will definitely strengthen the confidence of investors to invest in their stocks.
- This study recommends to the policy-makers/companies to alleviate the problems of online trading, accessibility of technology and communication network for converting the traditional investors into well-informed investors. It is also recommended to closely resolve the issue of high transaction cost.
- It is recommended that companies should strengthen their fundamentals to increase the confidence of investors in their stocks as capital gain was found to be the most important factor to affect the investors' decision for investment and under capital gain investors go through the value of earning per share

importantly. Therefore, companies should improve their status of earning per share for attracting more and more investors.

- On the basis of oscillators, bearish trend was observed in the stock price of Dr. Reddy’s Laboratories Ltd., Sun Pharmaceutical Industries Ltd., Hindalco Industries Ltd., Tata Steel Ltd., Wipro Ltd., Mahindra & Mahindra Ltd. and Tata Motors Ltd., while an upward momentum of stock price was shown by Dr. Reddy’s Laboratories Ltd. and Mahindra & Mahindra Ltd. during the study period. Therefore, it is advisable to investors to sell the stocks of Sun Pharmaceutical Industries Ltd., Hindalco Industries Ltd., Tata Steel Ltd, Wipro Ltd., and Tata Motors Ltd. but it is advocated to hold the stocks of Dr. Reddy’s Laboratories Ltd. and Mahindra & Mahindra Ltd.
- Bullish trend was found in the stock price of GAIL (India) Ltd. and Infosys Ltd. but there was downward movement of stock price in Oil & Natural Gas Corporation Ltd. The current study advise to buy or hold the stocks of GAIL (India) Ltd. and Infosys Ltd. and they can sell the stocks of Oil & Natural Gas Corporation Ltd.