

Technical Analysis Indicators: Pathway towards Rewarding Journey

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ABSTRACT

Investment in stock market is rewarding but it comes with risks too. These risks are in the form of fluctuations in stock prices from time to time. Hence, in order to make appropriate investment decisions in respect of entry and exit into the stock market is concerned, this study focuses on applying and analysing some Technical Analysis Indicators on selected Indices and stocks of selected companies. The purpose of the paper is to review the evidence on the profitability of Technical Analysis Indicators. Researcher began by introducing the concept of Technical Analysis Indicators and their subdivision into Leading Indicators and Lagging Indicators. In this paper, researcher provides an analysis of various Indicators namely Moving Average, Relative Strength Index, Average Directional Index, Moving Average Convergence Divergence, Money Flow Index along with their application on stock charts of selected companies, NSE Nifty and Bank Nifty in order to get a more clear picture. Since, it is nearly impossible to make absolute predictions of stock markets in future, so this paper is an attempt to understand the concept of Technical Analysis Indicators as much as to make the profitable move in the stock market. Hence, researcher explored the potential prediction power of Technical Analysis Indicators in this research study. Researcher concluded thereby that Technical Analysis Indicators are one of the best ways to make rewarding investment decisions.

Keywords

Technical Analysis, Technical Analysis Indicators, Buy/Sell Signals, Stock

1. INTRODUCTION

Unlike Fundamental Analysts' who analyse the economy, industry and company to estimate the intrinsic value of company's share; Technical Analysts' emphasis on studying historical price movements to predict the future price behaviour. There are both the benefits and the limitations of using the Technical Analysis but certainly it gives us the new set of tools, indicators or skills that will enable us to be a better investor. So, Technical Analysis Indicators are part of the classical Technical Analysis and are much used to predict the market/price movements.

In this paper, researcher have endeavoured to give an insight into Technical Analysis Indicators as to how investor can strive to improve the success rate of increasing the profitability by taking right entry and exit positions into the stock market.

Technical Analysis does not provide us with definite answers as to this is the right or the wrong time to take an appropriate position into the market but surely it will act as a guide in improving trading capabilities to almost 80 % that means 8 out of 10 trades will be successful. Just as the weather forecasting can never be fully accurate; in the same way Technical Analysis can never give us truly accurate results. Researcher can just endeavour to make our success rate as high as possible by concentrating on improving the odds of making profitable trades.

So, whenever an investor attempts to trade in stock of a particular company, he comes across a lot of questions as to should he buy today or what will be the price tomorrow, next week, next year and finding an accurate answer to these questions is not only an arduous task but nearly impossible. Technical Analysis here attempts to help the investor to improve his trading capability. Had it been the case that such analysis would have given us completely accurate answers, each of them would have been able to draw profits each time they enter or exit the stock markets. Hence, Study of Technical Analysis Indicators supplements our idea of moving towards a rewarding journey when it comes to trading on stock markets/stocks.

The best decision to take Buy/Sell decision in the stock markets/stocks is to make one's own decisions by using Technical Analysis Indicators. There are majority of Indicators that are either oscillating or trending type. Trending Indicators are basically drawn on price charts like the Moving Averages and they are also Lagging Indicators as the Buy/Sell Signals generally lag the price action while Oscillating Indicators are usually plotted in different area like Relative Strength Index, Average Directional Index, Moving Average Convergence Divergence and their values fluctuate above and below a centre line or between an upper and lower level.

2. LITERATURE REVIEW

Frankel and Froot (1990) noted that market professionals tend to include Technical Analysis in forecasting the market. Wing-Keung Wong, Meher Manzur and Boon-

Kiat Chew (2002) article discussed that the helpful principle of Technical Analysis is to identify trends and then go with the trend whether it is occurring randomly or due to fundamental factors. They also discussed the techniques of moving averages and relative strength index (RSI) by applying it on Singapore stock exchanges. Their results showed that application of RSI is good if used in non-trending environment and the results indicate that using simple moving averages and 50 crossover method of RSI will provide good results excluding the transaction costs. Manuel Ammann, Matthias Rekaté and Rico Von Wyss The text of their article showed an outperformance of Technical Analysis. They argued that the extent of academic acceptance of using Technical Analysis is not so good as compared to its practical application and it has been said that Technical Analysis is combination of separate methods than a full proper system or method. The article also discussed that Technical Analysis is connected with the forces of demand and supply and sentiments in markets so it is very useful in short term also because Technical Indicators can be calculated and applied quickly whereas fundamental techniques may take days to apply. They also discussed simple moving average techniques, RSI and advance/decline ratios technique and applied it onto 18 stocks out of the Swiss Stock market and concluded that application of Technical Analysis including transaction costs provides results not more than a buy or hold strategy but advance/decline ratios are more helpful and successful even when transaction costs are taken into account. Kavajecz and Odders-White (2004) show that support and resistance levels coincide with peaks in depth on the limit order book 1 and moving average forecasts reveal information about the relative position of depth on the book. Treynor and Ferguson (1985) established the first theoretical model to apply Technical Analysis and model described that investors choose strategies to hold a security for a particular time period either long or short in order to get benefit from it later after they receive private information at particular point of time. The model concluded that this private information is helpful only with the combination of some additional or further information. Brown and Jennings (1989) in the article on outperformance of Technical Analysis said that portfolio strategies works so well when the market does not contain all relevant information and there are only few investors who are well aware of that information. William Brock, Josef Lakonishok and Blake LeBaron (1992) their article explored moving averages and support and resistance levels in order to find out generation of signals for the long and short time period and then to check high and low hits of prices. They argued that we cannot allow to leave those false patterns which are not covered by Technical Analysis tools and Techniques because it is very difficult to enquire too much about data but we can be able to reduce this problem either by providing full reporting of techniques used or by using a very long data and information. Paul A. Weller, Geoff C. Friesen and Lee M. Dunham (2007) the

text of their article explained the theoretical and empirical examination of price trends and patterns in Technical Analysis. Technical Analysis has been defined in the Article as to use information from the past price trends and movements which are then summarized into charts which then helps investors to predict price movements in future. Kadida Ramadhani & Shagilla Mashaushi (2006) the text of their article showed the analysis of technical trading strategies. In the 1980s, technical strategies have made a significant "come back" for predictions and it motivated researchers to reconsider Technical Analysis as well. Louis B. Mendelsohn argued that the technique used in trend forecasting is moving averages. It has its own strengths and weaknesses at smoothing the data and reducing the lag (when mathematical structure or in simple words averaging prices over a number of prior periods), have a tendency to follow the current market price) and this lag effect can become very prominent and costly in very fast moving markets where prices are rising and falling sharply, If this deficiency can be overcome in some way then this tool of moving averages could be ranked as the most effective trend identification indicator in the analysis of market but still despite of all its limitations Moving Average technique has still been used broadly because it has been recognized as an important quantitative trend reorganization technique and if investors are creating such strategies for forecasting trends that compares actual moving averages with predicted moving averages, then definitely investors will be able to get an early warning that there is an approaching change in trend direction.

3. OBJECTIVES OF THE STUDY

- To understand various Technical Analysis Indicators.
- To study the relevance of Technical Analysis Indicators in analysing the performance of Stock/Indices.
- To make interpretation as regards entry/exit into the stock/stock market.

4. RESEARCH METHODOLOGY

The research is primarily based on secondary sources that encompass various books, journals, websites, magazines, software, webinars, articles, company(s) database.

Data Collection

Researcher depicted the Indicators on Daily Candlestick Charts of NSE Nifty, Bank Nifty and Stocks of the following companies listed on Bombay Stock Exchange (BSE):-

- Sun Pharmaceuticals Industries Ltd
- Ranbaxy Laboratories Limited

– Tata Motors Limited

Research Design

Our study is descriptive as well as analytical in nature. Researcher has endeavoured to explain as to what are the Indicators and thereby analysed their impact to come out with the best decision.

Research Tool

In this study, researcher has incorporated Candlestick Charts that represents the element of candle in four portions namely Open-High-Low-Close (OHLC). Each candlestick data represent one period of data. In our case each candle represents data of a day. In some of the charts researcher has incorporated Volume too at the bottom.

Scope of the Study

In this study, researcher has selected the following Technical Analysis Indicators:-

- Moving Averages
- Relative Strength Index
- Average Directional Index
- Money Flow Index
- Moving Average Convergence Divergence

Each candlestick under study depicts the OHLC of the day.

Sample Size: In order to explain and analyse the above Indicators, the Sample Size consists of:-

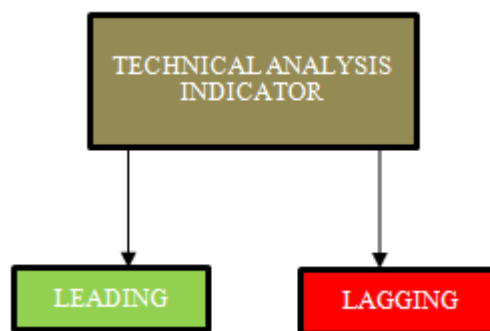
- NSE Nifty – To plot Relative Strength Index
- Bank Nifty - To plot Moving Averages
- Sun Pharmaceuticals Industries Ltd - To plot Average Directional Index
- Ranbaxy Laboratories Limited- To plot Money Flow Index
- Tata Motors Limited - To plot Moving Average Convergence Divergence

5. ANALYSIS OF THE STUDY

Fluctuations in stock markets has made imperative to understand the concept and application of Technical Analysis Indicator. Researcher hereby defined Technical Analysis Indicator as series of data points that are derived by applying a formula to the security's price and/or volume fields.

So researcher need the price data that is the OHLC (Open-High-Low-Close). A series of data points over a period of time is required to create valid reference points to enable technical analysis.

Technical Analysis Indicators is sub-divided into Leading Indicators and Lagging Indicators.



Leading Indicators: These indicators help in profit by predicting what prices will do next and thus provides greater rewards at the expense of increased risks. So such indicator precedes the price movements. They perform best in sideways or trading market. Such indicators typically work by measuring how overbought or oversold a security is because the security which is oversold will bounce back. Moving Average is a Lagging Indicator.

Lagging Indicators: Leading indicators do not warn of upcoming changes in price. It's a confirmation tool because it follows price movement. They simply tell what prices are doing (rising or falling) so that you invest accordingly and thus reducing the risk by keeping the investor on right side of market. Such indicators do not work well in sideways market. Average Directional Index, Relative Strength Index, Money Flow Index, Moving Average Convergence Divergence.

How to calculate the Technical Analysis Indicator depends upon what you want to calculate. It may be the momentum, strength, volume, trend, volatility and sentiments.

In this research, researcher has discussed selected Leading and Lagging Indicators in order to come out with profitable trades.

I. Moving Average (MA)

Moving Average refers to average price of a security at a given time.

Three types of Moving Averages:

- Simple Moving Average (SMA)
- Weighted Moving Average (WMA)
- Exponential Moving Average (EMA)

Simple Moving Average

It is calculated by adding the security's price for the most recent n time periods and then dividing by n. Like add the closing prices of a security for the most recent 20 days and then divide by 20.

SMA= Closing Price of n days/n days
See Figure 1 below 20 days SMA of Bank Nifty.



Fig. 1 Daily chart of Bank Nifty

Weighted Moving Average

This type of MA is much faster and much more reactive to the prices. It gives weight to recent price close than that of price close of 20 days back. Maximum weight to last day price and least weight to first day price i.e. 20 days back price. See Figure 2 below 20 days WMA of Bank Nifty.



Fig. 2 Daily chart of Bank Nifty

Exponential Moving Average

This type of MA is a midway between SMA and WMA. It is calculated by adding a percentage of yesterday's MA to a percentage of today's MA. In this way it put more emphasis on recent data. Though, calculation is very complicated but it's a good indicator and is widely used one. See Figure 3 below 20 days EMA of Bank Nifty.



Fig. 3 Daily chart of Bank Nifty

Features of MA:-

Lagging indicator- In Figure 4 with 20 day SMA, it can be seen, market bottoms out at A and prices starts to move up thereafter but MA turns from red to blue after a couple of bars at B. Similarly, at point C, market tops out and prices starts to fall thereafter but MA tends to fall after couple of bars. Hence, its a lagging indicator.



Fig. 4 Daily chart of Bank Nifty

- Defines the trend (Trend Indicator) – MA uses MA angle, MA>or <Price and Dual MA to confirm the trend.

-MA Angle (Fig. 5). Whenever the angle of MA goes up i.e. from A, its uptrend and when angle of the MA goes down i.e. from B its downtrend but the only caveat is, it tend to move up or down very fast in choppy market.

-Wait for closing price above or below the MA (Fig. 5). At C (Green Candlestick), prices tend to close above the MA. So this confirms the fact that Nifty has now moved into an uptrend. Reverse is when prices closes below MA i.e. At D (red candlestick). Again the caveat to this is in a range bound market, where a price closes above MA at E, and it us said there is an uptrend and after a couple of days it slip down again to confirm a downtrend. When trend is confirmed, and there is a strong down or uptrend, a simple calculation can give investor a lot of returns.

In the Figure 5 below, 20 day EMA is plotted.



Fig. 5 Daily chart of Bank Nifty

-Dual MA crossover.

In figure 6 below, MA of different timeframes is plotted. One is 20 day EMA and other is shorter time MA of 5 days. When Dual MA crossover, there is uptrend or downtrend. The faster MA i.e. 5 when crossover 20 from

above at A, markets are in a downtrend, it comes very close to it to give a positive crossover but never goes up. Now, when 5 cuts 20 from below at B, the trend is on upside and likely to extend on the upside. It can get investor in and out of the market when there are big trends.



Fig. 6 Daily chart of Bank Nifty

- Smoothen out daily price movement and thus removes choppiness in prices.

II. Relative Strength Index (RSI)

It is a strength indicator. It does not compare the relative strength of 2 securities but rather the internal strength of a single security as to the comparison of strength or momentum of price in current market situation relative to what it was 14 bars back. 14 day RSI is generally considered for calculation of RSI. RSI ranges between 0 and 100.



Fig. 7 Daily chart of NSE Nifty

Interpretation

In Figure 7 above, at the bottom of the chart, green line as RSI line and red line as the 9 day EMA of green line are plotted. Three horizontal lines at the bottom of the chart are drawn. At the top there is level 70, in the middle there is 50 and at the bottom there is 30.

- Overbought and oversold – It can be seen 70 as overbought level and 30 as oversold level. 2 dotted lines are drawn on top 70 and bottom 30. When green line touches 30 or below 30 mark, market is

oversold and chances of bounce back are very high. When green line goes above 70, lot of buying is there that means is RSI is overbought, and the markets are likely to consolidate or go range bound or likely to see trend reversal.

- Trading Signal – When RSI crosses above its own average or below, it tends to give signal on buy side or sell side. Investor will land up making many such trades, and almost more than 50% lead to whipsaws. So not a sound strategy to use. Now, one can use crossing of 50 point mark-ups also by drawing 50 level horizontal lines. When RSI crosses above 50, uptrend. When RSI crosses below 50, downtrend.
- Divergence – Divergences occur when price makes a new high (or low) that is not confirmed by new high (or low) in the RSI. Price usually correct and move in direction of RSI. A positive divergence occurs when price is making lower low and RSI higher low. So, not going in tandem with price. Positive Divergence comes after a fall and leads to trend reversal. Negative Divergence occurs when price tend to go up (higher high) but RSI tend to fall (Lower high). So, momentum is coming out of the market and markets are likely to come off in near future.

III. Average Directional Index (ADX)

ADX is used to measure strength or weakness of trend and not the actual direction. If ADX is falling, trend of price is weak. If ADX is going up, it does not means prices are going up but trend of prices is strong. Directional movement is defined by +Di and -DI. +Di and -DI represent a group of directional movement indicator that form a trading system developed by Welles Wilder. Wilder suggested that a strong trend is present when ADX is above level 25 and no trend when below level 20.



Fig. 8 Daily chart of Sun Pharmaceuticals Industries Ltd.

Interpretation

- In figure 8 above, at the bottom of the chart, three lines are plotted - green line, red line and in between there is much smoother blue line.

- Green is +DI, red is -DI, blue is ADX line and dark horizontal level drawn is 25.
- Direction of trend is given by combination of green and red line while blue tells whether direction has strength in it or weak.
- If green cuts red from below at A, at this is positive indication and that the trend is likely to go up.
- If blue moves above 25, it indicates that strength of trend is very strong that is green was above red and it was uptrend which is a strong one.
- Now, as can be seen, green cuts red from below at B; prices does not extend the way it extended in our previous case which means direction is alright but there is not much strength in underlying trend so it may not give windfall profits that one might look into. As blue line is significantly below 20 and stays below 20 price go range bound and finally fell.

IV. Money Flow Index (MFI)

It is an oscillator that uses both price and volume to measure buying and selling pressure. It measures the strength of the money flowing in and out of a security. Also known as Volume Weighted RSI. MFI starts with typical price for each period. Money Flow is positive when typical price rises (buying pressure) and negative when the typical price declines (selling pressure). A ratio of positive and negative Money Flow is then plugged into an RSI formula to create an oscillator that moves between 0 and 100. Failure swings at level 80 or 20 reversals. We will look for market tops to occur when the MFI is above 80 and we will look for market bottoms to occur when the MFI is below 20.

There are basically two Buy/Sell Signals namely: Overbought/Oversold, Bull/Bear Divergence



Fig. 9 Daily chart of Ranbaxy Laboratories Limited (Ranbaxy)

Interpretation

In the above Figure 9, blue line as the MFI line at the bottom of the price chart is plotted.

- Overbought/Oversold levels – Whenever MFI reaches overbought or oversold levels at A and B

respectively, one can expect some amount of selling or buying respectively.

- Bear/Bull Divergence – Ranbaxy price is making higher high while MFI is making lower high as you can see in the above diagram. So this is a negative or bearish divergence. It can be said probably money is going out of the stock and it can lead to reversal of trend. Also, there is a positive or bullish divergence as well when price fall but MFI slowly goes up. This means as stock is going cheaper, more money is getting into the stock and this can lead to reversal on the upside. Such Divergence provides leading indications of reversal of trend that followed.

V. Moving Average Convergence Divergence (MACD)

MACD is developed by Gerald Apple. It is a trend following momentum indicator that shows relationship between two Moving Averages of prices.

The MACD is a difference between a 26 day and 12 day EMA. A 9 day EMA called the Signal Line, is plotted on the top of the MACD to show Buy/Sell Signals.

There are 3 ways to use MACD for Buy/Sell Signals namely:-

- Crossover
- Overbought/Oversold
- Divergence



Fig. 10 Daily chart of Tata Motors Limited

Interpretation

In the above Figure 10, MACD which is the blue line and red line, the Signal Line at the bottom of the price chart are plotted. In the top part, blue line as 12 day EMA and green line as 26 day EMA are plotted.

- Crossover – These are used to trigger Buy/Sell Signals. At A, 12 is cutting the 26 from below (crossover) and it goes up and this positive difference between 12 and 26 is the MACD line which can be seen at the bottom of the chart. At the

crossover, MACD is at zero. Now, if one trades the crossover of two MA's, buy signal comes at A, however the crossover of MACD and signal line gives a buy signal at B. So, MACD gives signal way before and hence a smarter indicator. It is also popular to buy/sell when MACD goes above/below zero line.

- Overbought/Oversold – When shorter MA pulls away dramatically from longer MA (i.e. MACD rises), it is likely that security price is over extending and will soon return to more realistic levels.

Divergence – An indication that end to the current trend may be near occurs when MACD diverges from security. A bullish divergence occurs when MACD is making new high while prices fail to reach new high. A bearish divergence occurs when MACD reaches new lows while prices fail to reach new lows.

8. CONCLUSION

Technical Analysis is a widely used approach to trade in stock markets/stock of companies. By concentrating the research on Technical Analysis Indicators, researcher has attempted to increase the awareness and use of Technical Analysis Indicators and finally improving the results, thereby, making profitable trades. Often, researcher found various investors using Technical Analysis Indicators and thereby following Buy/Sell signals. Thus, Indicators aid in Technical Analysis of trends and making the right decisions. Efforts should be made to improve the odds of making profitable trades.

Though there are certain limitations of using Technical Analysis Indicators in the sense that it is necessary to know the prior trend, being a mathematical formula it's a tedious task, cannot be used standalone, can give False Signals yet the investor can find out the most appropriate turning points in the market once he is able to forecast the direction of trend and the movements in the stock prices and as a result investors can easily identify the entering and leaving time into the stock market. So, it is basically just a matter of taking initiative in understanding the relevance of Technical Analysis Indicators as it is one of the best ways to reach to rewarding decisions.

Thus, several Technical Analysis Indicators do provide incremental information and may have some practical value. The adherents of Technical Analysis claim that unusual profit can be achieved by studying and applying the Technical Analysis Indicators to the past security prices. This approach if by no means infallible, but a careful, patient, and objective use of such Indicators can put the odds of success very much in favour of the investor.

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