Chapter 2

REVIEW OF LITERATURE

This Chapter covers the extensive review of literature which has been carried out on different issues related to technical analysis. The literature reviews focus primarily on the outcomes of applying technical analysis and its predictive value of future price movements. Further this chapter gives immense understanding of the topic in different dimensions of candlestick charts. In this chapter the Literature has been divided into three parts which are shown as below.

- 2.1 Reviews on Technical Analysis and its outcome.
- 2.2 Reviews on Candlestick Charts and its outcome.
- 2.3 Reviews on Investor Behaviour towards investment.
2.1 Technical Analysis Reviews

**Alexander (1964)** Applied his famous filter rules to identify nonlinear patterns in security prices (S&P Industrials, Dow Jones Industrials). He found that the small filter rules generated larger gross profits than the buy-and-hold strategy, and these profits were not likely to be eliminated by commissions.

**Alexander (1961, 1964) and later Fama and Blume (1966)** Examined the profitability of various trading rules based only on the past price series which purportedly capture the essential characteristics of many technical tools. These studies also revealed that filter rules do not yield profits (net of transaction cost) which is higher than that of a buy and hold strategy.

**Cooter (1962)** Found that the stock prices move at random when studied at one week interval. The data for his study was weekend prices of forty five stocks from New York stock exchange. He tested randomness of share by means of a mean square successive difference test. He concluded that there was not one random walk model. He concluded that the share price trends could be predicted when studied at fourteen-week interval. But in total the stock prices followed a random walk at weekly intervals.

**Godfrey et al (1964)** Studied series of share prices, share price indices and volume series at daily, weekly and monthly intervals on the New York and London Stock Exchanges. The connection between different industry group series was not high and very often weak and there was no evidence of one series leading another. Also, the result failed to suggest any evidence to associate prices and volumes of shares sold.
Eugene F Fama (1965) Has answered the questions to what extend can the past history of a common stock price can be used to make meaningful predictions concerning the future prices of the stock? The theory of random walk on stock prices is studied with two hypotheses. They are i) Successive price changes are independent and ii) The price changes conform to some probability distribution. The data for this study consists of daily prices for each of the thirty stocks of the Dow Jones industrial average. This study concludes that there is strong and voluminous evidence in favor of random walk theory.

Fama and Blume (1966) In the best-known and most influential work on technical trading rules in the early period, exhaustively tested Alexander’s filter rules on daily closing prices of 30 individual securities in the Dow Jones Industrial Average (DJIA) during the 1956-1962 period. They simulated 24 filters ranging from 0.5% to 50% and conclude that there were trends in stock market prices.

Jensen (1967) Highlighted the danger of data snooping in technical trading research; Technical trading profits were often compared to one of several benchmarks, such as the buy-and-hold returns, geometric mean returns, or zero mean profits, to derive implications for market efficiency.

Granger and Rees (1968) Examined the interrelationship among bonds of different lengths of maturity and reported close correlation between bonds of nearly same term, which was not unexpected, as it had always been considered that arbitrage by holders is usually closest between adjacent maturities. One-year rate was found leading the other rates for long run fluctuations, but this was not the case for shorter fluctuations (higher frequencies).
**Fama (1970)** Argued that “there are types of nonlinear dependence that imply the existence of profitable trading systems, and yet do not imply nonzero serial covariance. Thus, for many reasons it is desirable to directly test the profitability of various trading rules”. As a result, in early studies technical trading rules are considered as an alternative to avoid such weaknesses of statistical analyses, and are often used together with statistical analyses.

**Rao and Mukharjee (1971)** Could not find, spectral analysis, any evidence contrary to the random walk. Therefore it is said that behaviour of prices in the Indian stock conforms to that in the markets of advanced industrial countries-random walk hypothesis.

**Hatanaka and by Hymans (1973)** They found that the indicators did lead, in that the phase diagrams indicated such a lead, but the coherences were often lower than might be hoped for and leads were less than those suggested by NBER.

**Sharma and Kennedy (1977)** Made a comparative analysis of stock price behavior on the Bombay, London, and New York stock exchanges. Their results indicated that the spectral densities estimated for the first differences series (raw and log transformed) of each index, confirmed the randomness of series, and no systematic cyclical component or periodicity was present. Based on these tests, their view was that stocks on the Bombay Stock Exchange obeyed a random walk and were equivalent in this sense to the behavior of stock prices in the markets of advanced industrialized countries.

**Goldberg and Vora (1978)** Used bispectrum to test the implications of CAPM and concluded that market index did not perfectly explain individual portfolio movements for
all portfolios and that despite cyclical betas that were fairly stable, the true value of beta appeared to be different for cycles of differing durations.

**Daigler Robert T et al (1981)** Have conducted a study on the development and testing of trading rules on the New York stock Exchange which are based on the discriminant Function. The study analysis the ability of daily technical indicators to predict future changes in the "Standard and Poor's 500 Index". The study also signifies that the Technical indicators possess predictive ability to the extent that investor's possess predictive ability to the extent that investors believe they contain information on Future Market developments, and/or to the extent that the indicators reflect changing expectations among market participants.

**Zahir and Khanna (1982)** Studied the determinants of stock prices in India in 101 industrial giants in the private sector for the year 1976-77 and 1977-78 with the help of multiple linear regression model. Dividend per share emerged as a significant determinant of share price, yield also emerged highly significant determinant with its negative association with market price of share. The coefficient of book value was positive throughout and highly significant except 1977-78. The influence of earning-price multiplier on share prices appeared to be very weak.

**Balkrishan (1984)** In his work analyzed the interrelationship in the explanatory variables, i.e. dividend per share, earning per share, book value, yield and cover with market price of share. A linear regression model was used to study the inter-relationship of these variables in general engineering and cotton textile industries. Book value per share and dividend per share turned out to be the most significant determinants of market
price in both the industries. Yield also emerged as significant determinant in cotton textile industry along with a negative sign.

**Kumar and Hundal (1986)** Examined the impact of dividend per share, earning per share, net sales per share, book value per share, earning per share, net worth, retention ratio, leverage ratio and growth in total assets on market price of share by using the linear regression model. The analysis also showed the sensitiveness of the market towards the dividend policy of the three groups. Growth showed a positive influence only in case of textile industry. Leverage in general had a negative influence on the share prices.

**Murphy, J. Austin (1986)** Could not find any statistically significant evidence to support the idea that technical funds (based on the performance of sixteen purely technical futures funds during the period from May 1980 to April 1985) can outperform a benchmark buy and hold strategy.

**Dixit (1986)** Found that dividend and earnings were the most significant predictive variables of share prices. Size and book value also were having a positive influence on share prices. The influence of return on investment was weak while leverage and growth were redundant variables of share prices.

**Shiller (1987)** Shows that market participants in the equity industry are affected by the signals of technical analysis when they encounter extreme market conditions such as the crash of 1987. In questionnaires that were sent out concerning October 19, 1987, Shiller received nearly 1000 responses. Almost one third of the investors that took part in the study answered that their trading behavior during the time of the market crash was
influenced by technical analysis considerations (one of them was that the prices followed a long term bearish trend line).

Ritter (1988) Analyzed the buy/ sell details of NYSE stocks over a period of 15 years from Dec 17, 1970 to Dec 16, 1985. Ritter proposed the parking the proceeds hypothesis i.e., the individual investors who sell the stocks prior to the late December for tax loss selling and they buy the shares in early January, mostly small stocks. He concluded that the ratio of stock purchases to sales by individual investor displays a seasonal pattern, with individuals having a below-normal and buy/sell ratio in late December and above normal ratio in early January.

Jagadeesh (1990) Found predictable stock price patterns when looking at monthly returns during the 1934-1987 time period. He found evidence that stocks that experience large increases or decreases in price during one month are likely to reverse significantly during the following month. This type of pattern suggests that investors can profit from technical trading strategies.

Frankel and Froot (1990) Noted that market professionals tend to include technical analysis in forecasting the market. The guiding principle of technical analysis is to identify and go along with the trend. When there is a trend, whether started by random or fundamental factors, technical methods will tend to generate signals in the same direction.

Kenneth R. French, James M. Poterba (1991) Asks whether market fundamentals can explain the recent run-up and decline of Japanese equity values and price-earnings ratios. Accounting differences explain about half of the long-run disparity between U.S. and
Japanese P/Es. Similarly, we are unable to isolate changes in required stock returns or growth expectations that are large enough to explain recent Japanese stock price movements.

**Brock et al (1992)** Describe an approach that employs two technical to generate buy and sell signals. Profits generated by the signals are calculated by simulating transactions on the Dow Jones Industrial Average over 1897-1986. Their results show that the system generates consistent returns. Specifically, investing on the buy signals produced by the technical indicator generate annual returns of 12%.

**Allen and Taylor (1990) and Taylor and Allen (1992)** Who conducted a questionnaire survey covering over 400 chief foreign exchange dealers in London. Their results show that 90% of the respondents rely at least to a small extent on Technical Analysis when they form their trading strategy. Although technical analysis and fundamental analysis are found to be complementary, the former was of declining importance for long forecasting horizons.

**Silber (1994)** Is among the first researchers who examine the profitability of simple trading strategies in foreign exchange markets in presence of central banks’ interventions. His sample covers the German mark, Swiss franc, Japanese yen, British pound and Canadian dollar. He uses simple moving averages as trading rules. He finds evidence that technical rules can be valuable in markets where governments are found big players. The results show that government interventions provide speculators with an opportunity to generate abnormal returns by applying simple technical trading strategies.
Nishat (1995) Estimated the impact of dividend, retained earnings, size, variability in earning distribution and lag share prices on share prices. He also found that multinational and private sector firms have higher share prices.

Menkhoff (1997) Examined the trading behavior of the professional participants in the foreign exchange market in Germany. A total of 523 questionnaires were sent in 1992, covering almost every important participant of the market, including 96 banking institutions and 44 management companies. Furthermore, a telephone survey and interviews were conducted in order to increase the reliability and coverage of the study. The conclusions drawn from the study are very interesting, since they illustrate that more than 87% of all respondents (FX-managers and fund managers) use technical analysis, attaching, on average, 35% importance to it for predicting FX rates. Moreover, although fundamental analysis is found to be the most important long-term predictive tool, technical analysis is not only used for short horizon forecasting. Another conclusion drawn from the study is that technical analysis is used by all types of participants regardless of age, position and size of firm that they work for, indicating that chartism theory is a widely accepted technique in the foreign exchange market.

Lui and Mole (1998) Studied the importance of technical analysis for foreign exchange dealers through a questionnaire survey conducted for 152 members of the Hong Kong Forex Association. That study revealed that over 85% of the respondents use technical analysis for forming their trading strategies. As far as the forecasting horizon is concerned, technical analysis methods are used for shorter horizons, more than fundamental analysis, and its importance diminishes as the time horizon is extended. According to the results extracted from the questionnaires, due to its short-term nature,
technical analysis is used heavily in predicting turning points and less in predicting trends.

**Lui and Mole (1998)** Report the results of a questionnaire survey conducted in February 1995 on the use by foreign exchange dealers in Hong Kong of fundamental and technical analyses. They found that over 85% of respondents rely on both methods and, again, technical analysis was more popular at shorter time horizons.

**Wong and Cheung (1999)** Sent out questionnaires to a large number of investment professionals and analysts in Hong Kong and showed that technical analysis is used widely, with its significance being higher when the investment horizon is short.

**Osier and Chang (1999)** Studied the use of technical analysis and estimate that over 90% of the participants in the foreign exchange market in London and Hong Kong rely on technical strategies.

**Bauer and Dahlquist (1999)** By examining several technical indicators for a long period, concludes: (1) signals from technical indicators perform worse than ‘buy and hold’ policy, (2) technical indicators are conservative and hence signal high proportion of cash positions, (3) they outperform ‘buy and hold’ for stocks that are declining and underperform for stocks that are rising in price, (4) they contain information that may be of value in trading, (5) results vary with indicator, stock and period, (6) long-short combination is better than either of them and (7) combined indicators results in better signals, though less frequent.
**Fernando Fernandez et al (1999)** Assessed whether some simple forms of technical analysis can predict stock price movement in the Madrid stock exchange, covering thirty-one-year period from Jan, 1966 to Oct, 1997. The results provide strong support for profitability of those technical trading rules. By making use of bootstrap techniques the author shows the returns obtained from these trading rules are not consistent with several null models frequently used in finance.

**Murphy (1999)** Reveals technical analysts often argue that technical analysis is a pragmatic discipline, largely interested in what works rather than existing theory. The fact remains, though, that a number of methods in technical analysis are highly subjective in nature, and critics often claim that price patterns and indicators used by practitioners of technical analysis is more in the mind and eye of the beholder.

**Osler (2000)** Examines the technical trading rules of support and resistance levels provided by six foreign exchange trading companies. The data sample covers the period from 1996 to 1998. The statistical test of the bootstrap technique is used. The results show that signals are very successful in forecasting trend interruptions or reversals. The findings show that some companies are more accurate in indentifying turning points in exchange rate trends. Overall, the prediction in USD/JPY and GBP/USD rates are more accurate than the prediction in DM/USD. Also, it is found that the predictive power of the support-resistance levels tend to last five working days at least once the levels are published to the public.
Martin (2001) Found that technical trading rules were profitable for some spot currencies in each sample period they considered. However, technical trading profits in currency markets seem to gradually decrease over time.

C. L. Osler (2001) Provides a micro structural explanation for the success of two familiar predictions from technical analysis: (1) trends tend to be reversed at predictable support and resistance levels, and (2) trends gain momentum once predictable support and resistance levels are crossed. The explanation is based on a close examination of stop-loss and take-profit orders at a large foreign exchange dealing bank. Take-profit orders tend to reflect price trends, and stop-loss orders tend to intensify trends. The requested execution rates of these orders are strongly clustered at round numbers, which are often used as support and resistance levels. Significantly, there are marked differences between the clustering patterns of stop-loss and take-profit orders, and between the patterns of stop-loss buy and stop-loss sell orders. These differences explain the success of the two predictions.

Leigh et al (2002) Propose a system that uses several techniques in artificial intelligence (e.g., neural networks and genetic algorithms) and several tools from technical analysis to analyze the stock exchange. They report positive result and excess returns compared to a simple buy-and-hold strategy.

Saacke (2002) Provides evidence of the unusual profitability of applying technical trading strategies on days when the Fed and Bundes bank interventions take place. The researchers find that the trading rules of using moving averages are considerably profitable on the days when the central banks interfere. The findings also reveal that
trading rules returns are still high on days in which interventions did not take place or on preceding days. This means that central banks’ interventions are not the only cause of trading rule returns.

**Corwin (2003)** Identifies uncertainty and asymmetric information as a strong influence on the firm’s equity pricing and as a matter of fact lead to under priced instrument. many factors both micro and macro-economics, have impact on equity pricing in the stock market, the impact differs from firm to firm, industry to industry, economy to economy and from time to time, but one comforting conclusion is that most of the factors appear to have the same behavior regardless of time, industry or firm constraints. For instance, increased inflation and interest rates, declining dividends, earnings, poor management leave negative impact on equity pricing and vice-versa A lower degree of efficiency in less developed countries market might be caused by common characteristics of loose disclosure requirements as well as thinness and discontinuity of trading. It is generally assumed that the emerging markets are less efficient than the developed markets.

**Kidd and Brorsen (2004)** Provide some evidence that the reduction in returns to managed futures funds in the 1990s, which predominantly use technical analysis, may have been caused by structural changes in markets, such as a decrease in price volatility and an increase in large price changes occurring while markets are closed.

**Cheung et al (2004)** Conducted a survey and report that 32.7% of the traders who participated in the study answered that they currently follow a technical trading based strategy for the medium run (6 months), 26.3% indicated technical trading as the most important factor that determines exchange rate movements. Apart from the fact that
technical analysis is widespread in the foreign exchange industry, the results of the survey illustrate that its popularity has increased considerably in recent years, since only 13.8% reported that the trading strategy they had followed five years ago was technical based.

**Fifield et al (2005)** Examine 11 European stock markets by using some simple trading rules for 1991-2000 period. They observe that the less developed markets are not informational efficient, suggesting a degree of predictability in the price changes.

**Sharma and Singh (2006)** Used data from 160 Indian firms between 2001 and 2005 and found that earnings per share, price-earnings ratio, dividend per share, dividend coverage, dividend payout, book value per share, and firm size are the determinants of share prices.

**Sundhar and Kakani (2006)** Used two moving averages, simple moving average and displaced moving average to test their performance as a trading rule to beat the markets. They used 15 years data for National Stock Exchange to do the study and tested the rules on a portfolio of stocks. It was found that both the moving averages are successful and this reinforced that the markets are weak form, inefficient to the extent of the sample data. It was also revealed that extra-normal returns can be earned by using the displaced moving average trading rule.

**Ravindra and Wang (2006)** Examine the relationship of trading volume to stock indices in Asian markets. Stock market indices from six developing markets in Asia are analyzed over the 34 month period ending in October 2005. In the South Korean market, the causality extends from the stock indices to trading volume while the causality is the opposite in the Taiwanese market.
**Turner (2007)** Found that fundamental analysis involves the study of company fundamentals such as revenues and expenses, market position, annual growth rates, and so on, technical analysis is solely concerned with price and volume data, particularly price patterns and volume spikes.

**Loh (2007)** Compare technical trading rules used by academics (e.g. Moving Averages) with practitioner’s approach (e.g. oscillators) for five Asian countries and documents that the projecting power of technical trading is improved as the practitioner’s approach is collaborated with academics rules.

**Menkhoff and Taylor (2007)** Observe the effects of technical analysis on decision making of foreign exchange participants. They also suggest that, first, the phenomenon of market participants using technical analysis is not simply concluded as the world of irrationality. Second, government interventions are possibly associated with large changes of foreign exchange rates and they could affect the profitability of technical analysis. Third, order flows could also have an effect on the profitability of technical analysis. Lastly, technical analysis helps to reveal non-fundamental variables in the short term.

**Balsara et al (2007)** Evaluated the profitability of moving average, channel breakout, and Bolinger Band and achieved significant abnormal returns after the inclusion of transaction costs for Class A (i.e. domestic) and Class B (i.e. foreign) shares listed on Shanghai and Shenzhen stock markets, China.

**Turner (2007)** Price and volume data is readily available in real time, which makes technical analysis ideally suited for short term swing trades. The underlying assumption
in technical analysis is that stock prices evolve with a certain regularity, forming reliable and predictable price and volume patterns that reveal market psychology which can be used to determine shifts in supply and demand.

**Park and Irwin (2007)** Try to analyze potential profits generated by technical analysis. They find that modern studies indicate that technical analysis consistently generate profitable returns in a variety of speculative markets (e.g., the stock market, foreign exchange market etc.

**Turner (2007)** Technical indicators are designed to identify and follow existing trends. What we are basically looking for when doing technical analysis is patterns in the price data that signal continuations or reversals in trend. We want to recognize situations that signal a continuation in trend so that we can ride the trend as long as possible. We also want to look for situations that signal a reversal in trend so we can a) sell the stock before the trend turns, or b) buy the stock at the moment it reverses.

**Stephen (2008)** Examines the profitability of using technical models of moving averages and the trading rules are profitable. The profitability is mainly because of the exploitation of exchange rate trends; the result stay valid even with sub-periods trading and declining profit during late 1980s. The results of the best 25 performing models in-the-sample period from 1973 to 1999 are almost as good as those generated in the out-of-sample period of 2000-2004 in the majority of the cases. It is worth to mention that the risk of making losses when applying each of these models is almost zero, adding another plus to the profitability of technical analysis in trading foreign exchange currencies.
**Metghalchi et al (2008)** Study various moving average trading rules for Swedish stock market and suggest that technical trading can outperform B&H strategy even taking data snooping problem and transaction costs into account.

**Krishnan and Menon (2009)** Study the influence of foreign currencies, technical indicators and time frames on trading profits. The findings reveal that using technical analysis in foreign currency trading activities is profitable; all of the currencies, technical indicators and time frames play significant roles in generating profits in foreign exchange spot markets. EUR/USD is found the most profitable and the least risky. The findings also show that short –term trading is riskier and of low liquidity, compared to the long-term trading. Moreover, the authors find that using a combination of technical indicators in a trading system generate remarkable profits.

**State Street (2009)** Used the monthly returns for Russell 3000 Universe from December 1986 to October 2007 to note that low beta stocks outperform high beta stocks. According to this study, lowest beta stocks do not necessarily produce the highest returns, thus implying that some success can be attributed to portfolio construction.

**Balsara et al (2009)** Conducted test for a group of U.S. stock indexes from 1990 to 2007. They document that moving average, trading breakout, and Bollinger Band rules underperform B&H strategy. However, significant positive returns can be produced by the opposing form of these three rules, after considering for a 0.5 percent one-way trading costs.

**Somoye et al (2009)** Examined the factors influencing equity prices in the Nigerian stock market for the period 2005-2007. They employed simple linear regression model to
examine the impact of earning per share, GDP, interest rate, dividend per share and oil price on equity price. The empirical results showed the variable dividend per share, earning per share and GDP exerts a positive correlation to stock prices but are not significant determinants of share price.

**Kung and Wong (2009)** Studied moving average and trading breakout rules for Taiwanese stock market and suggest that these two rules have substantial predictive power for 1983-1990 period, less for the 1991-1997 period, and no power for the 1998-2005 period. They hence conclude that Taiwan stock market is more efficient in recent years.

**Lai et al (2010)** Analyzed technical analysis with psychological biases for Taiwan stock market and provide that disposition, information cascade, and anchoring effects each has certain influence on trading signals.

**Al-Shubiri (2010)** Investigated the determinants of market stock price movements of Jordanian commercial bank. The study includes the commercial bank of Amman stock exchange for the period 2005-2008. The study used simple and multiple regression analysis to investigate the determinants of market stock price. The empirical findings show highly positive significant relationship between market price of stock and net asset value per share, market price of stock dividend percentage, GDP and negative significant relationship on inflation and lending interest.

**Cekirdeksi and Iliev (2010)** The research examines a technical trading system using and back tests of around 250 stocks from various industry sectors, from April 2005 to April 2010. The initial tested set ups include buy and sell filters, inside bar, simple and
exponential moving averages, a volume indicator, per cent trailing exist, overbought and oversold areas of Relative Strength Index and ATR Ratchet. The results show that, when combining buy and sell signals with other indicators, such as the volume indicator, the opening range is a powerful model; it generates significant returns when traded with the correct stock.

**Nazir et al (2010)** Investigated the determinants of share price in context of Pakistan using 73 firms from KSE 100 Index. They used six years (2003-2008) data and employed pooled ordinary least squares, fixed effects model and random effects model. They found dividend payout as the most significant determinant of stock price.

**Lento (2010)** Employs some combined technical rules (CTR) and find that CTR is profitable on S&P 500 for the 1950-2008 period, even when individual trading rules alone are not profitable.

**Milionis and Papanagiotou (2011)** Explore alternative testing procedure for the predictive power of moving average rules for New York Stock Exchange (NYSE), the Athens Stock Exchange (ASE), and the Vienna Stock Exchange (VSE). They support the weak-form market efficiency for NYSE for the 1993-2005 period, reject for the ASE except for the 2001-2005 sub-period, and reject for VSE over the 1993-1997 period and accept for the other two sub-periods.

**Metghalchi and Garza-Gomez (2011)** Used some selected technical trading rules for the Abu Dhabi Stock Index and conclude that it cannot outperform the B&H strategy.
Mitra (2011) Investigates the profitability of moving average trading rules for the Indian stock market and observes that profitable opportunities from technical analysis stay as a puzzle in the market.

Nirmala and Sanju (2011) Identified the determinants of share prices in the Indian stock market. The study focuses on three sectors viz., auto, health care & public sector undertakings over the period 2000-2009. They employed panel co-integration test and fully modified least squares to examine the effect of dividend, profitability, price earnings ratio and leverage on share prices. The empirical findings showed that dividend per share and price earnings ratio are influenced positively to share price of all three sectors. The results further indicated that debt equity ratio is a significant factor influencing share prices for all the three sectors and that it exerts a negative relation with share price.

Sharma (2011) Examined the empirical relationship between equity share prices of different industry groups and explanatory variables such as book value per share, dividend per share, earning per share, price earnings ratio, dividend yield, dividend payout, size in terms of sale and net worth for the period 1993-2008. The results revealed that earning per share, dividend per share and book value per share has significant impact on the equity price of different industry groups in India.

Malik (2011) Tested the statistical relationship of nine fundamentals with stock price. Study is based on the sample of nine most representative food sector firms from KSE for the study period of 2005-09. Research employed the OLS regression and fixed effects model and claims that earnings per share (EPS) has most significant relation to stock
price in food sector companies of Karachi stock exchange which defines 49.2% variations.

**Azeem & Kouser (2011)** Used the Ohlson model to observe the impact of International Accounting Standards on the relationship of stock price with financial information. Study used the OLS and fixed effects model. It found that fundamentals’ determination power is subject to financial reporting practices. However study doesn’t discuss comparative share price determination and neither it used product model.

**Holmberg, Lönnbark and Lundström (2012)** Test the profitability of the trading strategy of the “Open Range Breakout (ORB), but in the US crude oil futures prices from March, 1983 to January, 2011. The ORB is a trading rule that signals entry and exit rules once the price moves beyond predefined boundaries. Using the joint distribution of low, high, open and close prices over a period of time, the researchers find that their ORB trading rule significantly generates high returns.

**Lu, Shiu and Liu (2012)** Found evidence of three profitable bullish patterns in the Taiwan stock market.
2.2 Review of Literature on Investor Behavior

Many Organizations and individuals conducted several studies on the various aspects of the capital markets in the past. These studies were mainly related to various instruments of capital market, share holding pattern, new issue market and scope, market efficiency, risk and return, performance share prices. However, not much of research was done on investment patterns and investor’s perceptions. Hence an attempt is made to review some of the studies relevant to the topic in order to get into in depth details of the chosen study.

Cohn, Lewellen, Lease, and Schlarbaum (1975) Investors earn strong returns before fees, but transaction costs yield portfolio returns that are similar to those available from passive investment strategies.

Taylor and Helen (1992) Found that around 90 per cent investors depend on technical analysis in forming their views at different time horizons. The results show that technical analysis is applied mainly for the shorter time frames for entry and exit timings. Moreover, technical analysis tools are found to be the best tools for trading currencies. The survey results also reveal that fundamentals are reliable for the long term picture, whereas others rely on both fundamental and technical analysis in taking trading decisions.

Epstein (1994) Examined the demand for social information by individual investors. The results indicate the usefulness of annual reports to corporate shareholders. The results indicate a strong demand for information about the product safety and quality, and about the company’s environmental activities. Further, a majority of the shareholders
surveyed also want the company to report on corporate ethics, employees relations and community involvement.

**N.K.liu and K.K.Lee (1997)** Presents an intelligent system to assist small investors to determine stock trend signals for investment in stock business. A pilot system is built providing three main categories of technical analysis theories, namely momentum, moving average, support or resist line. For novice investors, the system is associated with tutoring features and it supports analysis study of the rationale behind some system recommendations. Skillful investors can explore the various theories for the prediction by means of adjusting the weightings, combinations and even some independent variables allocated by the intelligent system. General users can therefore formulate their investment strategies upon system recommendations under different investment criteria accordingly.

**Kent (1998)** Developed a theory of securities market under and over reactions based on two well-known psychological biases investor overconfidence about the precision of private information; and biased self-attribution, which causes asymmetric shifts in investors' confidence as a function of their investment outcomes.

**Murphy (1999)** Attributes the formation of regular and predictive price patterns and price calculations to a study in human psychology and group dynamics which is the basis for behavioral finance where Trading with technical analysis we examine stock price data for price patterns that in some way predict the direction of price in the future. We consequently have to assume that price patterns form with a certain regularity and that price patterns that have been successful in the past will be successful in the future. As financial markets are fueled by human actions and expectations,
Grable and Lytton (1999) Highlighted the role of financial education in determining risk taking, with the more financially educated participants more likely to take risk.

Barber and Odean (2000) Studied for the period 1991-1996 and found that the average individual investor underperforms a market index by 1.5% per year. Active traders underperform by 6.5% annually.

Merikas et al (2000) Undertook an empirical study survey of the factors, which mostly influenced individual investor behavior in the Greek stock exchange. They examined the factors that were thought to exercise the greatest influence on the individual stock investor. It was found that there was a certain degree of correlation between the factors that behavioral finance theory and previous empirical evidence identified as the influencing factors for the average equity investor, and the individual behavior of active investors was influenced by the overall trends prevailing at the time of the survey.

Krishnan and Brooker (2002) Analyzed the factors influencing the decisions of investor who use analysts’ recommendations to arrive at a short-term decision to hold or sell a stock. The results indicate that a strong form of the analyst summary recommendation report, i.e. one with additional information supporting the analysts’ position further, reduces the disposition error for gains and also reduces the disposition error for losses as well.

Pandey (2003) Found that there are undervalued securities in the market and the investors can always make excess returns by correctly picking them. Through autocorrelation analysis and run tests it was concluded that the series of stock indices in the Indian stock market are biased random time series. The auto correlation analysis
indicates that the behavior of share prices does not confirm the applicability of the random walk model in the Indian stock market. Thus the adaptation of strategies in stock market can maximize the returns.

**Gupta (2003)** Examined the perceptions about the main sources of his worries concerning the stock market. A sample comprise of middle-class household’s spread over 21 states/union territories. The study reveals that the foremost cause of worry for household investors is fraudulent company management and in the second place is too much volatility and in the third place is too much price manipulation.

**Merikas et al (2003)** Adopted a modified questionnaire to analyze factors influencing Greek investor behavior on the Athens Stock Exchange. The results indicated that individuals base their stock purchase decisions on economic criteria combined with other diverse variables. The results also revealed that there is a certain degree of correlation between the factors that behavioral finance theory and previous empirical evidence identify as the influencing factors for the average equity investor, and the individual behavior of active investors in the Athens Stock Exchange (ASE) influencing by the overall trends prevailing at the time of the survey in the ASE.

**Malmendier and Shanthikumar (2003)** Tried to answer the question: Are small investors negative? They found that large investors generate abnormal volumes of buyer initiated trades after a positive recommendation only if the analyst is unaffiliated. Small traders exert abnormal buy pressure after all positive recommendations, including those of affiliated analysts.
Hodge (2003) Analyzed investors’ perceptions of earnings quality, auditor independence, and the usefulness of audited financial information. He concluded that lower perceptions of earnings quality are associated with greater reliance on a firm’s audited financial statements and fundamental analysis of those statements when making investment decisions.

Kim and Nofsinger (2003) Studied individual investors in the Japanese markets and examine their behavior and performance. They used the market level data and found that Japanese investors own risky and high book-to-market stocks, trade frequently, make poor trading decisions, and buy recent winners. Further, these behaviors and characteristics appear to vary depending on the bull or bear market conditions. They observe that it is primarily during a bull market where individuals tend to hold high book-to-market stocks, as opposed to a bear market where they exhibit an inclination towards high beta stocks. Overall the poor performance by individual investors can largely be explained by this tendency to hold value stocks during advancing markets and high risk stocks during declining market. They conclude that these behaviors reveal at the market level also represents important findings and hence, become one of the important bases of our study of individual investors in India.

Lim (2004) Tried to test the trading decisions of investors. Using trading records of individual investors, the study tested whether investors’ trading decisions are influenced by their preferences for framing gains and losses. The study finds that investors are more likely to bundle sales of losers on the same day than sale of winners. This result is consistent with the hedonic editing hypothesis, according to which individuals prefer integrating losses and segregating gains.
Brown and Cliff (2004) Investigated investor sentiment and its relation to near-term stock market returns. They find that many commonly cited indirect measures of sentiments are related to direct measures (surveys) of investor sentiment. However, past market returns are also an important determinant of sentiment. Although sentiment levels and changes are strongly correlated with contemporaneous market returns, the tests in this study show that sentiment has little predictive power for near-term future stock returns. Finally, the evidence does not support the conventional wisdom that sentiment primarily affects individual investors and small stocks.

Dorn and Huberman (2005) Risk tolerant investors hold less diversified portfolios and trade more. Those who think themselves more knowledgeable than the average investor trade more aggressively.

Massa and Simonov (2006) Studied Swedish Security Register Center1995-2000 and found Investors earn strong returns on portfolio holdings that are professionally or geographically close to them.

Mitchell, Mottola, Utkus & Yamaguchi (2006) Studied the lack of attention that investors pay to their investments. They examined, by demographic characteristics, what groups are more or less likely to rebalance their portfolios. They found that most participants are inattentive in the oversight of their accounts and that men are more likely to trade.

study indicates that the Fund managers have not been successful in reaping returns in excess of the market; rather they are timing the market in the wrong direction.

**Lusardi & Mitchell (2007)** Studied using the 2004 HRS about the responses of men and women to gauge the relationship between financial literacy and preparedness. Their study shows that women are less likely than men to be able to answer financial knowledge questions correctly and that the ability to answer those questions was correlated with a propensity to plan for retirement.

**Fischer and Gerhardt (2007)** Conducted extensive research on individual investor investment decision making. They find that individual investor investment decisions deviate from recommendations of financial theory. They show that these deviations lead to considerable welfare losses. Therefore they conclude that financial advice is potentially correcting factor in investment decision making process and construct a simple model to capture its very impact on individual investors’ investment success, measured in risk-adjusted return and wealth.

**Yesh Pal Davar and Suveera Gill (2007)** Study “Investment Decision Making: An empirical study of perceptual View of Investors”. The results of this study suggest that investor’s preferences are supposedly related to the actual performance of investments and the same is taken into account while forming an opinion about making future investment decision.

**Turner (2007)** The motivation for technical analysis is largely based on human emotions, such as greed and fear, as a primary propellant of stock prices. Greed and fear are fundamental emotions that motivate nearly all traders.
**Savin et al (2007)** Investigate the price formation of Head-and-Shoulder (H&S) and conclude that the rule should be combined with a passive strategy in order to advance the performance. They show that the passive strategy incorporated with H&S strategy can generate up to 8% excess return.

**Venkataraman (2008)** Suggests that Price movements do not only depend wholly in Technical Analysis. Fundamental factors also affect the commodity market price. So, each and every investor should think about their selling and buying the product before the investment. Day to day prices changes in Government policies also affect the market prices. Political stability, war, depression / boom of the economic condition will affect the market. In India, commodity market growth have been increasing day by day awareness spread out throughout the country now ignorance of the commodity market slightly removed by the government policies.

**Ducassy and Jeannicot (2008)** Studied the impact of CSR information on investor behavior. The study was conducted for a period of three years where a sample of 50 companies was analyzed and to represent the CSR part, the social reporting rankings generated by an independent body were used. The result revealed a market response to this ranking and a significant impact was observed for those companies that have risen or regressed the most in rank from the previous year. Thus the importance that the investors attribute to companies CSR dynamics was proved.

**Anderson (2008)** Studied for 1999-2002 and found that lower income, poorer, younger and less well educated investor invest a greater proportion of wealth in individual stock, holds more highly concentrated portfolios, trade more and have worse performances.
**Verma (2008)**  Identified the demographic profile and investor personality can be the two determinants for making perception about the investor psychology, which if scientifically studied could help the Wealth Management professionals to advice their clients better.

**Commins (2009)**  In their article discussed the hedonistic psychology of investors. It cites that the pursuit of happiness becomes hedonistic when people want to get the most of their investment and gaining wealth is no longer confining that one becomes overly materialistic.

**Zaghlami (2009)**  Study revealed that some psychological particularities that are not expected by the financial behavioral literature, the study was conducted on Tunisian investors.

**Graham, Harvey and Huang (2009)**  Found for UBS Survey of US Investors 1999-2002 that Investors who feel competent trade more often and have more internationally diversified portfolios. Competence is based on self-assessment questions regarding investors’ comfort with “investment products, alternatives, and opportunities.”

**Grinblatt and Keloharju (2009)**  Studied Finnish Stock Exchange1995-2002 and found that Link “overestimation” overconfidence and sensation seeking to trading activity. Overconfidence is measured by comparing self-assessments of skill to test outcomes. Speeding tickets are used as an instrument for sensation seeking.

**Abdelkarim et al (2009)**  Investigated the perception of users regarding the availability, adequacy, and usefulness of information disclosed in the financial reports of companies
listed on the Palestine Securities Exchange (PSE). The availability, adequacy, and timeliness of relevant information about marketable securities are important for both pricing efficiency and market confidence. The investors must be fully informed of relevant facts to make sound judgments about the value of securities.

**Syed Tabassum Sultana (2010)** An Empirical Study of “Indian Individual Investors’ Behavior” was an attempt to know the profile of the investors and also to know their characteristics so as to know their preference with respect to their investments. The study also tried to unravel the influence of demographic factors like gender and age on risk tolerance level of the investors.

**Grinblatt, Keloharju, and Linnainmaa (2010)** Studied Finnish Stock Exchange 1995-2002 and resulted that Stocks bought by high IQ investors earn strong returns at horizons up to one month.

**Huang (2010)** US Discount Broker 1991-1996 found Investors are more likely to buy a stock in an industry if their previous investments in this industry have earned a higher return than the market.

**Kelly and Tetlock (2010)** Studied Market Centre Data 2003-2007 and found that the daily order imbalance of retail traders positively predicts the returns on stocks at horizons up to 20 days.

**Linnainmaa (2010)** Expressed that Poor performance of individual investors can be traced to their limit orders. Market orders by individual investors earn strong returns.
Seasholes and Zhu (2010) Found that Discusses methodological issues in the estimation of cross-sectional differences in investor performance. Documents the strong returns on local stocks are not robust to reasonable variations in methodology.

Bennet and Salvam (2010) Analyzed the investors’ perception towards Social, Political, Economical, Regulatory, Technological, Environmental and Legal (SPERTEL) risks on the value of equity shares in the market. It was found that SPERTEL risk has an influence over the market price of the equity share. It was also observed factors between married and unmarried investors, political, regulatory and legal factors for age and occupation, all other factors were insignificant. The findings could be complemented by further investigation in the areas of other internal factors.

Talati and Sanghvi (2010) Made an attempt to identify the awareness and perception of the investors’ towards hedge funds as an investment avenue with special reference to Gujarat state. It was found that the awareness level regarding hedge funds was very less in the area covered for study. The investors were not aware of the advantage that they could get by investing in hedge funds nor were they aware of the basic functioning of hedge funds. Investors in Gujarat preferred to invest in government securities and fixed deposits of nationalize banks where they had a complete safety of their funds, though they got less returns.

Sudhakar and Sasikumar (2010) Conducted a research to understand the market of mutual funds in India and examined the factors that not only influenced its growth but also affected the different stakeholders in the market. It was observed that mutual funds
have been forced to encounter large number factors that certainly turned out to be barriers in their growth process.

Alrabadi et al (2011) Found that experience exerts statistically significant positive effect on overconfidence. With time-tested strategies investors get overconfident and their experience with these strategies always increases their confidence. This psychological aspect was explored through regression analysis on the Jordanian investors. It was shown that the Jordanian investors are overconfident of their trading skills and investment decisions they make through strategic planning.

Santhi and Gurunathan (2011) Found that most of the investors are averse of mutual funds due the volatility. It should be insisted that the investor can expect a maximum return out of their investment, but they should not be greedy about it.

Geetha and Ramesh (2011) Explored the perceptions and behaviors of the small investors towards the mutual funds and also suggested some measures to increase the quantum of investors and investments as well. It was enlightened that many of the facts present in the country were inevitable for mutual fund companies to change their present strategies to survive and penetrate potential market. It was also revealed that that the personal profiles of investors such as age, educational qualification, profession, annual family income and quantum of monthly savings have direct influence over the investors in making mutual fund investment decisions.

Jaakko (2011) Study revealed that most investors had affected based extra motivation to invest in stock, over and beyond financial return expectations.
Chikashi TSUJI (2011) Examined the direct relationships between FX rates and stock prices of the Japanese machinery industry and the Japanese banking industry. Our interesting findings and contributions are as follows. First, we find that we can model the linkage between Japanese banking industry stock prices and FX rates by the VECM since in our analyzing period, two variables have co-integrated relations. While we find that it is suitable to model the linkage between Japanese machinery industry stock prices and FX rates by the standard VAR model. This is very interesting since in general, it is considered that the linkage between Japanese machinery industry stock prices and FX rates is stronger than that between Japanese banking industry stock prices and FX rates. Third, in our sample period, we find the negative relations between banking industry stock prices and FX rates, and the weak positive relationships between machinery industry stock prices and FX rates in Japan. The former is consistent with stock-oriented approach and the latter is consistent with flow-oriented approach. We consider that research on the direct linkage between exchange rates and equity prices of specific industries are undeveloped

Dhiraj Jain and Khushboo Ranawat (2012) Examine the association of demographic factors on investment choices. The differences among the different genders were found to be significant for post office schemes, real estate, gold/commodities and shares/equity. The chi-square test shows that investors with higher income group prefer to invest in real estate and females prefer to invest in gold/commodities. The study reveals that females were conservative while investing and males were aggressive. Most of the investors consult their family members for taking investing decision and invest for the period of 3-5 years. Most of the investors invested their money for the safety and growth of money.
There is no association of income, age, gender, occupation on the percentage of income and investors wants to save for the future requirements, but there is significant relationship between qualification and percentage of income save for future requirements. But demographic factors does not affect the investment period. This study shows that there is association of demographic profiles and personality type of the investors with investment choice.

Ruta Khaparde & Anjali Bhute (2014) “Investor’s perception towards the impact of macroeconomic performance on stock market behavior” it was observed by the simplest means that the perception of the investors does differ towards the impact of macroeconomic performance on stock market behavior with respect to different individual factors like age and years of market investment experience. The study had been a possibility as more and more investors are doing market study before investing.
2.3 Review of Literature on Candlestick Charts

Many Organizations and individuals conducted several studies on the various aspects of candlestick charts in the past. Chart pattern studies test the profitability or forecasting ability of visual chart patterns widely used by technical analysts. Hence an attempt is made to review some of the studies relevant to the topic in order to get into in-depth details of the chosen study.

**Levy (1971)** Documented the profitability of 32 five-point chart formations for NYSE securities. He found that none of the 32 patterns for any holding period generated profits greater than average purchase or short-sale opportunities.

**Brashears and Elam (1993)** Explored the profitability of the Japanese candlestick trading and their ability to forecast reversals in the cotton futures market from 1973 to 1990. Their sample includes 13 candle reversal patterns. The bullish patterns include the hammer, the engulfing pattern, the morning star, the Doji star, the piercing lines and the tweezers bottom. The bearish patterns include the bearish engulfing, the upside gap two crows, the hanging man, the dark-cloud cover, the shooting star, the evening star and the tweezers top. These patterns are programmed individually using MetaStock programme. The final results show that no definite evidence of predictive power for the Japanese candle patterns in cotton futures markets. The researchers recommend that additional studies should be conducted to re-examine the predictive power of the Japanese candle trading rules in the future.

**Caginalp and Laurent (1998)** Reported that candlestick reversal patterns generated substantial profits in comparison to an average gain for the same holding period. For the
S&P 500 stocks over the 1992-1996 period, down-to-up reversal patterns produced an average return of 0.9% during a two-day holding period (annually 309% of the initial investment). The profit per trade ranged from 0.56%-0.76% even after adjustment for commissions and bid-ask spreads on a $100,000 trade, so that the initial investment was compounded into 202%-259% annually.

**Chang and Osler (1999)** Evaluated the performance of the head-and-shoulders pattern using daily spot rates for 6 currencies (mark, yen, pound, franc, Swiss franc, and Canadian dollar) during the entire floating rate period 1973-1994, established a strategy for entering and exiting positions based on such recognition. The entry position is taken when a current price breaks the neckline, while the timing of exit can be determined arbitrarily. They set up two kinds of exit rules

For the endogenous exit rule, head-and-shoulders rules generated statistically significant returns of about 13% and 19% per year for the mark and yen, respectively, but not for the other exchange rates. Returns from the exogenous exit rule appeared to be insignificant in most cases. The trading profits from the endogenous exit rules were substantially higher than either the annual buy-and-hold returns of 2.5% for the mark and 4.4% for the yen or annual average stock yield of 6.8% measured on the S&P 500 index. The head-and-shoulders returns for the mark and yen were also significantly greater than those derived from 10,000 simulated random walk data series obtained from a bootstrap method and were substantial even after adjusting for transaction costs of 0.05% per round-trip, interest differential, and risk. Moreover, it turned out that the returns were not compensation for bearing systematic risk, since none of the estimated betas were statistically significantly different from zero with the largest beta being 0.03. Profits for
the mark and yen were also robust to changes in the parameters of the head-and-shoulders recognition algorithm, changes in the sample period, and the assumption that exchange rates follow a GARCH (1,1) process rather than the random walk model. Over the sample period, a portfolio that consisted of all six currencies earned total returns of 69.9%, which were significantly higher than returns produced in the simulated data.

**Lo, Mamaysky and Wang (2000)** Examined more chart patterns which are evaluated the usefulness of 10 chart patterns, which are the head-and-shoulders (HS) and inverse head-and-shoulders (IHS), broadening tops (BTOP) and bottoms (BBOT), triangle tops (TTOP) and bottoms (TBOT), rectangle tops (RTOP) and bottoms (RBOT), and double tops (DTOP) and bottoms (DBOT). To see whether these technical patterns are informative, goodness-of-fit and Kolmogorov-Smirnov tests were applied to the daily data of individual NYSE/AMEX stocks and Nasdaq stocks during the 1962-1996 period. The results of the goodness-of-fit test indicated that the NYSE/AMEX stocks had significantly different relative frequencies on the conditional returns from those on the unconditional returns for all but 3 patterns, which were BBOT, TTOP, and DBOT. On the other hand, Nasdaq stocks showed overwhelming significance for all the 10 patterns. The results of the Kolmogorov-Smirnov test showed that rejected the null hypothesis, implying that the conditional distributions of returns for the 5 patterns (HS, BBOT, RTOP, RBOT, and DTOP) were significantly different from the unconditional distributions of returns.

**Lo, Mamaysky, and Wang (2000)** Found return distributions conditioned on technical patterns were significantly different from the unconditional distributions, an average
market adjusted return turned out to be negative across all technical patterns and sample periods they considered.

Leigh, Paz, and Purvis (2002) Noted that bull flag patterns for the NYSE Composite Index generated positive excess returns over a buy-and-hold strategy before transaction costs.

Lucke (2003) All showed limited evidence of the profitability of technical patterns in foreign exchange markets, with trading profits from the patterns declining over time.

Omrane and Oppens (2004) Used technical trading strategies. They examined the presence of price chart patterns in intra-day EUR/USD, using both close and high-low prices. They search for 12 chart patterns and study them, based on the two criteria of profitability and predictability. Using the statistical methodology of Monte Carlo simulation to calculate results’ statistical significance, the authors find evidence of chart patterns in the foreign exchange market. The results reveal that more than 50 per cent of the charts that are identified, has high predictability.

Marshall, Young and Rose (2005) Study the candle patterns in actively traded stocks listed in the DJIA. The sample includes data from 1992 to 2002; the starting year is selected to make sure that market participants had basic background of the different Japanese candle trading rules and they already started using them at that time in their trading strategies. The sample includes 28 candle patterns that fall under four main categories: bullish single lines, bullish reversal patterns, bearish single lines and bearish reversal patterns. To test the results, they use the bootstrap methodology to generate random prices of open, high, low and close. Contrary to the researchers’ expectations, the
final results show no evidence of profitable candle patterns in DJIA, thus, supporting the weak form of the EMH.

**Goo, Chen and Chang (2007)** Examine the profitability of Japanese candlestick patterns using daily data. Their sample includes 25 shares that are partially listed in Taiwan Top 50 Tracker Fund and Taiwan Mid-Cap 100 Tracker Fund, for 12 years from 1997 to 2006, and with 2,580 observations for each stock. The main objective of the study is to indentify profitable candle patterns as well as profitable holding periods that would generate abnormal returns for investors. They use six bullish single-line patterns and seven bullish candle patterns for ten holding periods using a stop-loss strategy as well. The first group includes the long white candle, the white Marubozu, the closing white Marubozu, the opening white Marubozu, the Dragon Doji and the paper umbrella; the second group includes the Hammer, the Bullish Engulfing, the piercing lines, the Bullish Harami, the three inside up, the three outside up and the tweezer's bottom. The t-test is used to statistically test the profitability of the patterns; NOVA and Duncan’s various range tests are also applied to compare the profitability of the patterns across the ten holding periods. In general, the results show that there is evidence of some profitable candle patterns at different holding periods. The researchers find that the Bullish reversal patterns are the most profitable patterns and that the profitability of various candle patterns depends on the holding periods. Another finding is that the long holding periods are appropriate for the two candle categories with few exceptions. The results also show that the -5% stop-loss strategy does improve the performance of the candlestick trading rules.
Young and Marshall (2007) Tests the predictive power of the Japanese candlesticks in the US stock market, particularly the DJIA Index, from 1992 to 2002. The authors use the t test and the bootstrapping methodology to test the results statistically. The Japanese candle patterns are technical trading rules that have been used in Japan for centuries. The use of these candle patterns has been growing among market participants all over the world because they used to be successful with the rice trading in Japan. The authors use 28 candle patterns that vary from one- to three-candle patterns. These patterns include the long white, the white the Marubozu, the Hammer, the Bullish Harami, the three outside up, the Gravestone Doji, the shooting star, the Dark Cloud Cover and the tweezers top. The findings show that candle trading rules are statistically not profitable. None of the single and multiple candlestick patterns, Bullish or Bearish, give timing signals. The authors recommend to use candlestick trading rules in combination with other market timing tools.

Lana, Zhanga and Xiongb (2011) Develops a model that visualizes Japanese candlestick patterns in Chinese stock markets. The model transforms the prices of open, close, high and low into “fuzzy” candle charts. The sample includes selected stocks listed in four markets SSE A Share, SSE B Share, Shenzhen A share and Shenzhen B share” from January 2000 to December 2010. The results show that the model is able to identify the reversal patterns and that it can be used to indentify early stock reversal signals through “symptoms sequence”. The researchers will further enhance the model with additional fuzzy variables to reflect candlestick lines, such as the position of body and shadows to fine-tune the prediction results.
Haibin, Zhao and Wang (2012) Examine the performance of the Japanese candlestick patterns in predicting equity returns using both in-sample and out-of-the-sample forecasts. Monthly data of main global financial markets are used; these markets include “FTSE100, DAX, CAC40 in Europe; NIKKEI225 (NK), Hang Seng (HS) and Strait Times (ST) in Asia”. Also, monthly data of Standard and Poor’s 500 (S&P500) is collected to find out if the candle patterns have reached the US markets as well. The researchers find that the Japanese candlestick patterns do have predictive power in both in-sample and out-of-sample forecasts. In all the cases, the Japanese trading rules are found superior to the simple buy-and-hold. Also, it is found that there is important information that spreads out from the US stock market to the other financial markets

Lu, Shiu and Liu (2012) Investigate the profitability of candle patterns that are composed of two lines through buying on bullish (bearish) patterns and holding the trades till bearish (bullish) patterns take place. Their sample includes daily prices of stocks listed in the Taiwan Top 50 Tracker Fund from 29 October 2002 to end of 2008. The researchers study three bearish reversal patterns and three bullish reversal patterns. These are the bearish engulfing, the Harami, the dark-cloud cover, the piercing lines, the bullish engulfing and the bullish Harami, respectively. The bootstrap methodology is used. The results show that the three bullish patterns are found generally more profitable than the bearish patterns. The returns of the three bullish patterns are found statistically significant in the Taiwan stock market.
Gap Analysis

After extensive reviews of the literature it was found that many studies have been done on different aspects of technical analysis with special reference to candlestick charts and impact of demographic variables and trading decisions of individual investors. There has been extensive study carried out in foreign countries about the above contexts but not in Indian scenario and there is a hardly any study that has been done on the candlestick charts. Here the present study titled “Understanding price behavior by using candlestick charts – a study on select equities” is undertaken to address the research gap which has been found after extensive review of literature.

Conclusion:

This chapter has given strong understanding the background of the previous works which have been already done on different aspects of technical analysis tools being used for the purpose of predicting the future price behaviour of the equity. Further previous studies have tried to find the utility and reliability of the candlestick charts. The review also established that the same are widely used to analysis the investor behaviour towards the investment.