Chapter 1

INTRODUCTION

This chapter explains about the evolution of candlestick charts, its role and importance in the financial markets. An effort is made to give the complete picture about the technical analysis and with special emphasis on the candlestick charts. The following topics are discussed:

- Introduction of candlestick charts
- Philosophy and History of candlestick charts
- Financial Markets
- Fundamental and Technical analysis
- Tools and Techniques of Technical analysis
- Types of charts and its importance
- Features of Indian stock market
- Trends, Volume and Moving averages
- Statement of the problem
- Need and scope of the study
- Research Methodology
- Objectives of the study
- Limitations and Organization of the study
1.1 Introduction

Candlestick charting technique has become very popular among traders today is that it accurately reflects short-term outlooks sometimes lasting less than eight to ten trading sessions. Candlesticks blend perfectly with nearly all of the traders common technical analysis methods. It will also increase one’s understanding of any commodity or stock issue as well as provide an incredible insight into the market’s future price moves. While candlestick charting has historically been sometimes a challenging system to understand, our technologically advanced era provides the necessary tools to simplify its use, and makes it accessible to anyone motivated to learn it.

Investors find candlestick charts easy to understand and interpret. Michael Feeny, economist at Sumitomo Bank, says, "Candlestick charts are immensely flexible and provide a powerful addition to more common chartist techniques, and an extra dimension to your breakdown of future trends."

Candlestick charting offers several advantages over other investment techniques. It helps investors enormously when they try to pin down the best trading stocks in the market. The indirect logic provided by the signals gives investors a platform to further analyze the market. This method always places the odds in favour of the investor. Candlesticks are known to help investors take advantage of human emotions, they can also use them to get rid of emotionally based weakness in their own portfolios. Candlesticks are especially popular because they give investors a very clear visual image of a stock’s progress. They provide deeper insight into the direction of the market as compared to other types of charts. Most investors feel that candlestick charts are more visually informative and appealing, therefore, it is easier to draw inferences from them. A candlestick provides an
encapsulated picture of the stock movement so that investors can easily compare the opening and closing prices, as well as the high and low. A major difference between candlestick charting and other investment techniques is that candlestick charting is the visual indication of what has occurred, while other techniques usually depict a trend that may occur. This highly popular method intuitively reveals the investment trends in a particular stock. The growth of interest in candlestick charts also owes a lot to the colorful terminology used to describe the patterns. Investors become addicted to this terminology, and find it very difficult to give it up with the result that they can’t even dream of going back to simple bar charts.

Another important advantage of candlestick charting is the combination of patterns. The tools can be flexibly used with any of the Western technical analysis tools, such as moving averages and oscillators. A key advantage of candlestick charts is the signals, which are not available in bar charts. "Technical analysts are realizing that anything you can do with a bar chart in western terms, you can do with a candlestick," says Steve Nison, senior vice president at Daiwa Securities America Inc. and author of several books on Candlestick Charting.

These charts show changes in volatility and momentum without the use of oscillators, if oscillators are used in addition to candlesticks, the analysis becomes truly robust. Candlestick charting has also highly improved the precise identification of reversal signals. Signals occur on a daily basis and eight to ten signals are sufficient for establishing a trend.
The correlation between the open and close is a piece of critical information for investors. White candlesticks indicate buying pressure whereas black candlesticks indicate selling pressure. Candlestick charts put immense emphasis on the psychological aspects of openings and closings, and other movements of the markets. The opening and closing indicate the trading mindset for the day. The opening provides the first hint to the direction of the market and the more anxious traders like to start trading earlier in the day.

Candlestick charting not only illustrates the trend, but also the forces underneath that trend. It helps investors protect their investments by enabling them to see indications.

1.2 The Philosophy of Candle Patterns

What makes the Japanese candlestick different from the western Technical analysis is that it takes into account human emotion, mass psychology and mood of the moment. Technical analysis is simply the study of prices as reflected on price charts. Technical analysis assumes that current prices represent all known information about the markets. But prices not only reflect intrinsic facts, they also represent a lot of other factors. Prices are a function of supply and demand, and both supply and demand are affected by emotions. Markets move based upon people’s expectations, not necessarily facts. A person shouldn’t attempt to disregard the emotional component of trading by making his decisions based upon chart formations, assuming that prices reflect both facts and emotion. There is also a difference between value and price, which needs to be taken into consideration while doing any kind of analysis based only on price.

In western technical analysis, standard bar charts are commonly used to convey price activity into an easily readable chart. It usually indicates the opening price, the highest
price for the session, the lowest price for the session and the closing price. A price bar can represent any time frame from one minute to one month. The total vertical length/height of the bar represents the entire trading range for the period. The top of the bar represents the highest price of the period, and the bottom of the bar represents the lowest price of the period. The Open is represented by a small dash to the left of the bar, and the Close for the session is a small dash to the right of the bar.

Candlesticks use the same price data as bar charts, yet the candlestick technique is better equipped to recognize complex patterns and to identify what these patterns mean. A Japanese candlestick is different from the bar charts as it is concerned with the relationship between opening and closing prices. The bar charts place more emphasis on the progression of the closing price from the earlier day’s close. Candlestick chartists are more interested in the relationship between the closing price and the opening price of the same trading day. One can see how much easier looking at the change in body color of the candlestick chart is for interpreting the day-to-day sentiment. The candlesticks are much more visually appealing, and convey the price information in a quicker, easier manner. On the Candlestick charts, there are several patterns to look for which signify bullish and bearish conditions. Candlesticks are a true leading indicator. They regularly identify potential market price moves before they begin to happen.

Candlesticks can also be applied to any other Western technical oscillators to produce a synergistic trading approach. Candlesticks are the only technical analysis tool that generates intuitive text massages (results) about the inner psychology of any market. The greatest advantage of a candlestick chart is its ability to read the market sentiments and predict the market.
1.3 Candlestick Charts History

Candlestick charts have a rich history that extends far beyond their relatively short period of popularity among today's traders. The Japanese are credited for developing the candlestick techniques still in use today. These techniques originated in the technical charting methods used as far back as the 1600’s. Over 100 years before the West developed the bar, point and figure analysis systems, Japanese candlestick chartists were crewing their charts on a scroll of rice paper, from right to left, with a crow quill and India ink ground by hand. Just spend a bit of time analyzing traditional candlestick formations and you will begin to see how, to this day; the patterns spell out market forces and investor psychology.

During the 16th and 17th centuries, the Japanese feudal lords waged constant wars; this was known as Sengoku Jidai, or "Age of Country at War." It was during this highly militaristic period that candlestick charting was developed. Naturally, the jargon of candlestick charting reflects this with numerous military terms and references. This turmoil gradually came to an end in the early 1600's as Japan was unified under the leadership of Nobunaga Oda, Hideyoshi Toyotomi and Leyasu Tokugawa. The collective achievements of these powerful feudal rulers known as “daimyo” are summarized in the saying, "Nobunaga piled the rice, Hideyoshi kneaded the dough, and Tokugawa ate the cake."

Osaka became Japan's capital during Toyotomi’s reign. As a sea port, it was an ideal commerce centre; land travel was slow and often dangerous, and therefore the port quickly emerged as a major trade hub. In warehousing and distributing commodities by sea and land, Osaka evolved into Japan's largest financial centre. In time, Osaka's
financial influence stabilized regional imbalances in rice prices. It was in Osaka at this
time that YodoyaKeian became an immensely successful rice trader due to his ability to
transport, distribute and set the price of rice. He was so successful that his front yard
became Japan's first rice exchange.

During Yodoya Keian’s ascendancy as one of the most powerful traders in Japan, society
was divided into four classes: the soldier, the farmer, the artisan, and the merchant. The
four classes were ruled by a military government known as the bakufu, or shogunate.
Sadly, the bakufu grew fearful of Keian’s power and influence. They charged him with
living a life of luxury beyond his social rank of merchant, and forced him to part with his
fortune. With Keian out of the way, several competing rice merchants attempted to corner
the rice market. However, the bakufu also confiscated these merchants' wealth and went
even further - sending them into exile after executing their children.

As stability settled over the Japanese culture during the early 17th century, new
opportunities also became apparent. The centralized government, led by Tokugawa,
diminished the feudal system and paved the way for the expansion of the local markets to
a centralized national market. The demise of local markets spurred the growth of
technical analysis in Japan. Accompanying all these changes was the formation of the
Dojima Rice Exchange, the institutionalized market that began in Yodoya's front yard.
Merchants were now capable of grading the rice, and negotiating the market price on a
broad scale. The resulting economic expansion increased the use of candlestick charting
as a tool for tracking the valuation of rice.
It has been rumored that candlestick charts were first introduced near the beginning of the Meiji era (around 1870) by an Englishman and were used primarily for the silver market in Yokohama. However, the most widely accepted theory as to how candlesticks were introduced into Japanese culture is that the chart originated with the beginning of the rice market (around as has been discussed above. Although it is still unclear as to precisely who is responsible for inventing the candlestick chart, there is no debate that much of the development and maturing process was thanks to Munehisa Honma. Although he was the youngest son at a time when tradition favoured succession by the eldest son, he inherited his family's business on the merit of his extraordinary trading skill. Using candlestick charts, he was able to predict price moves to the degree that he conducted his trades directly from his home which was a previously unheard of practice. He managed this by paying men to convey his selling or buying instructions by waving a series of flags from the tops of buildings from Sakata to Osaka.

Honma’s achievements were due in part to the fact that he applied candlestick charting in an innovative, new way. He researched the historic movement of rice prices in the context of seasonal weather conditions. His research established interpretations that he applied with great success. He discovered that although there was a link between price and the supply and demand of rice, the markets were strongly influenced by the emotions of the traders. He understood that when emotions played into the equation, a vast difference between the value and the price of rice occurred. His findings are known as the "Sakata Rules", named after the Honma family’s hometown. These principles are the basis for the candlestick chart analysis which is used to measure market emotions towards a stock.
Due to the debasing of coinage, rice became the primary medium of exchange. Actual rice trading expanded into forming and negotiating rice warehouse receipts after 1710. They become known as rice coupons, and were the first forms of futures. The Osaka rice brokerage became the foundation for the city's wealth with 1,300 rice dealers occupying the Exchange. A daimyo in need of money could send his surplus rice to Osaka and get a receipt from a warehouse and this receipt could then be sold. Many daimyo found that cash flow problems could be eliminated through this method. Sometimes many future years of crops were mortgaged to take care of current expenses. With the rice coupon becoming an actively traded entity, the Dojima Rice Exchange became the world's first futures exchange. Rice coupons were also called "empty rice" coupons, rice that was not in physical possession. Rice futures trading became so established in the Japanese marketplace, that in 1749, 110,000 bales were freely traded while there were only 30,000 bales in existence throughout Japan. It was during this time period that trading based on candlestick charts became more refined.

Following the commodity traders’ success with candlesticks, the Japanese later integrated these techniques into their stock market. Still later, after World War II, the chart became very popular in Japan due to an increase in the number of active speculative investors. Prior to the last 50 years or so, the candlestick technique was known to only a few Japanese investors. Now, however, Japan’s most elusive technical trading methodology has entered the twenty first century and traders worldwide are interested in profiting from the wealth of knowledge that is only available with this technique.
1.4 Candlestick Patterns

While candlesticks are able to provide valuable insight into a market’s situation, single candlesticks are usually regarded as too fragile to allow for a prognosis of required reliability. Hence, instead of relying only on a single candle’s shape, forecasts are based upon constellations of successive candlesticks. These so-called Candlestick Patterns usually consist of a series of three candlesticks with certain properties. Next to the candle’s shapes, their positions relative to each other, as well as the prevailing direction of movement, are taken into consideration.

In general, candlestick patterns can be classified into two categories: reversal patterns indicate an imminent turning of the current movement’s direction while continuation patterns confirm the current movement. Opposed to the previously introduced analysis methods, candlestick patterns only require a succinct time period to form a characteristic pattern and thereby emit a signal. Consequently, it is only natural to utilize these patterns for short-term forecasts. In fact, distinguished patterns have the means to forecast the following day’s direction with a rather high certainty, but by extending the forecast further into the future. Due to their short-term nature, candlestick patterns may be employed to facilitate strategies with a rather high trading frequency. Also, since the previously described analyzing methods tend to forecast movements on a larger scale, they can be augmented with candlestick patterns to pinpoint the exact positions of turning points.

Having discussed candlestick patterns in the preceding section, in the next section financial markets, fundamental and technical analysis etc. are discussed.
1.5 Financial Markets

In order to participate in any kind of financial markets a trader should perform some kind of market analysis prior to any investment decisions. The main goal of all analysis techniques is the evaluation of a security’s current state as well as a forecast of future price movements. The discipline of financial market analysis can be divided into two categories: the Fundamental Analysis studies key data of a security, e.g., financial statements, management decisions, market perspectives, and economic environments. The second approach is the Technical Analysis which does not take any fundamental data into account, but rather relies purely on a market’s history (namely movements of price and volume, i.e., number of securities traded within a certain period of time) in order to predict future movements. While both approaches can justify a valid analysis result, there is a magnificent difference in the required input data, background knowledge, and evaluation techniques for each approach.

In order to accomplish a thorough fundamental analysis of any security, it is essential to have a sound knowledge of the corresponding market and the ability to assess the impact of a huge variety of information. Since just the mere task of computationally capturing news’ meanings (let alone an evaluation of its possible impact) is highly error prone with current technology, major obstacles have to be overcome when facilitating a machine-based fundamental analysis. The basis of all technical analysis approaches is the premise that “market action discounts everything”. This premise states that all relevant information regarding a certain security is already reflected in its current price. For instance, if a security’s fundamental analysis suggests a prosperous development, the
security’s price should be rising and therefore the same conclusion can be reached with complete negligence of any fundamental data by simply examining the price and volume movements.

Technical analysis is all about forecasting future developments by identifying certain characteristics in a security’s historical price and volume movements. Since this field has been subject to intensive research for more than a century, technical analysis has a set of well-established rules and correlations available that allow for a profound market analysis. Opposed to the fundamental analysis, most of the knowledge in the technical approach can be conveniently expressed in terms of equations and algorithms and therefore it can be easily adapted to a machine-readable form. Another benefit of the technical analysis is the universal validity of its knowledge and therefore no expert knowledge in certain markets is required. Consequently, this work aims to exploit the well-established knowledge of the technical analysis and does not take fundamental data into account at all.

1.6 Fundamental Analysis vs Technical Analysis

Fundamental analysis and Technical analysis are the two main approaches used by funds and other finance managers to analyze a security value and monitor risk and return tradeoffs while managing portfolios. There has always been a debate on which approach is superior to the other one and whether they substitute or complement each other.

Fundamental analysts focus on security market price and its true values. In order to invest in a stock or any other financial security, fundamental analysts study the economic factors of supply and demand, which affect the price directions. In particular, they assess
all the factors that can affect the security market price in order to determine the intrinsic value of that security. Fundamentalists look at the book value and examine financial statements and use price-to-book ratio. Earnings are another key factor that reflects the income power of a stock, using the price-earnings ratio. These two ratios are important for many fundamentalists because they show the deviation of the shares from asset backing of the security. The second ratio of price to earnings shows the deviation of the shares from the earning power of the stock. So, if the intrinsic value is below the market price, this means that the security is overpriced and should be liquidated. However, if the intrinsic value is above the market price, it means that the security is underpriced and it should be added to the portfolio.

On the other hand, technical analysts believe that fundamental factors of securities are discounted and accounted for in the market price itself. Technical analysts study the market action as they believe that prices move in trends and that history patterns in financial markets repeat themselves. They forecast future market prices through examining short, intermediate and long term trend directions, price patterns, technical oscillators, time cycles, inter market analysis and other technical tools. As for the fundamental analysis, the technical analysis has also attracted a lot of investors, practitioners and academicians.

Nowadays, technical analysis is widely used by many big institutional investors and other market participants, in their trading and investing strategies. The power of mathematics of artificial intelligence as well as price pattern identification software has been growing so drastically. The globalization and the integration of different financial markets worldwide along with the advanced technology have enabled technical analysts to adjust
their trading strategies very rapidly when there are major movements. These speedy tools are not available for the fundamentalists.

A lot of studies have been conducted to examine the ability of fundamental and technical analyses to assist funds and risk managers to make correct decisions. Evidence of the profitability of technical analysis is explored in details in the literature review section. Other studies have gone further by examining the ability of integrating both analyses to optimize and further fine-tune investment and risk management strategies. Both analyses forecasting the market attempt to resolve the same issue of determining future price directions. The fundamental analyst examines the cause of the market direction, whereas the technical analyst studies the effect. At the start of major market moves, usually fundamental analysts are not able to explain what the market tends to do. This is the market stage when the two approaches fail to agree with each other. However, at some stage later, the two approaches do come back into sync, but not early enough for the trader to react. Another explanation for the discrepancies between the two is that market price movements tend to lead fundamentals. Since the known fundamentals have already been accounted for in the market, prices are currently responding to unfamiliar fundamentals. History records that some of the major bull and bear markets have started with little or zero perceived change in the fundamentals. At the time these changes became familiar, the fresh trend is already in place. With the passage of time, technical analysts can develop growing confidence in their price chart signals and they become among the minority who can spot a change in trend directions. They know at some stage that the reasons for that trend reversal will become known to others.
Most analysts categorize themselves as either chartists or fundamentalists, but in real-life situations, there is an overlap. A lot of fundamental analysts have some basics about chart and trend analysis. Similarly, many chartists are aware of some important fundamentals. The main challenge is that sometimes price charts and fundamentals conflict with each other.

Last but not least, if a trader has a choice between the two approaches, the choice would logically be the technical analysis. By default, technical analysis includes the fundamentals. If the fundamentals are accounted for in the market price, it makes less sense to study those fundamentals. In other words, chart analysis has become a shortcut of fundamental or value investing analysis.

1.7 Subjective Analysis vs Objective Analysis

Technical analysis can be classified into two categories: subjective and objective technical analysis (TA). Subjective TA refers to methods and patterns of analysis that cannot be clearly defined. This leads to the conclusion that technical analysts are open to personal views and interpretations when they use their technical trading rules. This means that it is possible for different analysts using the same method of same data sets, to have different findings. Thus, subjective trading rules cannot be tested and they are exempted from empirical examinations. Examples of subjective TA can include Gann Lines, trend channels, price chart patterns and divergences.

On the other hand, objective TA is clearly defined. When an objective trading rule is applied on a market data set, its signals are very clear and there is no room for ambiguity. This helps simulating technical methods on different historical data and identifying their
performance level accuracy. In other words, it allows back testing. Thus, any objective method can be repeatable; it enables technical analysts and academicians to re-test previous findings of profitable technical trading rules and perhaps refute current statistical evidence.

In a nutshell, one can distinguish between subjective and objective TA through using the programmability criterion; that is, a method is considered objective only if it can be implemented in a computer programme that can generate clear market positions. Any other technical trading methods that cannot be programmed become subjective by default. Subjective TA can be eliminated either through a shift into objective methods or rejection.

1.8 History of Technical Analysis

Technical Analysis has its origins back in late 1800s when Charles Henry Dow, editor of "The Wall Street Journal", published a stock market average on July 3, 1884. That first average included 11 stocks, of which 9 were railroad companies. After a lot of amendments, the Industrial Index comprised 30 companies in 1928, and it is still the most famous index in the world securities markets. That first index in 1884 was meant to be the beginning of a whole philosophy of investment appraisal, which after many decades took the name "Technical Analysis".

Dow's first observations about stock market movements, widely known as "Dow Theory", were actually articulated as a theory by his successor in "The Wall Street Journal", William Peter Hamilton. Until his death in 1929, Hamilton wrote a large number of editorials in "The Wall Street Journal" and in "Barron's", discussing and
forecasting major trends in the New York Stock Exchange. Since Dow never wrote a book on his theory, his successor explained and enhanced the basic ideas in a book called "The Stock Market Barometer", in 1922.

Although the modern methods of technical analysis are much more sophisticated than Dow and Hamilton could ever imagine, the core thinking of modern technical analysis is still based on the "Dow Theory". According to Hamilton, "the pragmatic basis for the theory, a working hypothesis, if nothing more, lies in human nature itself. What Technical Analysis is trying to capture is the human psychology behind the price movements which allow investors to profit from its changes. According to Martin Pring, one of the most famous technical analysts, "the technical approach is a reflection of mass psychology "crowd" in action, it attempts to forecast future price movements on the assumption that crowd psychology moves between panic, fear and pessimism on one hand and confidence, excessive optimism and greed on the other".

Dow Theory stems from the premise that market action (prices and transaction volume) reflect all available knowledge on the asset. Therefore, there is no need to examine the fundamental determinants of an asset's value. Furthermore, according to Murphy, asset price changes often precede changes in fundamentals.

The second main principle is that asset prices move in trends and thus an investor can profit by identifying the prevailing trend and following it. This is what the proponents of Technical Analysis mean when they say "follow the trend" or "the trend is your best friend".
The final basic principle of Dow Theory is that history repeats itself. In other words, market participants will act in the same way when they encounter the same conditions. In addition, by studying the price and volume history of an asset, an investor can forecast which direction the asset price will move when the same conditions prevail in the market.

The methods employed in Technical Analysis are based on either charting or mechanical rules. Using charting, which is as old as the theory itself, practitioners aim to predict future patterns by studying the patterns of the price graph for a long time in the past. The charting rules, which are responsible for giving the name of "Chartism Theory" to Technical Analysis, are to a large extent subjective, and need considerable experience and skill by users.

In contrast, the mechanical rules impose objectivity and consistency on the user since they are based on mathematical formulae which attempt to capture the nature of the price movements and take advantage of the market psychology that constitutes the major force for every change in the price direction.

Although technical analysis is as old as the Stock Market itself, it has been anathema to academics from the early beginning of its use. Its practical nature and the fact that it seems to violate the traditional theory of market efficiency are only two of the reasons that made academics treat technical methods as a heretic philosophy of market appraisal without any scientific and practical value. Lo et al claim that "technical analysis has survived through the years, perhaps because its visual mode of analysis is more conducive to human cognition and because pattern recognition is one of the few repetitive activities for which computers do not have an absolute advantage yet".
However, the renaissance of Technical Analysis in the last decade has made it impossible for the academic community to continue ignoring its presence and possible predictive power. As a consequence, a plethora of research has been carried out on tackling a large number of issues regarding the adoption of Technical Analysis as a reliable tool for predicting asset prices. The application of methods taken from applied sciences, such as pattern recognition, makes Chartism theory seem much more scientific than a few decades ago.

1.9 Tools and Techniques of Technical Analysis

There are numerous tools and techniques for doing technical analysis. Basically this analysis is done from the following four important points of view:

**Prices:** Whenever there is change in prices of securities, it is reflected in the changes in investor attitude and demand and supply of securities.

**Time:** The degree of movement in price is a function of time. The longer it takes for a reversal in trend, greater will be the price change that follows.

**Volume:** The intensity of price changes is reflected in the volume of transactions that accompany the change. If an increase in price is accompanied by a small change in transactions, it implies that the change is not strong enough.

**Width:** The quality of price change is measured by determining whether a change in trend spreads across most sectors and industries or is concentrated in few securities only. Study of the width of the market indicates the extent to which price changes have taken place in the market in accordance with a certain overall trends.
1.10 About Charts

Charts are one of the most fundamental aspects of technical analysis. It is important that you clearly understand what is being shown on a chart and the information that it provides. Charts are similar to the charts that you see in any business setting. A chart is simply a graphical representation of a series of prices over a set time frame. For example, a chart may show a stock's price movement over a one-year period, where each point on the graph represents the closing price for each day the stock is traded.

Figure 1.1 Basic Chart

Figure 1.1 provides an example of a basic chart. It is a representation of the price Movements of a stock over a 1.5 year period. The bottom of the graph, running horizontally (x-axis), is the date or time scale. On the right hand side, running vertically (y-axis), the price of the security is shown. By looking at the graph we see that in October 2004 (Point 1), the price of this stock was around Rs.245, whereas in June 2005 (Point 2), the stock's price is around Rs.265. This tells us that the stock has risen between October 2004 and June 2005.

1.10.1 Chart Properties

There are several things that you should be aware of when looking at a chart, as these factors can affect the information that is provided. They include the time scale, the price scale.
1.10.2 Time Scale

The time scale refers to the range of dates at the bottom of the chart, which can vary from decades to seconds. The most frequently used time scales are intraday, daily, weekly, monthly, quarterly and annually. The shorter the time frame, the more detailed the chart. Each data point can represent the closing price of the period or show the open, the high, the low and the close depending on the chart used.

Intraday charts plot price movement within the period of one day. This means that the time scale could be as short as five minutes or could cover the whole trading day from the opening bell to the closing bell.

Daily charts are comprised of a series of price movements in which each price point on the chart is a full day’s trading condensed into one point. Again, each point on the graph can be simply the closing price or can entail the open, high, low and close for the stock over the day. These data points are spread out over weekly, monthly and even yearly time scales to monitor both short-term and intermediate trends in price movement.

Weekly, monthly, quarterly and yearly charts are used to analyze longer term trends in the movement of a stock's price. Each data point in these graphs will be a condensed version of what happened over the specified period. So for a weekly chart, each data point will be a representation of the price movement of the week. For example, if you are looking at a chart of weekly data spread over a five-year period and each data point is the closing price for the week, the price that is plotted will be the closing price on the last trading day of the week, which is usually a Friday.
1.11 Chart Types

There are four main types of charts that are used by investors and traders depending on the information that they are seeking and their individual skill levels. The chart types are: the line chart, the bar chart, the candlestick chart and the point and figure chart. In the following sections, we will focus on the S&P 500 Index during the period of January 2006 through May 2006. Notice how the data used to create the charts is the same, but the way the data is plotted and shown in the charts is different.

1.11.1 Line Chart

The most basic of the four charts is the line chart because it represents only the closing prices over a set period of time. The line is formed by connecting the closing prices over the time frame. Line charts do not provide visual information of the trading range for the individual points such as the high, low and opening prices. However, the closing price is often considered to be the most important price in stock data compared to the high and low for the day and this is why it is the only value used in line charts.

![Figure 1.2 Line chart](image-url)
1.11.2 Bar Chart

The bar chart expands on the line chart by adding several more key pieces of information to each data point. The chart is made up of a series of vertical lines that represent each data point. This vertical line represents the high and low for the trading period, along with the closing price. The close and open are represented on the vertical line by a horizontal dash. The opening price on a bar chart is illustrated by the dash that is located on the left side of the vertical bar. Conversely, the close is represented by the dash on the right. Generally, if the left dash (open) is lower than the right dash (close) then the bar will be shaded black, representing an up period for the stock, which means it has gained value. A bar that is colored red signals that the stock has gone down in value over that period. When this is the case, the dash on the right (close) is lower than the dash on the left (open).

![Figure 1.3 Bar Chart](image)
1.11.3 Candlestick Charts

The candlestick chart is similar to a bar chart, but it differs in the way that it is visually constructed. Similar to the bar chart, the candlestick also has a thin vertical line showing the period's trading range. The difference comes in the formation of a wide bar on the vertical line, which illustrates the difference between the open and close. And, like bar charts, candlesticks also rely heavily on the use of colors to explain what has happened during the trading period. A major problem with the candlestick color configuration, however, is that different sites use different standards; therefore, it is important to understand the candlestick configuration used at the chart site you are working with. There are two color constructs for days up and one for days that the price falls. When the price of the stock is up and closes above the opening trade, the candlestick will usually be white or clear. If the stock has traded down for the period, then the candlestick will usually be red or black, depending on the site. If the stock's priced above the previous day's close but below the day's open, the close candlestick will be black or filled with the color that is used to indicate an up day.

![Figure 1.4 Candlestick Chart](image)
1.11.4 Point and Figure Chart

The point and figure chart is not well known or used by the average investor but it has had a long history of use dating back to the first technical traders. This type of chart reflects price movements and is not as concerned about time and volume in the formulation of the points. The point and figure chart removes the noise, or insignificant price movements, in the stock, which can distort traders views of the price trends. These types of charts also try to neutralize the skewing effect that time has on chart analysis.

When first looking at a point and figure chart, you will notice a series of Xs and Os. The Xs represent upward price trends and the Os represent downward price trends. There are also numbers and letters in the chart; these represent months, and give investors an idea of the date. Each box on the chart represents the price scale, which adjusts depending on the price of the stock: the higher the stock's price the more each box represents. On most charts where the price is between Rs.20 and Rs.100, a box represents Re.1, or 1 point for the stock. The other critical point of a point and figure chart is the reversal criteria. This is usually set at three but it can also be set according to the chartist's discretion. The reversal criteria set how much the price has to move away from the high or low in the price trend to create a new trend or, in other words, how much the price has to move in order for a column of Xs to become a column of Os, or vice versa. When the price trend has moved from one trend to another, it shifts to the right, signaling a trend change.
1.12 Features of Indian Stock Market for Technical Analysis

The study identifies the following features of Indian stock market as are relevant while considering the applicability of technical analysis as a predictive tool of stock prices in the market. Each of them is explained so as to show why technical analysis is relevant for dealing in any stock.

**Inaccessibility to Timely Information**: Fundamental analysis requires information on working results, financial position and various other matters. Data published by the company are not enough. They contain window dressing and secret reserves. Despite unequal accessibility, timely collection and analysis of information is highly cost-prohibitive to most of the investors. There can be ‘early bird’ advantage to some including insiders. What the technical analysts consider is the market data, which is the net effect of all the price sensitive forces and the investor behaviour.

**Poor Liquidity**: There is no continuous formation of prices for all the listed stocks. The market provides liquidity only for the shares of outstanding reputation and quality. When all concentrate on such stocks, speculation thereon becomes easier because of high demand at one time and large Supply at another time resulting in abrupt price fluctuations and irregular crises. They occur without corresponding changes in fundamental values of the concerned share.

**Scarce Floating Stock and Rampant Speculation**: The stock-charts used by the technical analyst give the best memory of the prices, reveals whether speculators are on the demand side or on the supply side and thus help to probe the prices.
Majority of the brokers in India lacks professional skill and expertise to provide adequate guidance and counsel to their clients. In the U.S.A. and the U.K., brokers form firms and companies and pool their knowledge and expertise for providing their clients with specialized analytical projections. Even though it is a matter of great controversy whether analyses would always assure great fortunes, it is a fact that analyses rationalize the investor behaviour. Unfortunately most of the Indian brokers retain their individual identity. Since the skill and resources goes scattered, the services become costlier. Inadequate specialization hampers the accuracy of prediction. Who wins the game is the clairvoyant. Technical analysis is affordable even to the less skilled and those with only limited resources because it takes only the market statistics. It is the best suited to those having small resource of time, money etc. and those who cannot have much access to insider information.

1.13 About Trends

The general direction of a market or of the price of an asset. A pattern of gradual change in a condition, output, or process, or an average or general tendency of a series of data points to move in a certain direction over time, represented by a line or curve on a graph.

1.13.1 Types of Trends:

There are three types of trend:

- Uptrends
- Downtrends
- Sideways / Horizontal Trends
As the names imply, when each successive peak and trough is higher, it’s referred to as an upward trend. If the peaks and troughs are getting lower, it's a downtrend. When there is little movement up or down in the peaks and troughs, it’s a sideways or horizontal trend. If you want to get really technical, you might even say that a sideways trend is actually not a trend on its own, but a lack of a well-defined trend in either direction. In any case, the market can really only trend in these three ways: up, down or nowhere.

1.13.2 Trend Lengths

Along with these three trend directions, there are three trend classifications. A trend of any direction can be classified as a long-term trend, intermediate trend or a short-term trend. In terms of the stock market, a major trend is generally categorized as one lasting longer than a year. An intermediate trend is considered to last between one and three months and a near-term trend is anything less than a month. A long-term trend is composed of several intermediate trends, which often move against the direction of the major trend. If the major trend is upward and there is a downward correction in price movement followed by a continuation of the uptrend, the correction is considered to be an intermediate trend. The short-term trends are components of both major and intermediate trends. Take a look at Figure 1.6 to get a sense of how these three trend lengths might look.

![Figure 1.6 Trend Lengths](image-url)
When analyzing trends, it is important that the chart is constructed to best reflect the type of trend being analyzed. To help identify long-term trends, weekly charts or daily charts spanning a five-year period are used by chartists to get a better idea of the long-term trend. Daily data charts are best used when analyzing both intermediate and short-term trends. It is also important to remember that the longer the trend, the more important it is; for example, a one-month trend is not as significant as a five-year trend.

### 1.13.3 Trend Lines

A trend line is a simple charting technique that adds a line to a chart to represent the trend in the market or a stock. Drawing a trend line is as simple as drawing a straight line that follows a general trend. These lines are used to clearly show the trend and are also used in the identification of trend reversals.

As you can see in Figure 1.7, an upward trend line is drawn at the lows of an upward trend. This line represents the support the stock has every time it moves from a high to a low. Notice how the price is propped up by this support. This type of trend line helps traders to anticipate the point at which a stock's price will begin moving upwards again. Similarly, a downward trend line is drawn at the highs of the downward trend. This line represents the resistance level that a stock faces every time the price moves from a low to a high.

![Figure 1.7 Trend Lines](image-url)
1.13.4 The Importance of Trend

It is important to be able to understand and identify trends so that you can trade with rather than against them. Two important sayings in technical analysis are "the trend is your friend" and "don't buck the trend," illustrating how important trend analysis is for technical traders.

1.13.5 Importance of Support and Resistance

Once you understand the concept of a trend, the next major concept is that of support and resistance. You'll often hear technical analysts talk about the ongoing battle between the bulls and the bears, or the struggle between buyers (demand) and sellers (supply). This is revealed by the prices a security seldom moves above (resistance) or below (support).

Support and resistance analysis is an important part of trends because it can be used to make trading decisions and identify when a trend is reversing. For example, if a trader identifies an important level of resistance that has been tested several times but never broken, he or she may decide to take profits as the security moves toward this point because it is unlikely that it will move past this level.

Support and resistance levels both test and confirm trends and need to be monitored by anyone who uses technical analysis. As long as the price of the share remains between these levels of support and resistance, the trend is likely to continue. It is important to note, however, that a break beyond a level of support or resistance does not always have to be a reversal. For example, if prices moved above the resistance levels of an upward trending channel, the trend have accelerated, not reversed. This means that the price appreciation is expected to be faster than it was in the channel.
Being aware of these important support and resistance points should affect the way that you trade a stock. Traders should avoid placing orders at these major points, as the area around them is usually marked by a lot of volatility. If you feel confident about making a trade near a support or resistance level, it is important that you follow this simple rule: do not place orders directly at the support or resistance level. This is because in many cases, the price never actually reaches the whole number, but flirts with it instead. So if you’re bullish on a stock that is moving toward an important support level, do not place the trade at the support level. Instead, place it above the support level, but within a few points. On the other hand, if you are placing stops or short selling, set up your trade price at or below the level of support.

1.14 About Volume

Volume is simply the number of shares or contracts that trade over a given period of time, usually a day. The higher the volume, the more active the security. To determine the movement of the volume (up or down), chartists look at the volume bars that can usually be found at the bottom of any chart. Volume bars illustrate how many shares have traded per period and show trends in the same way that prices do.

![Volume of shares traded](image)

Figure 1.8 Volume of shares traded

Volume is an important aspect of technical analysis because it is used to confirm trends and chart patterns. Any price movement up or down with relatively high volume is seen
as a stronger, more relevant move than a similar move with weak volume. Therefore, if you are looking at a large price movement, you should also examine the volume to see whether it tells the same story.

Say, for example, that a stock jumps 5% in one trading day after being in a long downtrend. Is this a sign of a trend reversal? This is where volume helps traders. If volume is high during the day relative to the average daily volume, it is a sign that the reversal is probably for real. On the other hand, if the volume is below average, there may not be enough conviction to support a true trend reversal.

Volume should move with the trend. If prices are moving in an upward trend, volume should increase (and vice versa). If the previous relationship between volume and price movements starts to deteriorate, it is usually a sign of weakness in the trend. For example, if the stock is in an uptrend but the up trading days are marked with lower volume, it is a sign that the trend is starting to lose its legs and may soon end. When volume tells a different story, it is a case of divergence, which refers to a contradiction between two different indicators. The simplest example of divergence is a clear upward trend on declining volume.

1.14.1 Volume and Chart Patterns
The other use of volume is to confirm chart patterns. Patterns such as head and Shoulders, triangles, flags and other price patterns can be confirmed with volume, a process which we'll describe in more detail later in this tutorial. In most chart patterns, there are several pivotal points that are vital to what the chart is able to convey to
chartists. Basically, if the volume is not there to confirm the pivotal moments of a chart pattern, the quality of the signal formed by the pattern is weakened.

1.14.2 Volume Precedes Price
Another important idea in technical analysis is that price is preceded by volume. Volume is closely monitored by technicians and chartists to form ideas on upcoming trend reversals. If volume is starting to decrease in an uptrend, it is usually a sign that the upward run is about to end. Now that we have a better understanding of some of the important factors of technical analysis, we can move on to charts, which help to identify trading opportunities in prices movements.

1.15 Moving Averages: Moving averages are one of the most popular technical indicators used to identify the trend direction of financial markets. Moving averages form the basis of a myriad of single market trend following trading strategies, ranging from the popular 4-9-18-day moving average “crossover” approach to the widely followed 50-day and 200-day simple moving averages used to assess the market trend direction of broad market indexes and individual stocks. There are a number of different types of moving averages that vary in the way they are calculated, but how each average is interpreted remains the same. The calculations only differ in regards to the weighting that they place on the price data, shifting from equal weighting of each price point to more weight being placed on recent data. The three most common types of moving averages are simple, linear and exponential.

1.15.1 Major Uses of Moving Averages: Moving averages are used to identify current trends and trend reversals as well as to set up support and resistance levels. Moving
averages can be used to quickly identify whether a security is moving in an uptrend or a
downtrend depending on the direction of the moving average. As you can see in Figure
1.9, when a moving average is heading upward and the price is above it, the security is in
an uptrend. Conversely, a downward sloping moving average with the price below can be
used to signal a downtrend.

![Figure 1.9 Moving Average](image)

Another method of determining momentum is to look at the order of a pair of moving
averages. When a short-term average is above a longer-term average, the trend is up. On
the other hand, a long-term average above a shorter-term average signals a downward
movement in the trend. Moving average trend reversals are formed in two main ways:
when the price moves through a moving average and when it moves through moving
average crossovers. The first common signal is when the price moves through an
important moving average. For example, when the price of a security that was in an
uptrend falls below a 50-period moving average, like in Figure 1.10, it is a sign that the
uptrend may be reversing.

![Figure 1.10 Reverse Uptrend](image)
The other signal of a trend reversal is when one moving average crosses through another. For example, as you can see in Figure 1.11, if the 15-day moving average crosses above the 50-day moving average, it is a positive sign that the price will start to increase.

If the periods used in the calculation are relatively short, for example 15 and 35, this could signal a short-term trend reversal. On the other hand, when two averages with relatively long time frames cross over (50 and 200, for example), this is used to suggest a long-term shift in trend. Another major way moving averages are used is to identify support and resistance levels. It is not uncommon to see a stock that has been falling stop its decline and reverse direction once it hits the support of a major moving average. A move through a major moving average is often used as a signal by technical traders that the trend is reversing. For example, if the price breaks through the 200-day moving average in a downward direction, it is a signal that the uptrend is reversing.

Figure 1.11 Short term Trend Reversal

Figure 1.12 Moving Average
Moving averages are a powerful tool for analyzing the trend in a security. They provide useful support and resistance points and are very easy to use. The most common time frames that are used when creating moving averages are the 200-day, 100-day, 50-day, 20-day and 10-day. The 200-day average is thought to be a good measure of a trading year, a 100-day average of a half a year, a 50-day average of a quarter of a year, a 20-day average of a month and 10-day average of two weeks. Moving averages help technical traders smooth out some of the noise that is found in day-to-day price movements, giving traders a clearer view of the price trend. So far we have been focused on price movement, through charts and averages. In the next section, we'll look at some other techniques used to confirm price movement and patterns.

1.15.3 Moving Average Crossovers Lead to Whipsaws

Moving averages can be used as building blocks in more complex technical indicators, in which, for instance, two moving averages are compared to one another. This is done either by subtracting the value of one moving average from the other or by dividing one moving average value by the other. Traditional moving average “crossover” strategies are extensively relied upon by traders to discern market direction. A typical moving average crossover approach, for instance, involves the calculation of two simple moving averages of different lengths, such as a 5-day and a 13-day moving average. When the short moving average value is greater than the long moving average value, the trend is assumed to be up. When the short moving average value is less than the long moving average value, the trend is assumed to be down. Traditional moving average crossover strategies are quite effective at filtering out market noise and identifying the current market direction in trending markets. However, in highly volatile, or choppy, non-trending
sideways markets, or even in trending markets when using very short moving averages (which may be overly sensitive to short term price fluctuations), these approaches tend to generate faulty trading signals. This results in repeated “whipsaws” which can rack

1.16 Statement of the Problem

Every day individual investors come across many issues for the investment activities and fail to find a tool to understand prices patterns of stocks for estimation of returns for prescribed time period and the right time to invest. Adequate studies have not taken place supporting the candlestick charts definite role in predicting the behaviour of share price and also to see the extent of utility and validity (how far reliable) of technical tools in Indian stock market. The present study focuses on the different types of technical charts that help in analyzing the price behaviour and study broadly the long-term and short term price behaviour of the select stocks in Indian scenario and further it will also examine the validity of the Technical analysis with special reference to candlesticks and the individual investors awareness level, perception and expertise in using the candlesticks for the evaluation of their investments interest.

1.17 Need of the Present Study

Capital market is a place where lot of investors invest their money with a motive to maximize their profit and minimize the risk, investor should be having the experience of investing further they should also take the help of any technical analysis tool to serve their purpose. For which the present study has been undertaken to study the utility and reliability of the candlestick charts which is one of the technical analysis tool.
1.18 Scope of the Study

NSE offers trading, clearing and settlement services in equity, equity derivatives, debt and currency derivatives segments. It is the first exchange in India to introduce electronic trading facility thus connecting together the investor base of the entire country. NSE has 2500 VSATs and 3000 leased lines spread over more than 2000 cities across India. So, the present study is based on select equities from NSE-NIFTY because NSE-NIFTY is the barometer of Indian Capital Market and all the companies of CNX-NIFTY are well established and financially sound, and dominant company in their respective.

1.19 Objectives of the Study

The objectives of the present are:

1. To study about various technical charts in understanding price behavior of select equities.

2. To study the long term price behavior of select equities by using candlestick charts.

3. To study short term price behavior of select equities by using candlestick charts.

4. To study the perception and awareness levels of retail investor towards technical analysis with special reference to candlestick charts.
1.20 Research Methodology

This study is an endeavor to find the importance for technical analysis in predicting the price behaviour of the selected equities, using candlestick charts. For this purpose five different companies are selected each from four different industry segments. After selection of the companies they are individually analyzed using the candlestick charts to know about the validity and utility it in prediction of the future prices. Further investors awareness level, perception and expertise level of understanding of candlestick analysis is studied.

1.20.1 Research Design

A research design is the arrangement of conditions for collection and analyses of data in a manner that aims to combine relevance of the research purpose with economy in procedure. It has verified the theories of technical analysis on the basis of observations. It has examined the overall performance and profitability of companies with the help of applying candlestick charts for the analysis.

Construction of Patterns The present study covers the four major traditional patterns such as 1) Head and Shoulders 2) Inverted Head and Shoulders 3) Up flag 4) Down Flag. Factors common to all the patterns are established and interpreted in the study.

Recognition of Signals The breakout of prices from neckline is recognized as the signal to action-buy or sell. If they breakout from down, the price is expected to rise and hence is a signal to buy. If they breakout from up, it is foreseeing a fall and hence is a signal to sell. Breakout of upper boundary of a Up flag pattern or breakout of lower boundary of a Down flag pattern is considered as a valid signal to act upon.
**Classification of Successful and Unsuccessful Patterns:** The pattern analysis involves an assessment of the achievement of traditional price objective by each pattern. This is used to gauge how far each individual pattern is successful in the prediction process as per the traditional view. The success is revealed by the direction and extent of price change after the breakout (signal for action) from each pattern. Here, it is the extent of achievement of price objective of each pattern that decides its success or failure (traditional predictive capacity). The setting of, and measurement of achievement of the price objective are done under respective heads of different patterns as they differ with each category of patterns. Price objective means the extent of ‘post-pattern price behaviour’ as objected or expected traditionally for each pattern. It is the result of this part of analysis that judges whether traditional holding regarding the applicability of technical analysis is valid in the Indian stock market.

If a pattern gave a valid signal of its post-pattern price behaviour and if price moved as predicted by the pattern, such a pattern is called a successful pattern. A pattern is said to be unsuccessful or failed when the post-pattern price behaviour is in the direction opposite to, or not to the extent predicted and thus not according to the signal given by the pattern. Example, if price breaks down the lower boundary of Down Flag that signals a sell. But if price rises or congests during the immediate post-signal days, such Down Flag is a failed pattern. A pattern that achieves hundred percent (full) of its price objective is taken to maintain its traditional validity and hence taken as a successful pattern. Any type of prediction can fail and technical analysis is no exception. So there is risk in acting on signals. The probability of this risk can be understood from the proportion of failed patterns in the total number of ‘patterns with valid signals’.
1.20.2 Sampling Design

The CNX Nifty, also called the Nifty 50 or simply the Nifty, is National Stock Exchange of India's benchmark stock market index for Indian equity market. In the present study, 5 different sectors have been chosen and 4 different companies from each sector i.e. total sample of 20 companies from Nifty have been considered for the study to analyze for short term (1 year) and long term (5 years) separately.

1. Automobile Sector
   a) Bajaj Auto Limited
   b) Hero Motor Corporation Limited
   c) Mahindra & Mahindra Limited
   d) Maruti India Limited

2. Banking Sector
   a) Bank of Baroda
   b) State Bank of India
   c) HDFC Bank
   d) ICICI Bank

3. Energy Sector
   a) GAIL
   b) ONGC
   c) BPCL
   d) RIL

4. FMCG Sector
   a) Hindustan Unilever Limited
   b) ITC Limited
   c) Britannia Limited
   d) Godrej CP Limited

5. IT Sector
   a) HCL Technologies Limited
   b) Infosys Technologies Limited
   c) TCS
   d) Wipro Technologies Limited

Note 1: Two companies, Britannia Limited and Godrej CP Limited are selected from NSE listed companies not from Nifty.

Note 2: Period of study only in respect Hero Motor Corporation limited is during Mid of 2011- 31st March, 2014 and for Infosys technology limited it is during July, 2011- 31st March, 2014 due to unavailability of data.
Sample Size

**Primary Data:** The present study has considered 400 investors were selected on the basis of convenience sampling and the instrument is administered to them. But due to response errors and incomplete responses only 300 final sample have been considered for the study, the primary data was collected from the investors. The structured questionnaire was administered to the investor in around Hyderabad and to analyzes the behavior of investor towards technical analysis, specifically to know about the perception and awareness level about the technical analysis and their expertise in usage of the candlestick charts.

**Time Period of the Study** The secondary data was collected and interpreted for the period of five financial years from 1st April, 2009 to 31st March, 2014 for the secondary data to study the price behavior of selected stock. The primary data was collected in the year 2014 through the questionnaire from investors to know about their behavior depending on their different demographics and their awareness level, perception and expertise in using candlestick charts.

**1.20.3 Statistical Tools Used**

To analyses the primary data collected using questionnaire statistical techniques like Chi-square analysis and ANOVA have been used.

The tools used for the secondary data for the purpose of technical analysis candlestick charts with candle patterns and price patterns, Exponential Moving Averages for 5 days, 13 days and 26 days have been used.
1.20.4 Limitations of the Study

The present study have following limitations:

- The stocks selected for this study are taken only from the NSE Nifty and not from any other Indices.
- Only few candle patterns and chart patterns were used to study the price behavior of selected stocks and not all the patterns.
- Primary data was collected from the investors in Hyderabad city and the results may not be generalized to other parts of the country.

1.20.5 Organization of the Study

Chapter I: Provides introduction about Candlesticks, need of the study, scope of the study, objectives, research methodology, Limitations of the study and organization of the study.

Chapter II: Traces Review of Literature.

Chapter III: Presents theoretical framework about Candlestick Charts, Candle Patterns, Price Patterns

Chapter IV: Data Analysis for long term and short term price behaviour using Technical Analysis.

Chapter V: Data Analysis on perception and awareness of Technical Analysis

Chapter VI: Findings, Conclusions and Suggestions

Bibliography
References
Questionnaire
Conclusion:

The present chapter has given the clear picture of the technical analysis, and evolution of candlestick charts and the method of establishing the patterns in chart and role of charts in predicting the future price trends of the equity. For the present study to be undertaken, statement of the problem is formulated and the need of the study is defined and further research methodology with objectives is clearly mentioned. the limitations of the present study are stated.