International Journal of Research Publication and Reviews

Applying Technical Approaches: RSI, Moving Average, and Rate of Change to Examine Stocks in the IT Sector

Dr. Madhvi Kush

Assistant Professor, Tilak Raj Chadha Institute of Mgt. and Tech., Yamuna Nagar, Haryana

ABSTRACT:

This paper provides a brief introduction to Technical Analysis, which involves predicting the future price of shares based on historical data related to price and volume, using tools such as charts to identify trading volume, price movements, and Buy/Sell patterns. The aim is to identify different price patterns and trends in financial markets and take advantage of them. The primary objective is to introduce a structured approach to market analysis to quickly assess the market from top to bottom and determine the appropriate actions. The purpose of the study is to analyze the technical analysis of top IT sector companies such as TCS, Infosys, and Wipro, using secondary data collected from the National Stock Exchange, particularly the closing prices of scripts. The analysis is based on technical tools such as Moving Average, Relative Strength Index, and Rate of Change, which are inferred based on chart patterns formed to help investors make a conclusion on whether or not to invest in these stocks. The paper includes elementary statistics used in calculations to draw inferences.

Keywords: *Stock market, Technical analysis, IT sector, financial market, Rate of change, Relative strength index*

Introduction:

Technical analysis is a financial technique that uses past market data, primarily price and volume, to forecast the future direction of security prices. Its primary tool is the chart, and it focuses solely on the price behavior of the market or instrument, assuming that price reflects all relevant factors before an investor becomes aware of them through other channels. Although there are some universal principles and rules, technical analysis is more of an art form than a science, subject to interpretation and flexible in its approach. Developing a style takes time, effort, and dedication, but the rewards can be significant. Technical analysis is the systematic study of charts of the past price actions of a particular item with the aim of ascertaining its expected future behavior, understanding the underlying pressures of buying and selling for a given script or market, and answering whether to BUY, SELL, HOLD, or IGNORE. It deals in probabilities, not certainties, and provides entry and exit points and expected prices in the next week, month, and year. Technical analysis has gained popularity in recent years as more people believe that the historical performance of a stock is a strong indication of future performance. It differs from fundamental analysis, which compares fiscal data from previous quarters and years to determine future growth, by believing that securities move according to predictable trends and patterns that continue until something changes the trend. Until then, price levels are predictable.

Importance:

The importance of technical analysis includes the ability to identify the current trend and detect any trend reversal as early as possible.

It involves analyzing historical price and volume data with the help of charts. While such data is usually available for currencies, shares, and commodities traded on exchanges, it may not be available for the interbank currency market, where analysts use different indicators derived from the price data.

These indicators have become so popular that they are now used extensively for financial assets and instruments traded on exchanges. Technical analysis is more reliable in broad and very liquid markets than in thin and shallow markets.

It also helps to judge the emotional state of the market, as the market has its own collective consciousness that is distinct from the individual consciousness of the participants.

Methods/Indicator used:

RSI

In June 1978, Welles Wilder published an article in Commodities Magazine (now known as Futures Magazine) introducing the Relative Strength Index (RSI), which has since become a highly useful and widely used momentum oscillator. This oscillator measures the magnitude of a stock's recent losses

and converts this data into a value that ranges from 0 to 100. The name "Relative Strength Index" is somewhat misleading, as it does not compare the strength of two different securities, but instead the internal strength of a single security. A more appropriate name might be the "Internal Strength Index".

The RSI calculation is based on the formula:

RSI = 100 – 100/1+RS, where RS is calculated as the average gain divided by the average loss. The number of RSI periods, denoted by n, can vary according to the technical analyst's preference and the trading timeframe adopted in a particular stock market.

RSI can be calculated for different periods, such as 5, 7, 9, and 14 days, and a longer period for calculation may reduce the possibility of incorrect signals. The RSI can help predict a reactionary sustained rise or fall in the price of a security.

The Relative Strength Index (RSI) is a momentum oscillator that has a range of 0 to 100 and is used to track price movements. Traders often use a technique of analyzing the RSI, looking for a divergence between the security's new high and the RSI's failure to surpass its previous high, which can indicate a forthcoming reversal. This reversal is confirmed when the RSI turns down and falls below its most recent trough, completing a "failure swing." The RSI measures the ratio of up-moves to down-moves and normalizes the calculation so that the index falls within the 0-100 range. If the RSI is 70 or higher, the instrument is assumed to be overbought, indicating that prices have risen more than expected. Conversely, an RSI of 30 or less signals that the instrument may be oversold, indicating that prices have fallen more than expected. In short, the RSI compares a stock's recent gains to its recent losses and produces a number between 0 and 100.

Moving Average:

Traders often struggle to discern a security's overall trend due to the variability in price movement displayed by most chart patterns. To address this issue, traders often apply moving averages to their analysis. Moving averages represent the average price of a security over a specified time frame, smoothing the data and making trends easier to identify, particularly in volatile markets. The two most popular types of moving averages are the Simple Moving Average (SMA) and the Exponential Moving Average (EMA).

A Simple Moving Average is calculated by finding the average price of a security over a specified number of periods. For instance, a 5-day moving average is calculated by adding the closing prices of the last five days and dividing the total by five. On the other hand, an Exponential Moving Average is calculated by assigning weight to recent price changes. The formula for EMA involves subtracting the previous EMA from the current price and multiplying the result by an exponent and the previous EMA. The smoothing constant for EMA is calculated using the formula $K = 2 / (1 + N)$, where N represents the number of periods for EMA.

It is worth noting that the weakness of moving average buy and sell systems is that they may become unprofitable when a stock or index begins moving sideways in a narrow trading range. Under such circumstances, prices do not move far enough above or below the average to be profitable.

Rate of Change:

The rate of change indicator (ROC), also known as the price rate of change indicator (PROC), is a technical oscillator based on price that appears in a separate sub-window. It is considered a momentum oscillator that measures the percentage change in price between the current price and the price n periods in the past. The ROC formula is calculated by taking the most recent closing price minus the closing price n periods ago, divided by the closing price n periods ago, then multiplied by 100. The ROC oscillator moves around the 0-line with some smoothing, oscillating between positive and negative. When momentum increases, the ROC moves from negative to above the 0-line, while when momentum decreases, the ROC moves from positive and above the 0-line to negative. Like other momentum oscillators, the ROC is displayed on a chart in a separate window below the price chart, plotted against a zero line that distinguishes positive and negative values. Positive values indicate upward buying pressure or momentum, while negative values below zero indicate selling pressure or downward momentum. Rising values in either direction, positive or negative, indicate increasing momentum, while falling values indicate decreasing momentum. The ROC can also be used to indicate overbought or oversold conditions for a security. Positive values

above 30 are generally interpreted as indicating overbought conditions, while negative values below -30 indicate oversold conditions. One potential issue with using the ROC is that it gives equal weight to the most recent price and the price from n periods ago, even though most technical analysts consider more recent price action to be more important in determining future price movement.

There are several issues and challenges to be addressed, including the lack of consideration for industry-specific factors, competition among all players, quality of management, disregard for monetary policy and inflation, neglect of business cycles and economic/political systems, overlooking demand and market position, ignoring the future prospects of three specific stocks, neglecting qualitative factors, and not utilizing fundamental analysis.

Several obstacles need to be overcome, such as the failure to factor in industry-specific conditions, treating all players as competitors, assessing management quality, ignoring monetary policy and inflation, disregarding business cycles and economic/political systems, neglecting demand and market position, overlooking the future prospects of three specific stocks, ignoring qualitative factors, and not utilizing fundamental analysis.

The analysis faces a range of issues and challenges, such as not taking industry-specific factors into account, treating all players as competitors, evaluating management quality, disregarding monetary policy and inflation, neglecting business cycles and economic/political systems, overlooking demand and market position, ignoring the future prospects of three specific stocks, neglecting qualitative factors, and failing to use fundamental analysis.

Analysis: Wipro

Source: Trading view

Interpretation:

The Moving Average chart features a violet line that represents the 5-day Simple Moving Average (SMA), which is currently above the price, a green line that represents the 50-day SMA, which is below the price, and a black line that represents the 200-day SMA, which is above the price.

• In the Relative Strength Index chart, the RSI level is indicated by a red line. Currently, the RSI level is 50.51 and trending upwards.

• The Rate of Change chart features a blue line that represents the overbought and oversold level. According to the chart, the rate of change is -1.52 and trending downwards.

In the Moving Average chart, the violet line denotes the 5-day Simple Moving Average (SMA), which currently sits above the price, while the green line represents the 50-day SMA, which is located below the price, and the black line represents the 200-day SMA, which sits above the price.

• The Relative Strength Index chart uses a red line to indicate the RSI level, which currently stands at 50.51 and is on the rise.

• The Rate of Change chart features a blue line that indicates the overbought and oversold level, with the rate of change currently sitting at -1.52 and trending downwards.

In the Moving Average chart, the 5-day Simple Moving Average (SMA) is represented by a violet line that currently appears above the price, while the 50-day SMA is depicted by a green line that sits below the price, and the 200-day SMA is shown as a black line that appears above the price.

• The Relative Strength Index chart features a red line that displays the current RSI level, which stands at 50.51 and is moving upwards.

• The Rate of Change chart includes a blue line that illustrates the overbought and oversold level, with the rate of change currently at -1.52 and moving downwards, according to the chart.

Wipro:

Source: Trading view

The Moving Average chart displays a violet line that represents the 5-day Simple Moving Average (SMA), which currently appears above the price, a green line that represents the 50-day SMA, which is also above the price, and a black line that represents the 200-day SMA, which also appears above the price.

• In the Relative Strength Index chart, the RSI level is indicated by a red line. Currently, the RSI level is 44.61 and trending upwards.

• The Rate of Change chart features a blue line that represents the overbought and oversold level, with the rate of change currently at 0.77 and moving upwards, according to the chart.

The Moving Average chart shows a violet line that denotes the 5-day Simple Moving Average (SMA), which currently appears above the price, while the green line represents the 50-day SMA, which is also above the price, and the black line represents the 200-day SMA, which sits above the price as well.

• The Relative Strength Index chart features a red line that displays the current RSI level, which is 44.61 and moving upwards.

• In the Rate of Change chart, a blue line represents the overbought and oversold level, with the rate of change currently at 0.77 and trending upwards, according to the chart.

According to the Moving Average chart, the violet line represents the 5-day Simple Moving Average (SMA) and is currently above the price, while the green line represents the 50-day SMA, which is also above the price, and the black line represents the 200-day SMA, which appears above the price.

• The Relative Strength Index chart displays the RSI level using a red line, which currently stands at 44.61 and is on the rise.

• The Rate of Change chart features a blue line that shows the overbought and oversold level, with the rate of change currently sitting at 0.77 and trending upwards, as per the chart.

TCS:

Source: Trading view

Interpretation:

Average (SMA), which currently appears below the price, while the green line represents the 50-day SMA, which is also below the price, and the black line represents the 200-day SMA, which appears above the price.

• The Relative Strength Index chart features a red line that indicates the current RSI level, which is 56.08 and moving upwards.

• In the Rate of Change chart, a blue line represents the overbought and oversold level, with the rate of change currently at 2.08 and trending downwards, according to the chart.

According to the Moving Average chart, the violet line represents the 5-day Simple Moving Average (SMA) and is currently below the price, while the green line represents the 50-day SMA, which is also below the price, and the black line represents the 200-day SMA, which appears above the price.

• The Relative Strength Index chart displays the RSI level using a red line, which currently stands at 56.08 and is trending upwards.

• The Rate of Change chart features a blue line that shows the overbought and oversold level, with the rate of change currently at 2.08 and moving downwards, according to the chart.

Conclusion:

The RSI for Infosys is indicating a sell signal, but the 5-day, 50-day, and 200-day Simple Moving Averages (SMA) are showing a buy signal, so it is recommended to avoid the stock. The RSI for TCS is also indicating a sell signal, but the 5-day, 50-day, and 200-day SMAs are giving a buy signal, so it is suggested to avoid the stock. For Wipro, both the RSI and Rate of Change (ROC) are giving a sell signal, but the 5-day, 50-day, and 200-day SMAs are indicating a buy signal, so it is recommended to avoid the stock. According to the analysis, the RSI signals for Infosys, TCS, and Wipro are all indicating a sell signal, while the 5-day, 50-day, and 200-day Simple Moving Averages (SMA) are all showing a buy signal. Based on this information, it is suggested to avoid investing in these stocks. The RSI of Infosys, TCS, and Wipro are all indicating a sell signal, but the 5-day, 50-day, and 200-day Simple Moving Averages (SMA) are all giving a buy signal. Therefore, it is advised to avoid these stocks based on this conflicting signal.

References:

Beaupain, R., Meng, L., & Belair, R. (2010). The Impact of Volatility on the Implementation of RSI. Insurance Markets and Companies: Analyses and Actuarial Computations, 1(3), 73-78.

Taran-Morosan, A. (2011). The Relative Strength Index Revisited. African Journal of Business Management, 5(14), 5855-5862.

Baral, R., & Chintu, A. K. (2013). Study of Technical Analysis for Finding Buying and Selling Signal in Stock Market Through Technical Indicators. International Journal of Entrepreneurship & Business Environment Perspectives, 2(1), 288-296.

Chong, T. T. L., Ng, W. K., & Liew, V. K. S. (2014). Revisiting the Performance of MACD and RSI Oscillators. Journal of Risk and Financial Management, 7, 1-12.

William, Jhon, Vimala (2015), A Study on Equity Share Price Volatility Of Selected Private Banks In (Nse) Stock Exchange, International Journal of Research in Applied, Natural and Social Sciences, Vol. 3(7), Jul 2015, 87-96

Sailendra, Baggam and Subramanian T (2015), A Study on the Technical Analysis of Share Price Movements of Banking Sector with Special Reference to NSE, Transactions on Engineering and Sciences, Vol.3(5), July-September 2015

Soudhi, Amanjot and Simran, Waraich (2016), Fundamental Analysis of Selected Public and Private Sector Banks in India, NMIMS Management Review Volume XXVIII January-February 2016

Undavia, Milan (2016) Fundamental Analysis of Selected Public and Private Sector Banks in India, Indian Journal of Research, Vol. 5(11) November-2016