

A Study on Essential Concepts, Tools, Techniques and Methods of Stock Market Trading: A Guide to Traders and Investors

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주식 거래의 필수 개념, 도구, 기법 및 방법에 관한 연구: 거래자와 투자자를 위한 안내서

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Abstract An attempt has been made in this article to discuss the fundamentals of technical analysis of the stock market. A retail investor or trader may not have the wherewithal to source that kind of information. Technical analysis requires a candlestick chart only. Most of the brokers in India provide charting solutions as well. Studying the price action of a security or commodity or Forex generally indicates a price pattern. Prices react at certain levels and widely known as support and resistance levels. Since whatever is happening with the price of the security is considered to be a part of a pattern or cycle which has already played out sometime in the past, these studies help a keen technical analyst to identify with certain probability, the future movement of the price. Study of the candlestick patterns, price action, volumes and indicators offer the opportunities to identify a high probability trade with probable target and a stop loss. A trader or investor can take high probability trade or position and control only her losses.

Key Words : Candlestick, Chart Patterns, Support and Resistance, Indicators, Risk Reward Ratio, Stop Loss

요약 본 논문에서는 주식 시장의 기술적 분석의 기본에 대해 제시하였다. 소매 투자자나 거래자는 다양한 정보원으로부터 나오는 외부 정보를 얻을 수 있는 수단이 제한적이다. 일반적으로 기술적 분석에는 캔들 차트가 주로 활용된다. 인도의 대부분의 브로커는 차트 솔루션도 제공하고 있다. 보안이나 원자재 또는 Forex의 가격 변동을 분석해 보면 일반적인 주가 변동 패턴을 예측할 수 있다. 주가는 특정 수준에서 반영되며 지지 및 저항 수준으로 널리 알려져 있다. 유가 증권의 가격에 발생하는 모든 일이 과거 언젠가 이미 진행된 패턴 또는 주기의 일부로 간주되기 때문에 이러한 연구는 영리한 애널리스트가 특정 확률로 가격의 미래 변동을 예측하는 데 도움을 줄 수 있다. 캔들스틱의 패턴, 가격 변동, 거래량 및 지표에 대한 연구는 가능한 목표 및 손절매로 높은 확률의 거래를 할 수 있는 기회를 제공한다. 본 연구 결과를 활용하여 트레이더나 투자자는 확률이 높은 거래나 조건을 취하고 투자 손실을 통제할 수 있게 된다.

주제어 : 캔들스틱, 차트패턴, 지지와 저항, 척도, 위험보상 비율, 손절매

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1. Introduction

One of the major challenges of retail traders and investors is to identify if the price of a security is likely to go up or not. The usual route for such a person is to look for opinions from TV channels, websites, friends, family and social media. Then they also create a narrative based on the economy in general and news on the script in specific. Once that is done and a positive view is made, a long position is created. Thereafter they only depend on hope [1,2]. Technical analysis does not take into account the industry, sector or the security's business quality. It only tells the price trend, the possibilities of a trend continuation or trend reversal. Using some of the tools one can pointedly identify the most appropriate entry level, multiple target levels and the stop loss. It does not guarantee anything, it only indicates whether the trade falls under high probability one or not. The trader has to make a decision based on the outcome of the analysis. A large portion of today's daily trade is being done on automated algorithms. Understanding of technical analysis in good depth is a necessary condition developing algorithms based on high probability strategies both in long and short sides. A thorough understanding of the interplay of indicators, time frames and price action is likely to help traders and investors to be consistently profitable. This focuses on those mentioned points for better understanding and comprehensibility by the traders and investors [3,4].

One of the major challenges a retail investor or trader often faces is this. Once a long position is taken, soon thereafter the price moves down. Let us understand this situation. There are two major categories of market participants. One is the institutional participants. That includes proprietary desks, HNIs, fund houses and other large players. The second

category is retail participant. Typically, these two categories of participants look at market movement in different ways when there is an imminent trend reversal. Retailers tend to buy a security when it has moved up significantly. At that point institutional participants start booking profit and liquidate their positions. In a downward trend, price takes support at certain levels. At those levels retailers get frustrated, book losses and exit. Those are the levels where institutions buy in. Technical analysis helps to understand these price zones. It helps to understand when an uptrend is ending or a downtrend is ending. For example, a positive crossover of 5, 13 and 26 exponential moving average (EMA) on a daily chart indicates a probable start of an uptrend. At this point one may consider a long position. Similarly, a negative cross over of these EMAs indicates beginning of a down trend. At that point one may consider exiting a previously held long position and book profit [4,5].

The rest of this article is organized as follows; the Section 2 discusses few indicators. The concepts, tools, techniques and methods of stock market trading are discussed in detail in Section 3. The Section 4 concludes this article with some of the future scopes.

2. Literature Survey

Individuals who attempt to day-trade without an understanding of market fundamentals often lose money. A working knowledge of technical analysis and chart reading is a good start. But without a deep understanding of technical analysis, the logic behind each interpretation and its unique risks, charts can be deceiving [6,7]. A bearish trend is normally interpreted when the closing price of a day is lower than the opening price. This is represented by a red candlestick in a chart. Yet, this single candlestick may not tell the larger story. Candle stick pattern before

that, other indicators and oscillators, volume, support and resistance levels may create a setup which may help one to take a more considered view on the trend. Price action traders rely on candlesticks because they convey a great deal of information about each trading period in a visual format that is easy to interpret, allowing traders to compare the behaviour of price in different time periods with a quick glance at a price action chart. Chart patterns indicate a meaningful part of the developing narrative of price. They communicate the *market sentiment*; whether (and to what extent) bears or bulls were in control, and how far traders managed to push price in either direction [8-10]. Consider a situation when price of a security is going up and traded volume is increasing. This indicates there is a bullish trend. The price movement is being supported by fresh buying, which is indicated by increasing volume. If the prices are increasing and volume is decreasing then it indicates that this up move may not be sustainable. May be short positions are being covered. Hence there is increasing demand, pushing the price up temporarily. Since positions are being squared off, the volume is decreasing.

One of the most popular candlestick patterns is the *Morning Star* pattern. The morning star pattern is more complex because it comprises three candlesticks; a long red followed by a short-bodied candle and a long green. Usually, the middle candle will have no overlap with the longer ones. The morning start suggests that the first period's selling pressure is fading, and a bull market is forming [11-13]. This formation happens at the bottom of a bearish trend. After continuous lower highs and lower lows, a morning star formation indicates a potential trend reversal. It's very likely that the prices will move up after such a formation. Violation of trend line, support or resistance or previous reversal point, signifies a change in buyer and

seller behaviour and signals the beginning or end of a trend [14,15]. Nobody can call the market, but we can determine where the forces are, by simply examining the lines of *support, resistance, trend* and *consolidation*. We can find levels which, if violated, indicate a particular outcome is probably underway [16,17]. It is believed that, the stock market movement is not random, and by analysing a large stable of stocks using basic technical methods one could find excellent opportunities for profit each and every day. In a larger time-frame price movement may look insignificant. For example, the major index Nifty 50 had a closing price of 17132 in Aug' 2021. In July 2022 it closed at 17158. So, in a year it moved by 26 points or 0.15%. During the same 12 months period it touched a high of 18604 and a low of 15183. This range is of 3421 points or 18%. So short term traders had enough opportunity to trade and earn during this same period while the annual return may look insignificant. Same is the case of securities [18,19].

The biggest and basic question is, why day Trade? There are several reasons. One, you are subject to reduced margin requirements. After all, if you are not going to hold positions overnight, the risk is considerably less than if you would carry them overnight. You still have to maintain stop loss positions [20,21]. As explained in the previous section, professionals or institutional players usually trade against the amateurs. They tend to buy lower openings, sell-short higher openings, and unwind their positions as the day goes on. Traders need to pay attention to the relationship between opening and closing prices. If prices closed higher than they opened, then market professionals were probably more bullish than amateurs. If prices closed lower than they opened, then market professionals were probably more bearish than amateurs [22-25]. A good understanding of chart reading,

interpreting trends, price action, some indicators and oscillators would help one to find out the mindset of the professionals at that point of time. It pays to trade with the professionals rather than trading against them [25,26].

Many a time's traders are in search of a Holy Grail set up. They spend years in search of a setup which never fails. The truth is there is no such setup. Searching of an algorithm which gives profit all the time, under all circumstances is futile. Market has its own surprises. Double guessing that all the time leads nowhere [27-29]. Support and resistance levels are points where a chart experiences recurring upward or downward pressure. A support level is usually the low point in any chart pattern (hourly, weekly, or annually), whereas a resistance level is the high or the peak point of the pattern. When the price action breaks through the pivot line - such as crossing from below it, the trend should continue in the direction of the breakout. If the breakout is bearish, the trade should be short, while for a bullish breakout, the trade should be long. Stop loss is a key thing in trading. One should consider putting a stop loss just below a support line in a long trade and just above the resistance line in case of a short trade [30-35].

3. Concepts, Tools, Techniques and Methods of Stock Market Trading

This article is designed to help short term and intraday traders understand major concepts. In this study, topics covered are for helping traders to choose an instrument, take a decision on entering into a high probability trade and make a sensible exit. It is assumed that user of this article has a fair understanding of technical analysis and securities market. All the topics mentioned above are vast subjects and one needs substantial amount of time to get a grip of them. It is also assumed that the

trader has spent at least two years in the market and has experienced various cycles, price movements and impact of events on the securities prices. Knowledge shared in this study is prepared from the vast body of work done by various successful traders and researchers over the last several decades across the world. It's important to note that this article is by no stretch of imagination a tool to recommend traders to take a trade based on the guidelines discussed. After reading this article, traders should be able to take informed trade decisions. There are several methods, processes and approaches for taking successful trades. In this article, only some of them are discussed, which can be helpful to the traders for improving their knowledge base and use their own intelligence while making a trade decision [5,6,9,10,32-35].

3.1 Major Candle Stick Patterns

There are large numbers of candlestick patterns. Interestingly each one has its relevance and importance. Here we will deal with only a few of them which are most often used and have a larger degree of reliability. These patterns if understood properly and trade decisions are taken based on the principles of these patterns, there is a high probability of successful trade. Each pattern indicates the psychology of the buyers and sellers at that point of time. Net result of this psychology (what the traders think of the price and direction) is reflected in the candlestick pattern [12-13].

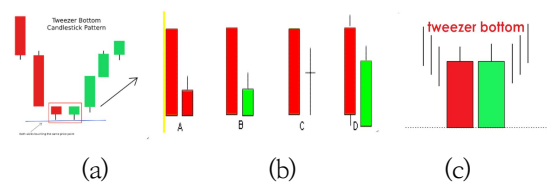


Fig. 1. Tweezer Bottom

These patterns are signals for a trend reversal. Hence, such patterns are to be seen

along with the current trend and other confirmatory indicators. Some of the major candlestick patterns are: (a) Tweezer Top and Bottom; (b) Hammer and (c) Marubozu. The high probability patterns are (a) Morning and Evening Star; and (b) Inside Bar. Tweezer Bottom is a bullish pattern and becomes a high probability one if formed at the end of a bearish trend. In that trend one red and one green candle form this pattern. The bottoms or lows of these two candles are at the same level. 1st is the red candle and the 2nd one is the green candle. All the six images shown in Fig. 1 (a), Fig. 1(b) and Fig. 1 (c) are Tweezer Bottom formations [36-37].

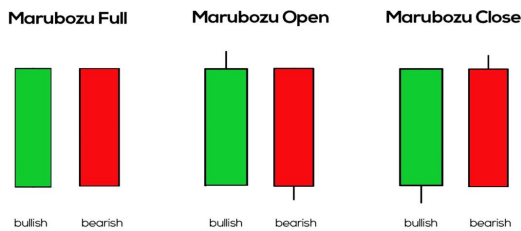


Fig. 2. Marubozu

Here, the lows both the candles should be same. This formation should be considered when formed at the bottom of a bearish trend. This indicates starting of a bullish trend or the reversal of a bearish trend or even a retracement. Tweezer Bottom pattern trading is most successful when support level formed at a major support level, like 100 or 200 EMAs. The price falling from a higher level rests at a major support level and tweezer bottom is formed. Then a green candle is formed above the high of the green candle. That could be a high probability long trade entry point. This pattern should be traded ideally with volume confirmation and a momentum indicator like RSI or Stochastic confirmation.

Marubozu (Green Marubozu, Red Marubozu) in Japanese means shaved or bald and shown in Fig. 2. The candle does not have a lower or higher wick or may have a very small wick.



Fig. 3. Bullish Marubozu and trend reversal

Typically, a Marubozu candle is a large one. A small Marubozu candle is not a very reliable one. A proper Marubozu is considered to be a very strong candle. Green Marubozu indicates strong conviction among buyers and a red one signals a very strong conviction of the sellers. In other words, a green Marubozu is formed when sellers have given up and bulls have taken control. The price is set to go up after a green Marubozu and just the reverse is true for a red Marubozu. Formation of such a candle at the low of a trend indicates a trend reversal. A green Marubozu with larger volume at the end of a bearish trend indicates a bullish reversal as shown in Fig. 3. Just the reverse is applicable for a bearish Marubozu at the high of a bullish trend.

3.2 Chart Patterns

Chart pattern is a structure of multiple candle sticks. For candlestick patterns 1 to 4 candlesticks are used. Chart patterns are seen with a formation of at least 10 or more candles. Some of these are visually identifiable patterns to any eye. Some of the patterns can be identified only by a trained eye. Most patterns have been researched and studied over long periods of time and its interpretations are validated over decades. Completions of these patterns lead to a bullish move or a bearish move. Some highly trained and intuitive traders also trade on a pattern which is forming and has not yet been completed. However, this is only for highly trained traders. For the rest, it's advisable to wait for the pattern to be completed,

a confirmation of the trend is seen and then the trade decision is executed [37].

As mentioned in the case of candlestick patterns, these chart patterns are also visible differently in different time frames. So, it's important to choose a time frame for decision making and stick to that. One who watches chart patterns in a 5 minutes time frame to determine trade decisions should stick to this time frame for trade execution. There are approaches to use multiple timeframes for the same security which requires much deeper discussion. Some of the chart patterns are; rounding top and bottom, symmetrical triangle and flag. The high probability patterns are; double bottom and top, head and shoulder and inverse head and shoulder.



Fig. 4. Rounding Bottom

Rounding Bottom Pattern (a bullish pattern) is formed by many candles which takes the shape of U or V or the lower half of a circle as shown in Fig. 4. That means the price levels of the beginning of the shape is same as that of the end of the shape and this is a bullish trend continuation pattern. At the beginning of the pattern formation, there is increase in supply and higher price gets rejected over a period of time. At the bottom of the formation lower prices get rejected. Bulls start taking control of the trades. However, this change of trade is confirmed only when the chart pattern is completed and the price moves above the neck line of the formation. The neck line is the line

joining the two ends of the rounding bottom. Long position is taken after the neck line is broken and a pullback happens. The expected price movement is double the distance from the bottom of the formation till the neck line. The stop loss level is the immediate swing low below the neck line [38].



Fig. 5. Rounding Bottom(1hour chart)

The pattern is formed over any time frame, minutes, hours, days, weeks even months. The above image Fig. 5 is of Infosys stock forming a rounding bottom is on 1 hour chart. One can notice that once the neck line is broken, the price tend to move up. The beauty of most of the chart patterns is, one can calculate the approximate target. The advantage of trading this pattern is the stop loss is very small and the target is quite high. Hence the risk reward ratio (R: R) is up to 1:5. In other words this pattern offers an opportunity of a safer trade [39-40].

3.3 Support and Resistance (S&R)

Prices of all securities move within the support and resistance levels. The key is to understand which levels are supports and which are resistances. The same level may act as a resistance in a bullish trend and as a support in a bearish trend. These levels help a trader to determine entry and exit points. In an up move one need to know up to what point the price may move before taking a reversal or rest. In a down trend, one needs to know up to what level the price will fall before taking rest or reversal. The price point at which the up-move rests or

reverses is the resistance point. There could be several such points. Similarly, in a bearish move the price point where it rests or reverses is called the support point. There could be multiple support points as well. The few terminologies used for support and resistance are, static and dynamic. Static S&R are horizontal lines drawn across the chart. There are two types in this. These are the swing highs and swing lows of all the major swings. For intraday one can take 1hr, 30 minutes or 15 minutes time frame to find the major swing highs and lows to draw horizontal lines and for swing trade one can take daily or weekly time frame to identify these levels. These are drawings that a trader manually draws across the chart. Because of this there is an element of subjectivity. A good S&R level is one which touches at least two or more swing highs and lows. One may find that the same level of S&R is valid over a very long period of time. A level at which the price had reacted one month, 6 month or even two years back, is valid on current date as well.

The limitation of drawing these lines is, there are no levels once a security trades at its life time high or low. A security trading at its life time high does not have any upward level to work as a resistance. Similarly, a security trading at its life time low may not have a support level below the current level [35-37].



Fig. 6. Major Support and Resistance Levels

It is noticed in the above chart of ITC (Fig. 6), there are several S&R levels based on the swing

highs and lows. You may also notice that in some cases these levels are not exact points but a range. Traders use ranges as well as exact points depending on their comfort level. Notice the points from where the price is getting rejected in an up move. Those are the resistances. Supports are clearly visible where the price is getting rejected in a down move [38].



Fig. 7. Support and Resistance Zones

Here one can see the change in the S&R levels of the same stock on a daily chart. The previous one was an hourly chart. A larger time frame chart is likely to provide more S&R levels compared to a lower time frame chart. The purpose of these levels is to help traders to decide on a long entry just above a support level and exit at the resistance level. For short trade one should look for an entry just below the resistance level and exit at the support level. Prices may very well go beyond the 1st resistance in an up move and it may go well below the support in a down move. However, traders need to have some point of reference, target or a stop loss to trade. These levels are very strong points to take such decisions [40,41].

Many traders ask if the resistance or support that was valid say 6 months back or a year back, is it still valid today? The answer is YES. All these levels, irrespective of the time in history, are valid. Buyers and sellers have responded or reacted to these levels earlier and they will most likely react at those levels even if that was created years back. Traders watch out these levels and the market respects them most

of the times. Hence it helps to draw these levels in chart and trade within those levels.

3.4 Pivot Levels

Pivot is an indicator applied on the chart. There are several variants of pivots. The most common among them is the *Traditional Pivot*. There are Fibonacci, Camarilla, Demark, Woodie and other Pivot Levels as well. In most of the charting platforms one can find this indicator. This is an age old indicator which draws horizontal lines automatically across the chart. Typically, there are 11 lines. The middle line is PP (Pivot Point). Five lines above this line are R1 to R5. These are the resistance lines. Five lines below the PP are S1 to S5 lines. These are the support lines. Pivot points for short term trade, are considered as static levels since they do not change in a day. The eleven pivot levels remain valid for a day, for time frames from 1 minute up to 15 minutes. The levels change once one applies it to 30 minutes and up to 4 hours chart. These levels remain constant for one trading week. For daily chart (1 day time frame), the pivot levels remain unchanged for a month. In a weekly chart the levels remain constant for a whole calendar year. These levels are calculated based on the previous period High, Low and Close [42].



Fig. 8. Pivot Levels 15 minutes Time Frame

The Fig. 8 is a 15 minutes chart of HDFC. One can see the pivot levels are valid for one day. For the subsequent day these levels change. The Fig. 9 represents the daily chart of same HDFC, but the pivot levels are drawn for the

whole calendar month. Depending on the trading type, (intraday or swing) one should choose the time frame and use these pivot levels as depicted in Table 1. Trading with pivot levels is similar to the swing high and low approach. In an uptrend one should look for a long trade when the price breaks above the PP or R1 or R2. The next level resistance becomes the target. Stop loss (SL) is often placed at the signal candle low or the previous swing low or the previous pivot level whichever is lower. In a down trend short trade is taken once the price breaks down below the PP, S1 or S2. The target is the next support level and the SL is kept at the signal candle high or the previous swing high, whichever is higher. It's important to note that these S&R should be traded along with other confirmations and the current trend. Apart from these two, there is one more static S&R indicator called CPR (Central Pivot Range), which is very useful and is available in some of the charting platforms.



Fig. 9. Pivot Levels, Daily Time Frame

The Table 1 provides details of time frames and the corresponding validity period of the pivot levels. It is important to take note of this to take right trading decisions.

Table 1. Time Frame and Corresponding Pivot Level Validity

Chart Time Frame	Pivot Level Validity Period
1 minute	1 day
2 minute	1 day
3 minute	1 day
4 minute	1 day

(Continued)

Table 1. Time Frame and Corresponding Pivot Level Validity

Chart Time Frame	Pivot Level Validity Period
5 minute	1 day
10 minute	1 day
15 minute	1 day
30 minute	1 calendar week
1 hour	1 calendar week
2 hours	1 calendar week
3 hours	1 calendar week
4 hours	1 calendar week
1 day	1 month
1 week	1 year

3.5 Dynamic Support and Resistance: Indicators and Oscillators

These are indicator or oscillator based support and resistances. These S&R levels keep moving along with each candle movement. That is why they are considered as dynamic levels. They are mostly not horizontal lines and take different shapes depending on the price movement. These include indicators, oscillators and trend lines. There are 100s of such tools. We will discuss only a few of them in this article:

- Volume Weighted Average Price (VWAP) (indicator)
- Moving averages (indicator)
- Trend Lines (drawing)
- Super Trend (indicator)
- RSI (oscillator)

(a) Volume Weighted Average Price (VWAP)

The VWAP indicator and is available in almost all charting platforms. Price moves as per the buyers' and sellers' perception. However, the price movement, when seen along with the volume traded, it shows the strength of the price movement. VWAP in fact does just that. This indicator has the option to select the look back period. The calculation is done on the previous candles prices (OHLC) and the volumes. One can choose to get the VWAP prices for the last 10, 20, 30 or any period of

one likes. The default value is the 14 look back periods on the closing prices [27]. The Calculation of VWAP is shown in Equation (1).

$$VWAP = \frac{\text{Cumulative Price} \times \text{Volume}}{\text{Cumulative Volume}} \tag{1}$$



Fig. 10. Volume Weighted Average Price (VWAP)

This Fig. 10 is a 15 minutes chart of Sun Pharma with VWAP indicator. This is one of the most trusted S&R indicators. One can trade long once candle crosses above the VWAP and may trade short once a candle crosses below the VWAP. This indicator however is most suitable for intraday trade or on short time frame charts. On a daily or weekly charts all candles will be on the VWAP line most of the times. Hence using this indicator to trade may not be possible on a larger time frame chart. There are specific process, methods and strategy of using VWAP for effective long and short trades. One can explore detailed trading strategies using VWAP.

(b) Moving Averages

These are lines that get drawn on the body of the chart once the moving average indicator is chosen. There are broadly two types of moving averages; simple and exponential. Simple moving average is called SMA and exponential moving average is called EMA. Typically, traders use 1 to 3 moving average lines on a chart for different purposes. Most common EMAs are 100, 200, 50, 20, 26, 13 and 5. These numbers indicate the number of candles whose closing values are taken for the calculation. These

numbers are also called 'look back' period. In fact EMAs are considered to be one of the most reliable indicators. The slow EMAs like 100 and 200 ones indicate the market trend. The slope of these slow EMA lines clearly show if the market is bullish or bearish. They also work as strong support and resistance lines. Traders also use 8 and 44 EMAs [42].

The chart is of Tata Motors on 5 minutes time frame is shown in Fig. 11. The blue line is 100 EMA. The down ward slope indicates that the stock is in bearish phase. The red line is 5 EMA & this is called the fast EMA and the green one is 13 EMA and is called medium EMA. The yellow one is 26 EMA and is called slow EMA. There are multiple approaches to trade based on these EMAs. Each line works as a support and resistance. In a bullish market if a candle crosses above the 5, 13 and 26 EMA, it is considered to have broken major resistance or there is a trend reversal from bearish to bullish. Such a formation may also indicate that the price took a support from a major support level. Such a positive cross over is also called a *golden cross over* [43-44]. In such a formation instead of looking at the candles, the EMA lines are considered. 5 EMA crossing over the 13 EMA and at the same time 13 EMA crossing over the 26 EMA is called a Golden Cross over. Traders use other combination of EMAs as well. 13, 26 and 34 EMAs are also considered by some traders. Typically, immediately after a golden cross over, price goes up significantly. Trading such formations has certain rules for exit and stop loss.



Fig. 11. Golden Cross Over of EMAs

Just the reverse also happens when price crosses below the 5, 13 and 26 EMAs. This is considered to be strong bearish trend. One may consider a short trade once this negative cross over happens. This indicates that upwardly moving price is rejected by the buyers and it faced a strong resistance or the price broke a strong support level. This is called Death Cross Over. Such a formation is a definite indication of a imminent price fall. A death cross over example is shown in Fig. 12. Long positions should be exited once such a formation is seen.



Fig. 12. Death Cross Over of EMAs

Another example of a death cross over is demonstrated in Fig. 13. Here the EMA 5, 13 and 26 have crossed below each other. This is also called a negative cross over. A negative cross over is in fact a crossing of a fast EMA below a slow EMA. An EMA of a smaller value is considered a fast EMA. An EMA of a relatively larger value is a slow EMA. In the set up of 5, 13 and 26 EMA, the 5 EMA is called the fast EMA, 13 EMA is the slow EMA and 26 EMA is slowest EMA. In the Figure below one can see the fall of price soon after the death cross over.



Fig. 13. Death Cross Over

(c) Trend Lines

These are drawn by joining the swing highs and swing lows. There are two rules to draw trend lines, such as; (a) the line should touch at least two swing highs or two lows. In case the trend line touches more than two points, then it is considered strong one and; (b) highs of the swing high candles should be considered to draw this line. Similarly, lows of the swing low candles should be considered [45].



Fig. 14. Trend Lines to Confirm Trend Continuation

In a bearish market, once the close of a candle crosses above the swing high trend line, it signals a trend reversal. A long position should be considered after getting confirmation from other indicators and price action. Similarly, in a bullish trend, if the close of a candle crosses below the trend line connecting swing lows, it signals a trend reversal and beginning of a bearish trend. One may consider a short position or an exit from a long position after getting confirmation from other indicators and price action as shown in Fig. 14.

In the Fig. 15, the Sun Pharma chart one can see the candle breaking above the trend line in a bearish trend. This indicates a trend reversal. It's important to note that the trend lines may be drawn across multiple days as well. At this point one may exit a short trade or may consider initiating a long trend.

The Fig. 16, represents the Tata Steel chart, in a bullish move, the trend line joining the swing lows is broken down, which indicates a trend reversal. One should consider a short position or an exit from a long position [46].



Fig. 15. Trend Line and Trend Breakout



Fig. 16. Trend Breakdown

(d) Super Trend

This is a widely used indicator across asset classes. Traders use it on equities, derivatives, commodities and Forex. This is calculated on the candle high, low and the ATR (Average True Range) along with a multiplier which can be computed using Equation (2) and Equation (3). This indicator basically identifies a start or an end of a trend.

$$\text{SuperTrendUpperLine} = \frac{\text{High} + \text{Low}}{2} + M\text{tiplier} \times \text{ATR} (2)$$

$$\text{SuperTrendLowerLine} = \frac{\text{High} + \text{Low}}{2} - M\text{tiplier} \times \text{ATR} (3)$$

ATR means Average True Range. This is an oscillator, found in most of the charting platforms. This broadly tells the range or difference between high and low of candles of a given time frame. This range is calculated on a look back period. A look back period 10 means the high and low of the previous 10 periods is considered for calculation. Hence the ATR value changes with the change in look back period. ATR also changes as the time frame changes.



Fig. 17. Super Trend - Bullish Trade

In Fig. 17 one can see Axis Bank price movement after the Super Trend turns from red to green. A green candle is formed just above the green line. This is a point where a bearish trend is seen to be reversing. One can initiate a long trend at that point. Similarly, a change from green to red line in the Super Trend and a red candle formation below the red line indicates the reversal of a bullish trend to a bearish one. In a 15 minutes chart of Axis Bank one can see the bearish trend is indicated as the green line the Super Trend turns to a red line is shown in Fig. 18. One can initiate a short trade at that point or exit a long position.



Fig. 18. Super Trend - Bearish Trade

As shown in Equation (2) and (3), the value of the Multiplier can change the Super Trend values. Similarly, a change in the look back period of ATR can change the value of the ATR. A change in the ATR value will change the upper and lower lines of the Super Trend. These two factors: ATR look back period and multiplier value are the two variable parameters of Super Trend indicator. Various default

parameters are set in different charting platforms. Traders use their own parameters depending on their own research and conviction. All these set ups have relevance in trading. This indicator gives false signals as well. Some also use two super trends to get some confirmation. Much greater details need to be understood to use this tool effectively. Table 2, gives some of the parameters traders use in super trend [47].

Table 2. Various Super Trend Parameters Traders Use

Length	Multiplier
4	2
7	3
10	3
10	4
21	2
21	4

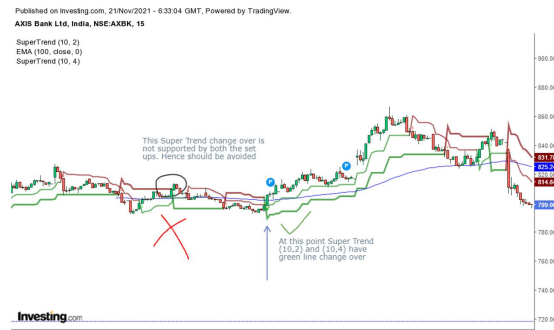


Fig. 19. Double Super Trend usage

In Fig. 19, Super Trend (10, 2) and Super Trend (10, 4) are applied. In this set up one checks for double confirmation by both the super trends for a trend reversal. If the trend line of both the super trends change from red to green at the same time and a green candle is formed above both the green lines, then a bullish reversal is considered. In corollary a bullish reversal indicated by one super trend and not by the other is considered to be a false signal. The same is applied for a bearish trend reversal.

(e) RSI (Relative Strength Index)

The indicators which appear below the charts are the oscillators. There are quite a few in this category. Moving average convergence divergence (MACD), stochastic and Commodity Channel Index (CCI) are some of these. RSI is one of the most widely used oscillators and also known as indicators. But indicators and oscillators have fundamental behavioural difference. Oscillators move within a defined range or boundary. Its value goes up and down during a trend continuation as well. However, indicators move along with the price movement without any limit or boundaries. Out of all the oscillators RSI is considered to be one of the more reliable ones. This is also a lead indicator, which means the RSI value indicates the direction of the price movement before it actually happens. The calculation is little complex, therefore, for simplicity, the ratio of average of up moves and down moves in a given time frame is calculated it is treated with 100 in two different steps to determine a ratio and hence, called an index. Equation 4 shows the calculation of RSI [49]:

$$RSI = 100 - [100 / (1 + (Avg\ Gain / Avg\ Loss))] \quad (4)$$

One can see the RSI oscillator at the bottom of the chart. All oscillators appear at the bottom of the chart in a separate pane. In default setting RSI has an upper band of 70 and lower band of 30. Additionally, one may see the look back period is 14. These three parameters are changed for different trading set ups. The most common change is the upper and lower limits of the RSI band.

However, traders use 60 and 40 values for upper and lower bands. In some setups 50 and 50 are also used. General interpretation of these values is done to confirm a bullish or a bearish trend. RSI value of 60 and above is considered a bullish trend. RSI below 40 is considered a bearish trend. In some of the option trading, a value above 50 is considered bullish and below 50 is considered bearish.



Fig. 20. Relative Strength Index (RSI)

Many traders consider a value of 70 or above is an overbought condition. That means, the prices is likely to come down after the RSI has crossed 70. So, in such case a long position may be exited or a short trade may be initiated. Similarly, a value of below 30 is over considered over sold. This means there will be increased demand or buying after the RSI has crossed below 30. Fig. 21 shows the oversold and over bought situations in the chart. Traders consider taking a long position in the over sold region and the reverse in an overbought situation.



Fig. 21. RSI Over Bought and Over Sold Conditions

Changing the look back period one can see very different RSI value movement. This tool as a lead indicator is used along with other powerful indicators for successful trades.

3.6 Stop Loss

This is the safety belt of the trader. There is no any guarantee of a trade’s success. Best of traders do deal with failed trades on a daily

basis. All good traders use stop loss for each trade. In almost all the algorithmic trading systems, strategies cannot be saved unless a stop loss is defined. This ensures that a trader's loss is limited. With a success rate or win rate of 40% one can make reasonable profit if risk reward ratio is maintained and SL is honoured [49].

Table 3. SL, R:R and Net outcome

	SL	Target	Outcome	P/L
Trade1	5	10	SL Hit	-5
Trade2	5	10	Tgt	10
Trade3	5	10	Tgt	10
Trade4	5	10	SL Hit	-5
Trade5	5	10	SL Hit	-5
Trade6	5	10	SL Hit	-5
Trade7	5	10	Tgt	10
Trade8	5	10	Tgt	10
Trade9	5	10	SL Hit	-5
Trade10	5	10	SL Hit	-5
Net Profit/Loss				10

In the above example as depicted in Table 3, out of 10 trades SL is hit in 6 trades. Still there is net profit. Here, the win rate is only 40% and the R:R is 1:2. This means a trader loses Rs 5 in a losing trade or when the SL is hit. He gains Rs 10 when his target is hit in a winning trade. Hence, the R:R is 5:10 or 1:2.



Fig. 22. Calculating entry, profit target, SL and R:R

In cash of intraday equity trade, most brokers permit Bracket Orders (BO). That is a great way to enter into a trade with a predefined target and stop loss placed at the time of placing order. In case one wants to only limit the loss, then one may opt for a Cover Order (CO). In

this order only entry price and SL is entered at the time of placing order. A trade hitting a SL does not make one a bad trader. It only indicates that one is a disciplined trader. Every trade hitting SL is an opportunity to revisit the trade and learn from it. One may have made a wrong entry or might have estimated the SL wrongly. This gives an opportunity to remember the mistake and not repeat it. There are of course trades which go wrong after taking all cares. That is the nature of the market. One need not worry to find a solution for every losing trade, simply because there is no solution for every loss making trade.

Here is a long trade in Indigo which hit the SL. One can find out the reasons for this failed trade. One needs to ask, was the long entry signalled? Was the entry level, right? Was the SL correct? Various approaches to determine SL are:

Swing Low or High:

In a long trade typically the previous swing low is a safe way to put the SL. The general understanding is, a long trade should be initiated preferably in a higher high and higher low formation. As per the Dow Theory, such a formation is considered a bullish trend. Hence if the previous swing low is broken, then the bullish trend becomes questionable. Hence there is high probability of the price moving down further. If the price crosses below the swing low, it is advisable to cut the losses and close the position. Similarly, in a short trade, the previous swing high is considered to be SL level. One needs to have few points of buffer as well in both the conditions.

Major Support or Resistance

These are very strong levels for SL. In a long trade, if the candle is crossing above the Pivot Point (PP) and one sees the probability of this moving to the R1 level, then a long trade may be taken after a confirmatory candle is formed. In this case the SL would be just below the PP. This approach is valid for each of the Pivot levels.

Similarly, in a bearish trend as depicted in Fig. 23, if the price is breaking down under S1 and a short entry is being taken with the target of S2, then the SL should be just above S1. This is applicable for all major support and resistance levels.



Fig. 23. Short Entry, SL and Profit Target

3.7 Moving Averages

Exponential or simple moving averages are also used as SL. Typically for short trades EMA 50 or 20 is used as a SL. In many trades much slower EMAs like 100 or 200 are used as SL. In case of swing trade or even longer trades, 20 or 50 DEMA (Day Exponential Moving Average) are quite reliable SLs [50-53].



Fig. 24. EMA as SL and Short Entry Level

In Fig. 24, chart of TCS one can see that the 50 EMA in a bullish market is considered as a SL. The idea is to see that if the price is consistently moving above a major slow EMA, then that EMA is considered as the SL. If the

price crosses below that line, then a long trade should be exited. It indicates that after that level is broken, the price is likely to move down further. Similarly in the above chart (Fig. 24), for a short trade 200 EMA is clearly seen as a SL level. This means once the price has breached 200 EMA and is moving down, this level works as a resistance. So, in the bearish trend if the price crosses above the 200 EMA level, then it may indicate a trend reversal, hence a short position should be exited, treating it as the SL level. The key points to be noted are:

- SL is not dependant on one’s risk-taking ability. It is determined by the market through its price action.
- The entry point in a trade does not determine the SL. The market has already determined it before one takes a trade.
- The SL changes as the prices move over a period of time. Hence, trailing SL is used.

4. Conclusion and Future Scope

Technical analysis is very objective in nature. It depends on the price action or candlestick patterns or indicators and oscillators or combination of all of them. Hence it does not consider the quality of the asset. The target and stop loss are calculated with definiteness. This approach does away with the subjective assessments. A retail trader may not necessarily have the resources to do fundamental research to identify the right asset. Mostly retail traders who do not use technical analysis typically go by perceptions in selecting stocks. Such an approach has its inherent unreliability. While in the case of technical analysis such subjectivity is ruled out. It permits a trader to work within boundaries of stop loss and target. It also permits a trader to take an informed decision based on the risk to reward ratio and absolute risk. While a chart may indicate a favourable

trade, yet the risk to reward ratio may not be acceptable to the trader, or even if the risk reward ratio looks good, yet the absolute risk may be beyond the threshold of the trader. In such case the trader uses her discretion to take or not take the trade.

The challenge of technical analysis is the availability of a wide variety of tools. Each of the tools has its own multiple parameters to choose. For example, the most widely used indicator is EMA. One can choose 5,8,20,26,44,50, 100 or even 200. The question is which one is the best! Finding that could be tough. Same is the case with MACD, RSI, CCI, MFI, Bollinger Band, and Super Trend etc. The other challenge is reliability of an indicator in a particular strategy. It takes deep study and understanding to find out the best fit parameter of an indicator in a particular strategy. Technical analysis has the ability to provide insight to a high probability trade. However, one needs to learn the usage of tools available in technical analysis and the risk associated with it before using it in the live market. This is a broad study on technical analysis. Some of the concepts are discussed in this article. There is vast scope to study further on each of the elements in greater details and its practical applicability in trading. Some of the elements which are not covered in this study are price action and Fibonacci concepts. Other areas to be investigated are trading strategies and automated algorithmic trading.

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