CHAPTER SIX

TECHNICAL ANALYSIS

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6.1 Introduction:

Generally Technical Analysis is used by the experts and particularly the short term investors in the equity market. In this topic, comparison with fundamental analysis, Basic Tenets of Technical Analysis and Areas of Technical Analysis are presented.

The major part of the topic speaks about Tools of Technical Analysis and their use. The tools are presented with graphs, charts and the decisions to be taken by the investors for better understanding.
The entire philosophy of Technical Analysis is based on the promise that in a given point in time, the supply of and the demand for a particular share determines the price. *1

The Technical Analysis is radically different from fundamental analysis. While the fundamental analyst believes that the market is 90% logical and 10% psychological, the technical analyst assumes that it is 90% psychological and 10% logical. *2

The Fundamental approach concerns with the study of earnings and dividends record, the quality of management, and prospects of individual companies and industries. It is in the domain of security analysis. The technical approach, on the other hand, concerns with the study of the action of the market itself, with the aim to predict short-term price movements. It is, therefore, in the domain of market analysis.

6.2 **Technical Analysis Vs Fundamental Analysis**:

The differences between the approaches are given below: *3

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Point</th>
<th>Technical Analysis</th>
<th>Fundamental Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Objective</td>
<td>To predict short-term movements of stock prices.</td>
<td>To gauge long term security values.</td>
</tr>
<tr>
<td>2.</td>
<td>Object of study</td>
<td>Action of stock market, particularly price and volume changes of individual issues and the general market.</td>
<td>Earnings and dividend record, sales, product mix, profit margins, the quality of management, outlook of profit of the individual companies, industries and the whole economy.</td>
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<td></td>
<td>Strategy and tactics.</td>
<td>Follow trading rules such as placing 5 top class orders, cut losses short and let profits run; identify and take advantage of trends in movements of security prices.</td>
<td>Buy issues at reasonable prices in terms of both historical record and outlook; ignore short-term price movements.</td>
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<tr>
<td>5.</td>
<td>Philosophy or Conviction.</td>
<td>Short-term price movements can be predicted on the basis of price volume study, chart patterns of individual stocks and other technical market indicators.</td>
<td>Long-term security values can be gauged on the basis of fundamental factors. Short-term price changes, to say the least, are difficult to forecast.</td>
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While we all know about the two kinds of stock analysis—the Fundamental and Technical—a third one equally important but not much talked about is the 'judgmental' analysis. It is this very judgmental analysis that brings in the element of art into the science of investing. *4

Technical analysts study the internal stock market data in an attempt to gain insight into what economists call the 'supply and demand schedules' for a stock or for the stock market as a whole. *5

6.3 **Basic tenets of Technical analysis:**

Technical Analysis of the market is based on some basic tenets:

1. All fundamental factors are discounted by the market and are reflected in prices.
2. These prices move in trends or waves, which can be both upward and downward depending on the sentiments, psychology and emotions of operation or traders.
3. The present trends are influenced by the past trends and the projection of future trends is possible by an analysis of past price trends.

Analysis of historical trends confirmed the above principles and the Random Walk Theory, explaining the randomness of price changes, has been found inapplicable by the technical analysts in practice. *6

6.4 Areas of technical Analysis:

Technical Analysis is done from four important points of view:

1) **Price**: Changes in price reflect changes in investor attitude and demand for and supply of securities.

2) **Time**: The degree of movement in price is a function of time. The longer it takes for a reversal in trend, the greater the price change that would follow.

3) **Volume**: The intensity of price changes is reflected in the volume of transactions that accompany the change. An increase in price accompanied by a low volume implies that the change is not strong enough.

4) **Breadth**: The quality of price change is measured by studying whether a change in trend spreads across most sectors and industries or is concentrated in few types of scrips. Study of breadth of the market indicates the extent to which, price changes have taken place in the market in accordance with certain overall trend.

6.5 Tools of Technical Analysis:


We discuss some of the important tools.

6.6 **Dow Theory**:

Charles Dow, the editor of the “Wall Street Journal”, propounded it in 1900. It is the oldest method of identifying trends in the stock market.
The basics of the Dow theory are discussed below:

1. **The Average Discounts Everything** : The share prices are the results of discounting of all factors related to price. The price at which a buyer and a seller settle a deal is considered to be ‘one precise figure’ which synthesizes all factors rational and irrational, quantifiable and non-quantifiable. Thus, it maintains consistency with Efficient Market Hypothesis (EMH) Theory, which says that all news good or bad is reflected in the market price. *7

2. **Movements**: The theory refers to three movements
   (1) Primary Movements (2) Secondary Movements (3) Minor Movements.

   Primary movements represent major market trends. An upward primary trend represents a bull market whereas the downward primary trend represents a bear market.

   A primary bull market trend is a broad upward movement, interrupted by some reversals. A reversal is a decrease in price that occurs after a rise in prices.

   A primary bear market trend can be seen as long decline, interrupted by some rallies. A rally is an increase in price that occurs after a falling trend in prices. It is important that, though few rallies have occurred, the long term trend in prices is bearish. Primary trends are, thus, long term movements in prices, interrupted by swings in the opposite direction.

   Secondary movement represents technical correction. They represent adjustments to the excess that may have occurred in the primary movements. These movements are considered important in the application of the Dow Theory.

   Minor movements are daily movements in prices. They have no implication for long term forecasting, though short term investors tend to manipulate them to some extent.

3. **Price Action determines the Trend**: In the DOW Theory the major trends, namely bullish or bearish can be studied from the price behavior.
When successive rallies lead to peaks that are higher than the preceding peak and when troughs reached by the intervening secondary reactions are above the preceding troughs, a trend is called as a primarily bullish trend.

A bearish trend is marked by a series of descending peaks and troughs. A reversal in primary trend is indicated when the above tenet does not hold true.

A reversal in primary trend is indicated when the above tenet does not hold true.

*Chart - 6.1 - The Bull Market Interrupted by Reaction*

The above figure illustrates this tenet of the DOW theory. It shows a bull market interrupted by reactions. A reversal occurs at point 'X' when the rally does not surpass the previous peak. The reversal is confirmed by the next decline, as the trough lies at point 'Y' much below the previous trough. A DOW theorist considers penetration at point 'a' to indicate a bear market. More conservative analysts however await a rally or penetration of previous trough at point 'b'.

The following figure illustrates the opposite trend i.e. a change in primarily bearish trend.
Technical analysts generally measure the depth of the reaction to confirm if a reversal is actually a signal to a new trend. It is also seen if secondary reaction is deep enough, lasts for at least three to four weeks and is confirmed by vital changes in volume of shares traded.

4. **Lines indicate movements**: When price movements which initially look like secondary reactions exist within a narrow range and form a 'Line'. Price movements within a range of 5% of its mean average form a line. If this line is formed in between primary bear trend, it is called as accumulation. Whereas, if this line is formed in between primary bull trend, it is called as distribution.
If prices advance above an accumulation, it makes a reversal in bearish trend, if prices continue to fall after an accumulation line, it is only a consolidation of the bearish trend, and is only a horizontal secondary movement. The converse is true for a distribution.

5. **Price/Volume relationship provides background:** This relationship is very important in technical analysis. During the uptrend period the volume would expand when prices rise and decrease when prices decline. During the downtrend, there will be a reversal of the trend and the volume will expand when prices drop and contract when they start rising.

6. **The average must confirm:** Few indices and averages were used to explain the Dow Theory. The important level is - the averages must confirm each other. If we say that the market is truly a barometer of future business conditions, the industry averages and market averages should by and large move together. While making use of Dow Theory, for decision making, the tenets of the theory should be supplemented by the use of other information, the most important of them is dividend yield.
One rule of thumb that is widely used in the 'Wall Street', is that a 3% or higher fall in dividend yields indicates maturity of the bull market, and a 6% or higher rise in the dividend yield is said to indicate end of a bear market.

6.7 Technical Analysis and Charting:

Hundreds of years of price charts have depicted the basis truth - "prices move in trends". A trend indicates, there exists, an inequality between the forces of supply and demand. Certain patterns and formations which appear on the charts have a meaning and can be interpreted in term of probable future trend development. Charts are working tools of the analysts.

The below illustration, is the weekly chart which depicts opening, closing, highest and lowest prices.

*Chart – 6.5 – Weekly Chart*
6.8 Trends and Trend Lines:

A trend is simply the direction of the market. Market moves are characterized by a series of ups and downs which resemble a series of successive waves with fairly obvious peaks and troughs. It is the direction of these peaks and troughs that constitute the trend. *8

One can earn profit in both, an uptrend or a downtrend by buying or selling short-sell of shares which you do not possess.

Minor trends – very brief
Intermediate trend – trend lasting for a few weeks
Major trend – trend lasting for a period of months.
The following figures explain the uptrend and the downtrend.

* Chart - 6.6 - Trends - Uptrend & Downtrend
Some important guidelines given by trend line theory are:

1. Once the trend line is penetrated, the trend which was previously in force is reversed.
   - **Sell signal** – when an uptrend line is penetrated
   - **Buy signal** – when a downtrend line is penetrated.

2. The uptrend line becomes more valid after forming third bottom. The longer this trend line remains intact, the more authority it will have.

3. A trend line with gentle slope (not the steep slope) – upward or downward – usually offers more technical significance.

4. Validity of the penetration should be verified. It depends upon amount of penetration, volume of penetration. After penetration the close, itself, should be significantly below the trend line.

   a) **Pullbacks/Throwbacks**: In this the uptrend line is broken and the prices continue to fall for a few days. Then prices rally back up to the trend line again and ultimately the market proceeds to move lower. The reverse would occur upon the breaking of a downtrend line.

   ![Chart - 6.7 - Pullbacks](chart.png)

   b) **Trend Channel**: When prices tend to move between two parallel lines, a channel could be recognized. The area between these two lines is known as a trend channel.  

   ![Chart](chart.png)
In an uptrend the trend channel can be developed by drawing two parallel lines, one by joining the upper points of prices and another by joining the middle points of prices with line, the upper channel is called as sell zone and the lower channel is called the buy zone.

When the prices fails to reach up to the area of return line it is considered that the market is weakening.

6.9 Volumes:

There is relation between price movement and volume of trading. Investor can use this relationship to make favorable buy, hold or sell decisions. The few important points of relationship are listed below –

1. The volume of trading increases and remains higher than the average during an uptrend.
2. When volume has increased for several days or has been exceptionally high for a few days. It is a strong buy signal.
3. In a downtrend the volume is usually lower than the average.
4. When a price breakout to the downside of a formation or pattern, it gives a ‘sell’ signal irrespective of increase in volume of trading.
5. Volume usually decreases inside triangles or as a price pattern forms a triangle, trading volume usually decreases.
Chart – 6.10 – Head & Shoulder – Uptrend

The graph illustrates above points.
Chart – 6.11 – Head & Shoulder – Downtrend

DESCENDING TRIANGLE CHANGES TO DOWNTREND

PRICE

VOLUME

VOLUME DECREASE AT BREAKOUT

PRICE BREAKOUT
Volume and formation of Triangles – Volume usually declines as the price of a stock forms a triangle.

a. If the price breakout is to the upside and there is a large increase in trading volume, it is a buy signal.

b. If the price breakout is to the down side, it is a sell signal.

c. If the price finds its way out through the apex of the triangle, it is a ‘hold’ signal.

*Chart – 6.12 – Symmetrical Triangles*
Chart 6.13 - Ascending Triangles

As the price pattern forms a triangle, trading volume usually decreases.
Chart - 6.14 - Descending Triangles

As the price pattern forms a triangle, trading volume usually decreases.
6.10 **Reversal Pattern**:

When a price trend is in the process of reversal, downward or upward, a characteristic pattern takes shape on the chart and becomes recognizable as a 'reversal formation' i.e. change in trends.

Reversal pattern in the share prices gives signal to chartist than an important trend reversal is taking place. Most common reversal patterns are – (1) Head and Shoulders (top) (2) Head and Shoulders (bottom) (3) Double tops and bottoms (4) Triple tops and bottoms (5) Reversal day tops and bottoms (6) Rounding tops and bottoms.

All the reversal patterns found at the top (end of uptrend) are bearish, hence gives sell signals. All the reversal patterns formed at the bottom (end of downtrend) are bullish hence give buy signals. *10

1) **The Head and Shoulders (Top)**: This is one of the most common and also one of the most reliable reversal patterns. It consists of left shoulder, a head and a right shoulder.

   The left shoulder is formed usually at the end of an extensive advance with heavy (high) volumes. At the end of the left shoulder there is generally a small dip or recession with low volume.

   The head then forms with heavy volume on the upside and with lesser volume on following reaction. For confirmation of the form, the price must come down near to the low of the left shoulder and in any case below the top of the left shoulder.

   The right shoulder is then formed by a rally on usually less volume than any previous rallies in this formation.
A line called 'neckline', can be drawn across on the bottom of the left shoulder, the head and right shoulder.

A breaking of this neckline on a decline from the right shoulder is the final confirmation and completes the head and shoulders top formation. This gives a signal to “Sell short”.

The neckline also helps to determine the distance down from the point where prices penetrated the neckline after the completion of the right shoulder. To recheck the estimate of fall of price, verify the rise previous to the Head & Shoulders top formation. If it is small, the down move may also be small.
2. The Head and shoulders bottom: It is simply an opposite formation of a head and shoulders top. It indicates a trend reversal from down to upward.

   The volume should pick up as prices rally from the bottom of the head and then increase even more dramatically on the rally from right shoulder. It is a ‘Buy’ signal.

   The major difference between the top and the bottom patterns is the volume sequence. In Head and Shoulders bottom pattern, volume plays much more a crucial role. Volume should pick up as prices move up form the bottom of the head and then increase even faster on the rally from the right shoulder. If the breaking of the neckline is on low volume, then this may be a misleading signal. A head and shoulders bottom is confirmed if the breaking of the neckline is done on a high volume. *11

   **Chart – 6.17 – Head & Shoulders Bottom**

3. Double Top Formation: the figure appears as M on a chart. One should get the Double Top formation’s confirmation by breaking of valley; this will be certified if, the volume on the rise of the second peak is less than that on the first peak.
Chart – 6.18 – Double Top – Confirmation

A true double top requires the peaks to be separated by a deep and long reaction.

4. Double Bottoms: These are the inverse of double tops and look like W formation on the chart.

Chart – 6.19 – Double Bottom

All the rules are same like double top formation except the volume patterns. A valid double bottom should show a marked increase in volume on the rally up form the second bottom.

5. Triple Tops: Such formations are rare than double tops. Volume is less on the second advance and still less on the third. The highs need not be spaced apart and valleys need not bottom out as exactly the same level like double top. The triple top is confirmed only when prices have broken through both valleys.

After a double top has been confirmed, if prices are rallying again but on light volume, it is a good place to “sell short” with a stop, the exit point, above the highest peak of the double top. Generally after triple top prices go higher. It is very rare to see four tops at equal levels.
6. **Triple Bottoms**: If the chart of triple tops is turned upside down it becomes triple bottoms. All rules of triple tops can be applied in reverse, except the volume pattern. The third low should be on light volume and the ensuing rally from that bottom should show a higher pick up in volume.

7. **Reversal Day Top**: It occurs when prices move higher but then close near the lows of the day, generally below their opening and below the mid point of the day’s range. An even stronger reversal is indicated if the close is below the previous day’s close.
8. **Reversal Day bottom**: It occurs when prices move lower but then close near the highs of the day, usually above the opening and above the mid point of the day's range. An even stronger reversal is indicated if the close is above the previous day's close.

9. **Rounding Tops & Bottoms**: As compared to other trend reversal patterns rounding turns take place slowly. Rounding bottoms are also called as saucers. Rounding tops are called as Inverted saucers. Rounding tops are formed gradually at the end of the uptrend or boom. This is a clear bearish signal. But the rounding tops are very rare in share price charts.

   Generally, in rounding top formations after a substantial upward movement in a share price, selling grows a little stronger while the buying remains stationery at its previous level. This change in the technical balance will be indicated by slowing
down of upward movement. Then selling power equals the buying power and as a result the share price moves neither up nor down but remains steady with only minor fluctuations. This trendlessness continues for some time until the selling pressure grows and overtakes the buying power. This gradually declines the share price. If this change in uptrend to downtrend takes longer time with a trendlessness pattern in between, then the price pattern appears like an Inverted Saucer.

In rounding top pattern, volume moves just opposite to the price pattern, resulting in low volume when the price is at the highest level and immensing volume when price starts to decline.*12

*Chart - 6.24 - Rounding Top*

A rounding bottom or saucer is formed at the end of a bearish market. The lows reached at the end of the bearish market are all formed by price falls that are small and price rises that are insignificant due to lack of buying interest. After a saucer like formation these minor fluctuations take a gradual shift to upward diversion.*13
In a rounding bottom formation the volume also moves along with the price movement. At the beginning of rounding bottom, the volume decreases as the selling pressure reduces. The trend then becomes neutral with very little activity and volumes. Then the volume starts expanding as the price starts moving up. And finally, the price and volume continue to accelerate upwards. Identifying end of rounding tops and bottoms is very difficult. The technician should use other tools like moving averages, support resistance levels to identify a beginning of a new trend to take and investment or disinvestments decision.
6.11 GAPS:

A gap is simply an area on the bar chart represented by an empty vertical space or hole between one period of trading and another. Such a gap occurs in these situations:

1. When no trading has taken place
2. When the lowest price of a specific trading period is above the highest level of the previous trading period
3. When the highest price of a specific period is below the lowest price of the previous trading period. *14

It refers to an area on the chart where no trading takes place. The highest close on preceding day and opening with the higher price than the closing of preceding day creates a 'gap' in the chart like a no trading zone. This is called an up trending market and the reverse situation will be there in a down trending market.

The gaps that occur in the uptrend and the downtrend, show market strength and weakness, respectively. *15

There are four types of gaps:

1. Common gaps
2. Break away gaps
3. Measuring gaps and
4. Exhaustion gaps.

1. Common Gaps:

These are also called as pattern gaps, area gaps or temporary gaps. They occur in a sideways trading range or price congestion area. Generally, the price moves back, up or down, subsequently as the market returns to the gap area in order to fill the gap.

The common gaps are more apt to develop in consolidation rather than in reversal formations. In short, the appearance of many gaps within consolidation patterns is a signal that the breakout should be in the same direction as that of the preceding trend.
2. The Breakaway gap:

It occurs as prices breakaway from an area of congestion. Typically, prices will breakaway from an ascending or descending triangle with a gap. This gap implies strong change in sentiment and a powerful move. The market does not return to fill the gap if volume is heavy after the gap has formed. If volume is weak, there is a reasonable chance that the gap will be filled before prices resume their trend.

3. The Measuring gaps:

It occurs in the middle of a price move and can be used to measure how much farther a move will go. It is very likely to occur in the course of a rapid, straight-line advance or decline usually at approximately the half way points.
4. The Exhaustion gap:

It signals the end of a move. These gaps are associated with rapid, extensive advances or declines. The exhaustion gap is particularly accompanied by high volume. Another method for detecting an exhaustion gap is with a reversal day.

6.12 Support & Resistance:

Support & Resistance give some clues regarding, when a reaction or a rally is coming to an end, and when the primary trend should resume?

A support level is a price level at which sufficient demand exists to halt a downward movement in prices.

A Resistance level is a price at which sufficient supplies exist to temporarily halt an upward movement.
In an up trend each former top becomes a support level for the next rise. Where as in down trends each former bottom works as a resistance level for the next fall.

Chart - 6.30 - Support & Resistance

A congestion pattern forms an even more formidable support or resistance barrier since more actual trading took place at that price level. When a support level is broken, it becomes resistance and when a resistance level is broken it becomes support.

Chart - 6.31 - Support & Resistance - Congestion

Remember once a support or resistance level has been attacked, it is weakened. It may resist a second attack, but the third attack will usually break through.
6.13 Moving Averages:

When prices move haphazardly and are very volatile in nature, the use of moving averages is the best solution. A moving average is a summary measure of price movement, which reduces the distortions to a minimum by reducing the fluctuations in share prices. This helps to study trend in prices.

There are three types of moving averages:


1. Simple Moving Average (SMA):

As it is easy to conduct, this method is widely used by technical analysts. To construct the SMA the time span of the average has to be first determined. For example 30 days moving average is calculated. For every preceding 30 days, prices are summed up and the sum is divided by 30, to receive the 30 days SMA. The process will be continued for the time period decided under study.

The choice of the time span is very important in constructing moving averages. A smaller time span will represent many minor fluctuations on the price line, but will be of little use in determining tops and bottoms of a trend. A SMA, therefore, should provide an optimum trade off between over sensitivity and lateness in identifying reversals. A 200-day moving average is widely used by analysts and is believed to represent optimum span.

As the number of days in the moving average line becomes smoother, it becomes less responsive to short term fluctuations. The charts below depict the relationship and the guidance given to analysts. *16
Chart - 6.32 - Price Line & Simple Moving Average

Chart - 6.33 - Relationship between Short-term and Long-term Moving Average-Buy Signal
Some important tips in this regard — *17

a) A reversal in bullish trend is signaled when the moving average rises above the price line. The converse is true for confirming the end of a bear market. The price line in that case would cross over the moving average.

b) The price line that falls below a rising moving average only indicates a secondary reaction and need not signal a trend reversal. Similarly, a price line that rises above a falling moving average is an indication to sell.

c) A moving average represents a smoothened trend and therefore, also acts as a support or resistance line. A declining price line often finds support at the moving average line and rallies without crossing the line. Similarly, a rally in a bear market meets resistance at the moving average, and turns down.

d) If the moving average is flat or has already begun to change direction, crossover by the price line is a fairly reliable indicator of trend reversal.

e) The importance of the crossover signal depends on the time span covered by a moving average. A moving average covering a longer time span is actually
smoothening a long-term trend, and its crossover is more significant than the 
crossover of an average of shorter time span.

Multiple moving averages are useful because shorter span averages reach the 
turning points earlier than the longer span averages and are very useful in 
confirming a trend reversal.

2. Weighted Moving Average:

It can be observed that the moving average invariably changes direction after 
the price chart and lags the reversal in trend. This is because the moving average line 
is so constructed as to plot the average of a given period at its end. Such waiting can 
prove costly in terms of lost profitable opportunities as stock prices fluctuate rapidly. 
One way of overcoming this problem is to use weighted moving averages. The 
weighted moving average is weighted in favor of the most recent observations and 
therefore, turns earlier than the simple moving average.

One of the simpler method of weighting is to multiply the first set of 
observations by '1', next by '2' and so on till the current period. This sum of values is 
divided by total of the weights.

The weighted moving average being more sensitive than that of a simple 
average, a change in its direction rather than a crossover confirms a trend reversal.

3. Exponential moving average (EMA):

A simple moving average constructed over a longer period lags the price 
trend, while construction of a weighted average on the lines is time consuming. An 
exponential average provides a short cut method of weighting. This method also 
provides more weightage to the recent data.

For example to construct a 100 day moving average, the first step is to compute 
a simple average for the first 100 days. The value is used as a starting point at column 
2. The index value for the 101st day is computed with this value and the difference is 
shown in column 3. The exponent for the 100-day EMA is calculated as $2 = 0.02$. The 
difference obtained in column 3 is multiplied by the exponential 0.02 and posted in 
column 4. The EMA value next 100 days, excluding the first day and including the
101st day, would be the EMA value in column 2 plus or minus the product obtained in column 4, depending upon the negative or positive difference in column 2. The procedure is repeated for each second day.

Thus the EMA provides a smooth base for analyzing price trends. Since the exponent is used, it should be remembered that a 100day EMA would be thrice as sensitive as a 300day EMA, The exponent of the former being twice the exponent of the latter. If it is found that the EMA is very sensitive, the time span can be extended.

6.14 Breadth of the Market:

Breadth refers to the extent to which share issues move along with the market trend and is generally measured in terms of number of issues whose prices are advancing, declining, and remaining unaltered in the period over which a trend persists.

A reversal trend is imminent if the number of issues moving with the trend is fewer than those moving against it. Breadth also measures the underlying strength of the market. If the index continues to move up, when most listed shares are declining, a reversal can be read from the breadth of the market statistics.

One of the simplest methods is the advance-decline line (A-D line) to measure the market breadth. It is derived by taking the difference between the number of advancing issues and the number of declining issues every day. This daily figure is then added or subtracted each day to a cumulative number in order to determine the advance-decline line.

The objective is to know that the whole market is gaining strength or losing strength. This measure will signal a major change in the direction of the market before any of the averages.

For example the Dow is advancing, but the Advance-Decline line is falling, it means that, even though, the Dow is up, a majority of the other stock is declining. It is a sort of warning, that the technical condition of the market is deteriorating and that the bull market is in poor health.
The A-D line drawn from a simple cumulation of the net advances or declines is generally used to observe the breadth of the market over short periods of a month or two.

For long run observations, the A-D line is drawn after considering the number of issues also whose prices remain unaltered. The A-D line is drawn by cumulating the value of \( \sqrt{A/U - D/U} \), where A = number of stocks whose prices are advancing, D = number of stocks whose prices are declining, and U = number of stocks whose prices remain unaltered.

Inclusion of the issues whose prices remain unaltered provides additional information on the market following for a certain trend, and can also indicate in advance, a trend reversal. If the trend to advance or decline is very strong, the number of unchanged stocks should reduce.

By giving weightage to such stocks in computing the A-D line, any slow down in the momentum of the A-D line can be gauged earlier, because extreme movements would be sustained by an increasing number of unchanged stocks.

A rising index with a falling advance - decline line would be a bearish signal, while a falling index with rising A-D line would be a bullish signal. *18

As stated earlier, breadth of the market is studied primarily to observe whether the issues trading in the market support price trends. The divergence of the A-D line from the market index provides vital clues on the future course the market is expected to take. Therefore, the technical analysts attach much more value to the divergence of A-D line from the market index.

*The following principles of divergence have been found to apply universally:

1) In a bull market the A-D line generally peaks ahead of the market index because:

   a. The market, as a whole, discounts the business cycle, and generally attains the peak at least 6 to 9 months before the economy peaks out. However certain leading sectors like consumer durables peak out earlier than the business cycle. Stocks representing such sector, therefore will logically peak out ahead of the market.
b. At the end of a bull market, it is observed that the stock of blue chips companies are the last to be unloaded. Since most indices includes many Blue Chip stocks, it is natural for the A-D line to peak out before the indices, which may continue to rise even after the broad market has peaked out.

2) The longer and greater the divergence, the implied reversal may be expected to be deeper and more substantial.

3) At market bottom, the A-D line generally coincides with or lags behind the market index. It has no forecasting significance until its down trend reversal is signaled by a breakout from a price pattern. However, where the A-D line persistently refuses to confirm a new low in the market index, a down trend reversal is imminent.

6.15 Oscillators:

Oscillator is an alternative to the trend. They are extremely useful in identifying a reversal much before a trend peaks or bottoms out. They are generally used to locate overbought or oversold zones. They foresee the possibility of trend reversal, well in advance of a trend reversal, and identify an increase or decrease in momentum. There are different ways to construct oscillators. The most popular oscillators are:

1. Rate of change (ROC)
2. Momentum
3. Relative strength index (RSI)
4. Moving Average Convergence and Divergence (MACD).

The Oscillator provides help to earn profit from periodic sideways and trendless market situations. Oscillators are extremely useful during uptrend and downtrends to locate overbought and oversold situations.

Oscillators are plotted with a daily or weekly price chart and both of them are studied together. The Oscillator band is basically flat while prices may be trading up, down or sideways. However the peaks and troughs in the Oscillator coincide with
these on the price chart. Some Oscillators have a mid value that divides the horizontal range into two values, an upper and a lower.

As a general rule a buy signal is received when the Oscillator line is in the lower end of the band, while sell signal is received in the upper end of range. The crossing of line is often used to generate buy and sell signals. *19

6.16 Rate of Change Index (ROC):

It is one of the simplest and widely used methods to measure momentum. The method is to compute the rate at which the price of stock, or market index, changes over a certain period of time. It is the ratio of the price prevailing on a certain day to the price prevailing 50 days or 100 days or ‘n’ days earlier.

\[
\text{ROC Index} = \frac{\text{Price on latest day}}{\text{Price on ‘n’ days earlier}} \times 100
\]

‘n’ days refer to ‘n’ trading days & and not calendar days.

The reading 101.25 means that, the price has increased by 125 points, since the level prevailing ‘n’ trading days earlier. The ROC thus oscillates around 100, which would be index value, if the price did not undergo any change during the period under observation.

A rising ROC Index (a bullish factor) indicates a growth in momentum and a falling index, a loss in momentum ( a bearish factor). The line drawn at level 100, functions as a reference line, for studying the momentum of the index.

If the ROC index is above the reference line and is also rising, the rate at which the price is increasing is growing. Any fall on the ROC represents drop in momentum. If the index is falling, but is still above reference line, it indicates a slow down in the rate of increase in price.

The ROC index turning upward, even while it lies below the reference line, marks a reversal of bearish trend.

- If the ROC line is above 1—the current day price is higher than that of ‘n’ days ago.
• If the ROC line is above 1 and rising the difference between the current day price and the ‘n’ days back price grows at an increasing rate (bullish signal) –
  If the ROC line is above 1, but declining, the price rises at a lower rate than the earlier growth rate (bearish signal)
• If ROC line is below 1, the current day’s price is lower than the price ‘n’ days ago.
• If the ROC line is below 1, and falling, the difference between ‘n’ days price and ‘n’ days’ back price grows at a faster rate (bearish signal).
• If the ROC line is below 1, but rising, the rate of decline slows down.
  (Bullish signal).

ROC gives advance signals before the share price line takes a reversal direction. *20

6.17. **Relative Strength analysis**:

Stock prices tend to move more or less in tandem with the overall market trend, represented by a market index. The concept of relative strength can be used to study divergence in industry or stock price from the course charted by an index.

Relative Strength Index (RSI) is one of the very few sophisticated oscillators used in technical analysis. The simple oscillators have problems like erratic movements. To avoid them, the RSI was developed by Welles Wilder Jr. in 1978. RSI indicator provides not only the required smoothening but also ‘0’ and ‘100’ as the lower and upper limits respectively for its vertical scale.

RSI is calculated using the following formula:

\[
RSI = 100 - \frac{100}{1+RS}
\]

When, \(RS = \text{Average of ‘n’ periods price gains} / \text{Average of ‘n’ periods price losses.}\)

RSI for any period can be calculated. The most widely used period is 14 days. But for quicker signals, shorter period of 5 days, 7 days can be considered. Like in any other oscillators, shorter the time period the more sensitive and volatile the RSI.
becomes. Therefore, to reduce the misleading signals Wilder recommended and used a 14 days period for constructing RSI.

- The RSI values are plotted on a chart with a vertical scale of 0 to 100.
- If the RSI moves above the value of 70, it is considered as overbought.
- If the RSI moves below the value of 30, it is treated as an oversold zone.

There may be a downtrend in the price after the RSI moves above the 70 level and prices may recover and look up after the RSI falls below 30 levels. Generally the RSI indicator crosses the 70 levels much before the share price touches the peak. Similarly RSI line goes below the 30 level well ahead of the share prices lifting from the bottom. Therefore, RSI gives an advance signal for reversal in the share price movements.\textsuperscript{21}

The RSI indicator simply means,

1) A buy when the RSI line is crossing up through the 50 level, and
2) A sell when the RSI line is crossing down the 50 level.

We can also identify the chart patterns like triangles flags; rectangles in the RSI line and interpret the same way as in a price chart. Support and resistance level also can be drawn for RSI chart. These oscillators are useful for only short-term investors and traders.

Relative strength (RS) refers to the ability of an industry or stock to outperform the market at turning points. Relative strength arises out of inherent merit of an industry or stock to recover from a bear market or to peak out earlier than most of the stocks trading in the market.

RS is obtained by dividing the price of the stock by the market index. The divisor is always the measure of the trend that is expected to be outperformed.

A rising RS index indicates that the stock is doing better and vice versa. RS index also follows trends, reversal of which signifies changes in the relative strength of the stock.
RS are normally used in stock selection. When a stock and its relative strength, in terms of the market, are plotted together on a graph, the relative strength generally reverses ahead of the stock prices.

*Chart – 6.35 – RSI Graph*

6.18 **Momentum:**

Momentum is tool with technical analyst to take short term enter-exit decisions, particularly when the market is volatile.

Momentum is a basic application of oscillator analysis, which measures the rate of change in price. Momentum is calculated by taking price differences continuously for a fixed time interval. The difference is then plotted on a graph. Where X axis represents time (days) and Y axis the actual difference in the momentum that is calculated. This positive or negative value is then plotted around a zero line.

A shorter period like 10 days or 5 days produces a sensitive line with more pronounced Oscillations and longer time period such as 20 days results in a much smoother line in which the Oscillator swings are less volatile.
When the prices rise and the momentum line falls, it is called as "loosing momentum". It gives an early sign of possible reactions in the scrip. There are three principle signals generated by the momentum line from which a technician can profit:

1) Identification of overbought or oversold zones
2) Whether scrip is giving losing momentum
3) A buy or sell signal generated by crossing of the zero line.

Crossing above zero line is a buy signal and a crossing below the zero line is a sell signal. In short, buy signal is given when momentum becomes positive and sell when it turns negative.

The overbought and oversold zones are similar to the rate of change index. These zones are identified with the help of historical data and one has to look at the previous highs and lows reached by the momentum, to identify the zones. Like any other technical tool momentum is to be used with other techniques, like stop losses, which can be placed at the previous week's high or low trend lines and immediate top or bottom. *22

* Chart - 6.36 - Momentum
6.19 Moving average convergence and divergence (MACD):

MACD like ROC is an oscillator which measures momentum. Oscillator is called as MACD oscillator, as it continuously converges and diverges away from the horizontal line. It is constructed by taking the difference or the ratio of short-term and the long-term moving average. The points obtained are plotted against a horizontal reference line. The reference line represents the points, where the two EMA’s have identical values. From the movement of the MACD indicator it can be known, whether the short-term moving average is above or below the longer term moving average.

*Chart – 6.37 – MACD – Convergence & Divergence*

![Chart](image)

The points of crossing between the oscillator and the reference line acts as signal to buy and sell the stock. In the figure, at the points 'g' and 'h' since the indicator crosses the reference line from below, it is a signal for buying the stock where as at point 'k' since the indicator crosses the reference line from above, it is a sell signal.

In addition to this, one can superimpose a third EMA or a moving average obtained from the oscillator itself. This is referred to as a ‘signal line’ as it acts as a trigger which alerts the trader to take an appropriate buy or sell decision. It also helps to give an overall view of the market trend. When the indicator moves above the reference line it gives a buy signal (at point ‘H’) and a sell signal when the indicator crosses below the reference line (at point ‘N’).
6.20 Oscillators – Stochastics:

Stockstastics is an advanced tool generally used by short-term traders to sell at most of the peaks and buy at every lower point. This Oscillator also helps long term investors to identify reversal at the end of the boom to exit from the scrip and also to locate the reversal at the end of the bearish phase to take buying decision.

George C. Lane, an authority on Technical Analysis, developed the Stochastic. Stochastic is a price velocity technique and it is based on the observation that the prices increase closing prices tend to be closer to the height for the period. Similarly as prices decline the closing prices tend to be nearer to the lows for period.

Stochastic analysis requires construction of two lines, Percent K line and percent D line, in addition to the share price chart.

The percent D line is the most important which gives major signals useful for taking buy and sell decisions. For construction of percent K and percent D line, high, low and closing prices of the share for everyday/week/month are required. The first line is the percent K line, which is more sensitive and faster of the two. The formula for calculation percent K line is  \[ \%K = \frac{C - L}{H - L} \times 100 \]

Where K = stochastics, C = the least closing price. L = the low price during the last ‘n’ periods, H = high price recorded during the last ‘n’ periods, ‘n’ = number of periods.

George Lane suggests using of time period from 5 to 21. However, the most commonly used time period is 5 days. Some technicians also use 12 days or 14 days time periods.

The second line is the percent D line which is just a 3-day simple moving average of the percent K line values. Both the percent K line and percent D lines oscillate between zero and 100.

The percent K values calculated with the help of formula are plotted on a chart with a zero to 100 scale to get the percent K line. The percent D line is superimposed on the percent K line.
Percent K line is a fast moving line and generates faster signals than the percent D line. Percent D line gives buy and sell signals. The stochastic analysis is quite useful in identifying overbought and oversold zones.

Both the lines Oscillate between zero and 100. If the percent D line moves above the level of 70, it is considered as overbought and when the percent D line moves below the level of 30, then it is considered as oversold. It means - overbought zone is between 70 to 100 and oversold zone is between 0 to 30.

According to same analysts the best sell signals are when the percent D line is in the 85 - 90 overbought zone and the best buy signals only in the 10 to 15 range.

The exact buy and sell signals are given by the chart when the percent D line crosses over the percent K line:

1. Buy when the percent D line is in oversold zone (below 30) and percent K line moves above the percent D line.

2. Sell when the percent D line is in overbought zone (above 70) and percent K line moves below the percent D line.

**Divergence:** The divergence between the share price line and the percent D line give a warning signal to the technical analyst that the scrip is likely to change its direction. Bearish Divergence occurs when the percent D line is in overbought zone (above 70) and forms two declining peaks while the share price continue to move higher. However one gets a clear sell signal as and when percent K line moves below the percent D line.

Bullish Divergence occurs only when the percent D line is in oversold zone (below 30) and forms two rising bottoms while the share price line continues to move lower. A clear buy signal is indicated only when the percent K line moves above percent D line after the percent D line has already started upward movement. *23

Hence the crossover of percent K line generates stronger signals if both percent K line and percent D line are moving in the same direction. The buy and sell signals are created by divergence and also by crossover of percent K and percent D lines which indicate a reversal in the share price or a consolidation in the share price movement.
Stochastic chart has to be studied like any other oscillator along with the share price chart.

6.21 **Elliot Wave Theory:**

There are number of theories to explain the behavior of the market. One such theory is given by Ralph Elliot.

According to this theory the market is unfolded through the basic rhythm or pattern of 5 waves up and 3 waves down to form a complete cycle of 8 waves.

It helps the market analysts to determine where the market is in its overall cycles. Dow Theory, despite all its merits, tends to give its signals well after trend has been established. Elliot wave theory gives the analysts more advanced warnings of tops and bottoms, which can then be confirmed by the more traditional approaches. Elliot wave theory was originally applied to the major stock market averages, particularly the Dow Jones Industrial Average.

In each cycle of 8 waves, in advancing portion of the cycle, notice that each of the 5 waves are numbered. Waves 1, 3 and 5 called impulse waves, are rising waves. Waves 2& 4 are corrective waves because they correct waves 1&3. After the 5 wave numbered advance has been completed, a three wave correction begins. The three corrective waves are identified by the letters a, b, c.

**Wave Characteristics:**

1. **Wave No.1**: About 50% of the first waves indicate nothing more than a rebound from very depressed levels. First waves are usually the shortest of the five waves. Sometimes these waves can be very dynamic, particularly if they occur from major base formations.

2. **Wave-No. 2**: It usually gives back all or most of wave 1.

3. **Wave No. 3**: This is generally the longest or the most dynamic wave particularly in the common stock area. Virtually all-technical trend following systems have jumped on the bull bandwagon by this point. Volume is usually the heaviest during this wave and it is also the most
likely to extent. Wave no. 3 can never be the shortest in a five-wave advance.

4. **Wave No. 4**: Like wave no. 2 it is a corrective or consolidation phase. But usually differs in its construction. Triangles usually occur in the fourth wave. One cardinal rule of Elliott analysis is that the bottom of wave 4 can never overlap the top of wave no 1.

5. **Wave No. 5**: As compared to wave no. 3, this wave is less dynamic. It is also at this point that negative divergences begin to develop on various oscillators, warning of a possible market top.

6. **Wave A**: It is the wave of a corrective phase. It is usually misinterpreted as just a normal pull back in the up trend. One can spot several oscillator divergences on the prior advance. The alert technician may also notice a shift in the volume pattern at this point.

7. **Wave B**: It is a new downtrend, usually occurs on the light volume and usually represents the last chance to exit old long positions gracefully and a second chance to initiate new short sales. Depending upon the type of correction taking place, the rally may test the old highs forming a double top or even exceed the old highs before turning back.

8. **Wave C**: This wave signals that the up trend has been over. This wave is often declining well below the bottom of wave A, registering all kinds of traditional technical sell signals.

To conclude no single technical indicator can be expected to work every time, a useful picture can be expected to emerges when one follows several indicators which appear to be reasonably reliable particularly in conjunction with the various economic indicators.

The honest technical analyst knows that his approach will not solve all investment problems, but he also know that no other single approach will either. He believes his tools can reduce the margin of error.*24
6.22 **Charts from original data:**

The following charts are prepared with the help of excel software by using original monthly data of price index used for analysis.

*Chart - 6.38 - Chart Depicting Support & Resistance, Upper & Lower Channel*
Chart - 6.39 - Chart Depicting Head & Shoulder, Channel - Uptrend & Downtrend, Support & Resistance

BSE Index
Chart - 6.40 - Chart Depicting Head & Shoulder, Uptrend & Downtrend, Double Bottom, Double Top
Chart - 6.41 - Chart Depicting Head & Shoulder, Support
Chart - 6.42 - Chart Depicting Double Bottom
Chart - 6.43 - Chart Depicting Double Bottom, Support & Resistance

Grasim
References:


8. Ibid.


13. Ibid..


15. Ibid.
16. Mohan T. Krishna: Moving averages, Know Your Tool Kit – VI; Chartered


19. Mohan T. Krishna: Oscillators- ROC, Know Your Tool Kit – VII; Chartered

20. Ibid P.93

21. Mohan T. Krishna: Oscillators- RSI, Know Your Tool Kit – XI; Chartered

22. Mohan T. Krishna: Oscillators- Momentum, Know Your Tool Kit – VIII;

23. Mohan T. Krishna: Oscillators- Stochastics, Know Your Tool Kit – X; Chartered