Chapter 3
THEORETICAL FOUNDATION OF TECHNICAL ANALYSIS

3.1 Introduction

It is essential for an astute trader to be aware of the market and its movement. To analyze the market and its price movements, especially past price movement, the best way is to put it into graphical presentations that will improve understandability and make analysis easy. If it is numbers, the analysis will be tedious and difficult. In Financial Market, fundamental analysis and Technical analysis are two schools of thought used to make an active investment decision. Fundamental analysis concentrates on the real or intrinsic value of the security. Hence, it keeps a track of corporate results, trade deficit, changes in money supply etc. It analyzes the causes of price rise or fall. On the other hand, technical analysis is based on past price movement to predict the future price movement. It does not study the causes of price movement but it considers the effect of price movement.

For the successful participation in the financial market the trader should have some basic knowledge about charting techniques. Charting is the process of plotting the price of a security in the chart over a period of time. It is highly useful for forecasting the security price movement and market timing decision which are highly useful for short term traders to track the minor price movement. Technical analysis is often referred to as charting techniques. It uses historic price pattern of securities or financial instrument to predict the future price movement. Furthermore, technical analysis has a common set of principles and rules. The fundamental analysis concentrates mainly on the true value of the security and it is closely related with the
classical economic theory, which stipulates that the price will move in the direction to eliminate the discrepancy between the current price and the true value. According to fundamental analysis, the current price alone does not reflect the future benefit.

3.2 Definition

“Technical analysis is the study of market action, primarily through the use of chart, for the purpose of forecasting future price trend”- John. J. Murphy

Price series is one of the important components in the technical analysis. However, along with price series, the technicians now consider both volume and open interest. Another important aspect with regard to charting is its analysis. A technical analyst can easily analyze the facts and figures in the charts and earn better profit without analyzing the fundamental situation of particular security. It can give fundamental analyst a clue to the future events in the market. So it acts as a leading indicator in the market.

Manuel Ammann, Mathas and Rico Von wyes (2005) think that fundamental analysis and technical analysis are the two important analyses used in financial market. As per various studies, technical analysis is equally important in every investment analysis. Allen & Taylor (1990) indicate that around 90% of the traders at the London foreign exchange market use chatting techniques on a large scale and 60% of the traders consider technical analysis as equally valuable as fundamental analysis. Technical analysis is usually called “Voodoo finance” by fundamental analysis. Subjectivity is the main criticism against technical analysis trading rule. An active
portfolio manager who uses technical analysis performs better than a passive portfolio manager.\(^1\)

Caginalp and Balenovich (2003) argues that “the dissemination of information and reassessment of value is a slow process which may be overshadowed by the sellers of under valued securities who are either unaware of true value and hesitate to relay on the optimizing behavior of others and are attempting to limited losses. The direction of the price movement is only due to the demand and supply forces of the financial instrument”. Therefore, there is a close linkage between technical analysis and inefficiency of the market. The immense use of technical analysis in the market in contradiction to classical economic theory is posing a serious question to mathematical economics.

### 3.3 Efficient Market Hypothesis

The phrase ‘Efficient Market Hypothesis’ was first introduced by Louis Bachelier, a French Mathematician. The concept of Efficient Market Hypothesis is introduced by Eugene Fama in 1960s. According to Fama, an active market consists of intelligent and well informed investors. So, the price reflects all the available information. The theory points out that if a market is efficient, no analysis can outperform the market. According to Efficient Market Hypothesis, all the available information is reflected in the price. So every stock trades in the market are at their fair value and nobody can purchase undervalued share or stock and sell it for higher price. The theory says that it is impossible for an investor to outperform the market with market timings and expert stock selection. Securities will be appropriately priced

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\(^1\) Manuel Ammann, Mathas and Rico Von wyes(2005)Out performance with technical analysis-An intraday study on the Swiss stock Market, Swiss Institute for Banking and Finance
and it will reflect all available information. If a market is efficient, no information or analysis can be expected to result in the outperformance of an appropriate benchmark. However, the present study focuses on technical analysis which concentrates on past price statistics and contradicts random walk theory. It argues that past price contains information which can predict the future price movements in the share market.

3.4 Basic Principles

Principles are the law or doctrine to be followed. Basic principles always act as a cornerstone of technical analysis since the concept is built upon them. Price discounts information, price moves in trend and history repeats are the three basic principles of technical analysis and they form the inevitable law or doctrine of technical analysis.

3.4.1 Price Discounts Every Information

It is one of the basic premises of technical analysis. The major criticism of technical analysis is that it never considers fundamental information about stock or index. According to this principle, any information, whether it be political, economical or psychological is reflected in price. Technical analyst believes that changes in price are due to changes in demand and supply. If the demand exceeds the supply, the price will go up. If the supply exceeds the demand, the price will go down.

3.4.2 Price moves in Trend

According to technical analyst, the price of the security or index always moves in trend, the trend may be upward, downward or sideways. Technical analyst always concentrates on identification of trend and trading based on the same. Trend identification will become a difficult task unless the person has some basic
understanding of the market. It is an adaptation of Newton’s first law of motion. So a trend is more likely to continue than reverse.

3.4.3 History repeats

Human psychology plays an important role in the direction of the market though it changes from time to time in the market environment. Technical analysis use chart patterns to realize the market and identify the direction of the market. Technical analyst believes that certain patterns and trend that worked in the past will continue in future as well. The key to understand the future lies in the study of the past and the future is the repetition of the past.

3.5 Difference between Technical Analysis and Fundamental Analysis

a) Technical analysis is an internal analysis. It analyzes the market price, Volume and its movement. However, fundamental analysis is external which analyzes the economic, industry, company and political factors.

b) The focus of technical analysis is to identify the changes in the direction of stock price and move along with the trend. The fundamental analysis focuses mainly on finding the intrinsic value of the particular scrip, which is very difficult to find out in the practical market. Generally, crowd psychology designs the price and its direction.

c) Technician attempt to assess the over all situation regarding the stock by analyzing market sentiments and momentum. However, fundamental analysis is never concerned about the market sentiments, where people never considered the different factors affecting the price.
3.6 Elasticity and compliance of Technical Analysis

The formalized history of Technical analysis began with Charles. S. Dow. Dow theory is a barometer which helps to anticipate future price movements. The success of Dow theory lies in trader’s ability to interpret. According to Dow theory, market has three types of movements: primary movements, secondary movements and minor movements. The primary movements are the major trends which may last for several years and they are either bearish or bullish. The secondary movements are the corrective movements which always move in the opposite direction of the primary movements. Minor movements are the day to day fluctuations in the market. Moreover, the theory classifies market trend into three different forms; a) accumulation phase, b) public participation phase and c) distribution phase. Hence, Dow theory explains the movements of the price as well as the market reaction or market philosophy. Technical analysis was first used in equity market to track future price movements.

Technical analysis is applicable to every areas of trading like stock trading, future trading, commodity trading and currency trading. The traders can earn better return if they follow the tools and techniques of technical analysis. It is more useful in a trending market than in a non trending market. The signals generated by the technical indicators may go wrong in side ways market but the signal generated by the technical indicators in a trending market shows a better return. Technical analyst can easily follow as many markets as they desire.
3.7 Technical Analysis and Forecasting

Technical Analysis can play an important role in the forecast price and a technical analyst uses charts to understand the direction of the market. By seeing the direction on the chart, the technicians can easily understand the movement of economic indicators. Price of the commodity, crude oil, Treasury bond etc can easily be shown in a chart and forecast the trend of the market. By seeing the price chart of various commodities and crude oil one can easily forecast the inflationary pressure in the economy. So a technical analyst can show trend in these markets earlier than the traditional indicator that is published quarterly or monthly.

3.8 Technical Analyst & Types

Technical analyst is known by different names such as chartist, market analyst, Visual analyst etc. Technical analysts can be broadly classified into two: a) Traditional Chartists and b) Statistical Technicians.

3.8.1 Traditional Chartists

These are the market practitioners, who use charts as a primary tool to understand the market. Charting is a highly subjective approach and the success of this approach is highly dependent on the skill and experience of the practitioner in the market. Basically, reading of chart is an art rather than a science.

3.8.2 Statistical Technicians

Statistical Technicians are the market practitioners who use mechanical trading system to generate buy or sell signals. By using computer programming, these practitioners completely eliminate the subjective human elements in trading.
Generally, they may or may not use price charts but consider market action for better trading decision. These people are further classified into two: those who use mechanical computer trading system and those who use computer technology for developing better indicators. It should be noted that all the chartists are technicians but all the technicians are not chartists. Moreover, charting is just one area of technical analysis.

Past Information is highly essential in economic forecasting. In technical analysis, predicting the future price trend is based on past price series. So both technical analysis and economic analysis are related in certain aspects. In broader term, charting is related to time series analysis because both use past price information to predict the future price. This is also related to statistics. Price chart comes under the descriptive statistics and drawing inferences based on that is called intuitive statistics.

3.9 Types of Charts

Charts are the basic tools of technical analysis and they show the graphical representation of past price and volume information. Charts can be classified into four broad categories: Line Charts, Bar charts, Candlestick Charts and Point and figure charts.

3.9.1 Line Charts

Line charts are simple forms of price charts. It is based on closing price data. However, some technicians use median price as well. A straight line is used to connect all the closing price points plotted in the graph. It does not show any open,
high, low and close price together. This type charts are unambiguous and shows a clear trend. Short term traders are not profited by these charts but patient players can earn better return by using line charts.

Fig.3.1. Line Chart, www.investopedia.com

3.9.2 Bar Charts

Bar chart is investor’s favorite and it is as explanatory as the technical analyst. This chart contains the highest, lowest and closing price of the securities. A bar is formed by connecting the highest price and the lowest price in a day by a vertical line. A small horizontal line on the vertical line indicates the closing price. The top of the bar indicates the highest price and bottom of the bar indicates the lowest price. In modern times, bar chart also shows the open price by drawing a horizontal mark on the high low bar. Now most of the bar charts incorporate the technical indicators on the Bar. New bar charts are displayed with Indicators, volume, open interest and other technical tools.
3.9.3 Japanese Candlestick Charts

Just as standard bar charts, candlestick charts too show the open, close, high and low prices of a security. The highest price and the lowest price are connected by a straight line and the opening and closing price would be recommended by a rectangle. So the entire price bar looks like a candle, the height of the body indicates the open and closing price. When the body of the candlestick is black, it indicates that the closing price of the day is lower than the opening price of the day which means that bearish trend prevails in the markets. When the closing price of the day is higher than the opening price it is an indication of bullish trend in the market and it is represented by a white candlestick. When the opening price and closing price of the day is the same then it is indicated by doji.
3.9.4 Point Figure Charts

Line charts, bar charts and candlestick charts contain price volume and time information but point and figure charts do not have volume and time information. It is concerned with only price changes. This type of chart is prepared by putting a ‘X’ mark on the respective price column, if there is any further increase in price put another ‘X’ in the top of that column till the uptrend continues. If there is any down trend, put ‘O’ on the right of the existing column. In this way practitioners analyze the movement in the market. But practitioners do not use the point and figure charting due to their practical constraints.
3.10 Support and Resistance

The identification of support and resistance level in price is an important aspect in technical analysis. In a liberated market environment, the support and resistance level changes. Support is a price level at which sufficient buying pressure is generated to reduce further fall in the price. It is the time bull takes control and prevents further fall in price. In support level, most of the investors believe that the price will go up. Generally, support is required during the falling market. Resistance is a price level at which sufficient selling pressure is generated to prevent further raise in price. In this situation, the bear takes control and prevents further rise in price. Resistance is required during rising price. In this level, most of the investors feel that the price will go down.

3.11 Trend lines

One of the basic principles of technical analysis is price moves in trend. A trend line is a straight line. They can be up, down or sideways. Trend lines are
essential for identification of different stock market patterns as well as understanding the trend of the market. Trends can be broadly classified into short term, medium term and long term trends. The number of points the trend line passes through and the duration of time the trend exists without any change are the two important factors which determine the significance of trend line.

### 3.12 Chart Patterns

Charts are integral part of technical analysis. The recognition of patterns in the charts is highly helpful to a technical analyst in the identification of trend and it predicts the future price movement. Chart patterns are broadly classified into two: Reversal patterns and Continuation Patterns

Reversal patterns are those patterns which provide an indication or signal of reversing the existing market trend. Double top, double bottom, head and shoulders, wedges, triple top and triple bottom are some of the examples of reversal patterns. Continuation patterns are those patterns which provide an indication of continuation of the existing market trend. Cup with handle, flag and pennants triangles, rectangle price channels are the major reversal patterns.

### 3.13 Stock Market Indicators

Stock market indicators are indicators of future movement of stock prices in stock market. Many investors and professionals depend upon stock market indicators to understand the movement of the stock price. There are different kinds of indicators available in the market under different classifications. The study has explained
important indicators which are commonly used in Indian stock market. They can be broadly classified into two: Stock specific indicators and market indicators.

3.13.1 Stock Specific Indicators

Stock specific indicators are those which provide the information of a specific single share price or index movements. Different types of moving averages, relative strength index, and rate of change are prominent types of stock specific indicators. The most important types of stock specific indicator are shown below.

3.13.1.1 Moving Averages

Moving averages are the simplest but useful tools in the armoury of a technical analyst. This technique is more useful in volatile market, where it is very difficult to predict the price movement in the market. Moving averages is of different types: simple Moving average, Exponential Moving average and MACD. All the Moving Averages are lagging indicators which always lag behind the price. In India, Market participants now use different types of moving averages such as simple moving average, weighted moving averages to identify the market trend. Most of the practitioners use different types Moving averages together to achieve more clarity in the market.

3.13.1.2 Relative Strength Index

Relative strength is one of the important oscillators. It was first introduced by Wilder in 1978. It does not compare the relative strength of two single securities but it analyzes the internal strength of a single security. If the relative strength of the security is above seventy, it is an overbought situation and it is an indication to sell
and if it is below thirty, it is an oversold position and hence an indication to buy. Generally, 14 days RSI is calculated to understand the relative strength of the security.

3.13.1.3 Rate of Change

Rate of change is an important indicator which measures the rate of change of the price of security compared to some previous day price. Rate of change may be positive, negative or zero and its value oscillate around the zero line. According ROC a buy signal is generated when ROC is below zero but a sell signal is generated when the ROC is above zero. It measures the pace of price change. An upward heave in the ROC results in a sharp price increase and decrease in ROC indicate a price fall.

3.13.1.4 On Balance Volume (OBV)

On balance volume is a stock specific indicator which was developed by Joseph Granville in 1963. It shows the association between volume and price changes. The basic assumption of OBV analysis is that OBV changes leads to price changes. When the security price closes higher than the previous close, then the day’s volume is regarded as up volume. When the security price closes lower than the previous close then the day’s volume judged as down volume. Since it is a subjective indicator the trader has to understand the price chart and decide whether the OBV confirms or rejects the trend.

3.13.2 Market Indicators

Market indicators are those which provide the information on general market movements. Advance Decline Ratio, Open interest, mutual fund cash ratio, short
selling, market volume and activities in bond market etc are examples of market indicators. Following are the important types of market indicators.

3.13.2.1 Advance-Decline Ratio

Advance declining ratio is one of the important market indicators used in technical analysis. This ratio is calculated by taking into account of number of advances and decline during a particular period; it may be daily, weekly, monthly or yearly. This is to identify the general trend and strength of the market. In India, it is widely used to understand general reaction of the market.

3.13.2.2 Open Interest

Open interest is the total number of contracts outstanding at the end of the day. The unexercised option or future contract at the end of day is called open interest. It is used for the purpose of confirming the trend and trend reversal and by using it, investors can analyse the market situation. If open interest increases, investors can say that new money is flowing into the market and it is an indicator of present trend continuation – if there is a decline in open interest the investors can assume that the trend is going to reverse. It is one of the major indicators of market liquidity. An abnormal high in the open interest in a rising market is a warning of trend reversal in the market. Most of the experienced traders agree that open interest is one of the technical indicators which confirm the trend.

3.13.2.3 Mutual Fund Cash Ratio

Mutual funds are the biggest institutional force in every stock market. Especially in Indian stock market, it is still showing its strength. They have invested
huge amount of money in the market. Mutual fund cash ratio is one of the market indicators which are followed by many of the market analysts. If the mutual fund companies invest the cash in the market then it indicates that market is in a good position. But if they hold cash in their hands instead of investing in the market, then it is an indication of bearish trend in the market. So a low cash ratio indicates that market is in high position and high ratio indicates that market is in bearish mood.

3.13.2.4 Short Selling

Short selling means that selling without having. The seller sells the stock in the anticipation that the price will come down and he can purchase it at a lower price and reap the profit out of it. In technical analysis, short selling is known as short interest ratio. It is significant for market as well as individual securities. If the ratio is less than 1.0 the market is considered to be weak or the market is over bought. If the ratio is in between 1.0 and 1.50, then it is considered to be a neutral indicator and if the ratio is above 1.50, it is considered to be bullish. Above 2 is treated as favorable. So purchasing the shares to cover the positions is one of the major market indicators.

3.13.2.5 Market Volume

Market volume is an integral part of any analysis in of stock market. Especially in technical analysis volume is treated as a important element. It helps the analyst in confirming the trend. So the volume support the other technical indicators available in the market. When the market is moving up with the support of volume then the trend will prevail and the market is moving up without the support of the volume, in that case trend would not persist for long. And the same will happen in the
bearish market also. So, the volume which decides and confirms the trend and it is considered to be the most important technical indicator in the market.

3.13.2.6 Activities in the Bond Market

 Bond market is a market for debt securities. In India, bond market is classified into two; government bond market and corporate bond market. A bond is generally risk free but it is exposed risk when it transacted before its maturity. Interest rate risk, credit risks are the two important risks involved in the Bond market. Interest rate is a part of country’s monetary policy. So, any instability or variations in the economic and monetary policy affects the interest rate. So, a technical analyst should track the activities in the bond market to understand the general economic condition.

Technical analysis uses different tools, indicators and methods for understanding and predicting the market. They have been used by the market participants in different markets throughout the globe. Technical analysis works through the application of graphs and patterns which are highly comprehensible for the common investors. Of late, they have developed different new and innovative technical indicators for the market. However, most of the tools, except a few, have been developed based on international markets. Moving from basing on a global market, the present study concentrates on technical analysis practiced in India.