ANALYTICAL ARTICLE

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Technical Analysis as a Tool to Predict Stock Behaviour - A Study of BSE FMCG Stocks

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Abstract

Stock market is a place which decides the liquidity of a security by offering trading facilities. The price behaviour of stocks reflects the movements in their respective sector or company. The technical analysis, as a tool, offers insight into the price movements of these securities and tries to forecast the future price trends by using various tool like RSI, MACD, EMA etc. These trends can be for short or long term. The paper attempts to analyze and forecast the price movements of certain FMCG sector companies which are a part of Sensex with the help of various technical analysis tools. The paper also attempts to take an insight into the power of these tools to predict the stock prices under various conditions.

Keywords: EMA, SEMA, LEMA, RSI, MACD, Signal Line, Exponential Averages

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Introduction

Any rally in the stock market is based on the forces of demand and supply. This demand and supply of stocks depends upon various factors which may be categorized as macroeconomic and micro economic. Technical analysis helps in analyzing these price trends. It is a technique which believes that by analyzing past trends we can predict future performance of the stock price. It uses the information of price movements of stock, its trading volume and the market scenario to predict the stock price. The technique of technical analysis revolves around three assumptions:

a. The market discounts everything.
b. Price moves in trends.
c. History repeats itself.

Technical analysis predicts the prices through four dimensions namely Price of security - which reflects the attitude level of investors; Volume – which reflects the intensity of changes in investors' attitude; Time – which reflects the length of the movement cycles; and Breadth which shows the deepness and intensity of the investors' emotions. It uses various tools, also known as market indicators, to determine where market is headed and uses these indicators to determine the point of buying or selling.

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Literature Review

Technical analysis and its tools are being widely used for stock analysis for more than five decades. Various studies have been done to cover technical analysis from various dimensions. Separate studies have been conducted on analyzing the use and impact of its various tools and techniques. Osler & Chang (1995) did their research work to analyse the impact of technical analysis through 'Head & Shoulder' chart pattern and found out that this chart gives partial fruitful predictions. William Brock, Josef Lakonishok and Blake Le Baron (1992) used technical analysis through moving average and

support & resistance levels to find out generation of signals and found that 'buy' signals are more useful and accurate as compared to 'sell' signals. Mishra (2016) used technical analysis to explain the concept of risk premium for investment in equity markets. He advised that traders, retail investors and fund managers can rely on technical analysis for formulating trading strategies. Mahajan (2015) in his study used RSI & MACD as a tool of technical analysis and concluded that optimized MACD & RSI defy efficient market hypothesis and can be used for generating profitable investment strategies. Valamathi & Kowsalya (2016) in their study on use of technical analysis in IT sector found out that tools like RSI & EMA are very useful in anticipating market trends and advised that short term investors can rely on technical charts for taking investment decisions as they hold good for short term investment decisions. Sudheer (2015) in his study on technical analysis concluded that technical analysis should be used at right time to generate profits in all conditions of market i.e. bull or bear. Knowledge of tools of technical analysis to the investors can guide them through all times to earn a good return on their investments.

Research Methodology

The study aims to analyze the price movements of selected FMCG companies and to find out the various signal points of buying & selling with the help of various technical signal points of buying & selling with the help of various technical analysis tools like MACD, RSI & Moving averages. An attempt will also be made to check the efficiency of these indicators in providing an insight into the future price movements of concerned shares.

In particular, three companies, namely Hindustan Unilever Ltd, Nestle India Ltd and ITC Ltd have been selected for the study as they are the representative of FMCG sector in Sensex. These are the leaders in their sector and owns a major market share. Data related to these three companies have been taken for the official website of BSE for the period ranging from April 2018 to September 2021. The technical tools will generate sufficiently accurate results over the data of such time range. For the analysis of their trends and for predicting the behaviour of the prices of these companies, following tools have been acted upon:

Moving Average Convergence Divergence (MACD):

It is a technical indicator that predicts future stock movements based on the difference between short and long term price patterns. The difference between the 26-day and 12-day exponential moving averages is presented as a signal to trigger buy and sell signals. When MACD is above 0, it indicates upward momentum, and when it is below 0, it indicates downward momentum. When calculating EMAs, the most recent price data is given more weight than earlier data. The MACD is calculated using the following equation:

Exponential Moving Average = Exponent * (Closing Price – Previous EMA) + Previous EMA
Where in, Exponent = (2/ (Time Period + 1))

Relative Strength Index (RSI):

The RSI measures the speed with which a trend changes. The magnitude of price swings in the underlying securities or index is reflected in the upward or downward movement in the value of RSI. The most basic application of the RSI is to detect overbought and oversold signals in any index or stock. Oversold is defined as a movement of less than 30 points, while overbought is defined as a movement of more than 70 points. The movement of the RSI around the 30 level is regarded as a signal for bullish movement, whilst the movement of the RSI around the 70 level is regarded as a negative trend setup. The main calculation is based on the average price for the previous 14 days, while shorter days can be used to produce faster and steeper RSI fluctuations.

The basis equation of RSI to be used is
100- (100/ (1+RS))

Where in, RS = Average of X days up close / Average of X days down close

The RS values are smoothed using the following step:

((Previous Average Gain or Loss * 13) + Current Gain or Loss) / 14

Data Analysis and Interpretation

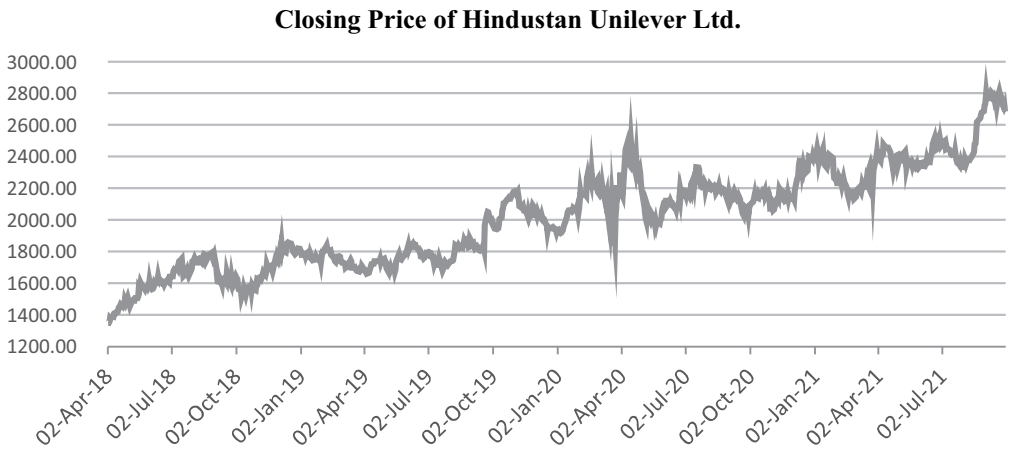
Moving Average Convergence Divergence (MACD):

Difference between Short Term Exponential Moving Average (12 Days SEMA) and Long Term Exponential Moving Average (26 Days LEMA) have been calculated to get MACD. Also, nine-day signal line has been plotted from MACD to discover the price trend. There can be four conditions depicting the concept of SEMA, LEMA and MACD. These are:

a) When MACD crosses over zero line, it shows that SEMA has crossed LEMA.
b) Prices will move in the direction of crossover of zero line.
c) MACD in positive side indicates rising price trend.
d) Negative value of MACD shows SEMA below LEMA and a declining price trend.

We can now analyze the stock price behaviour and signaling of future price trend of the mentioned three companies.

Graph 1: Closing Price of HUL

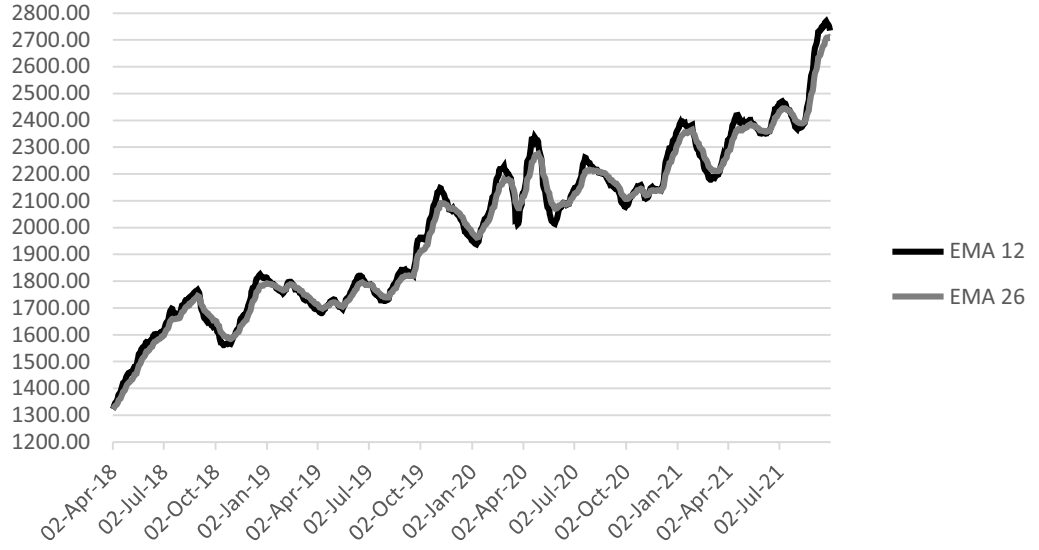


Source: Author's compilation

Hindustan Unilever Ltd.:

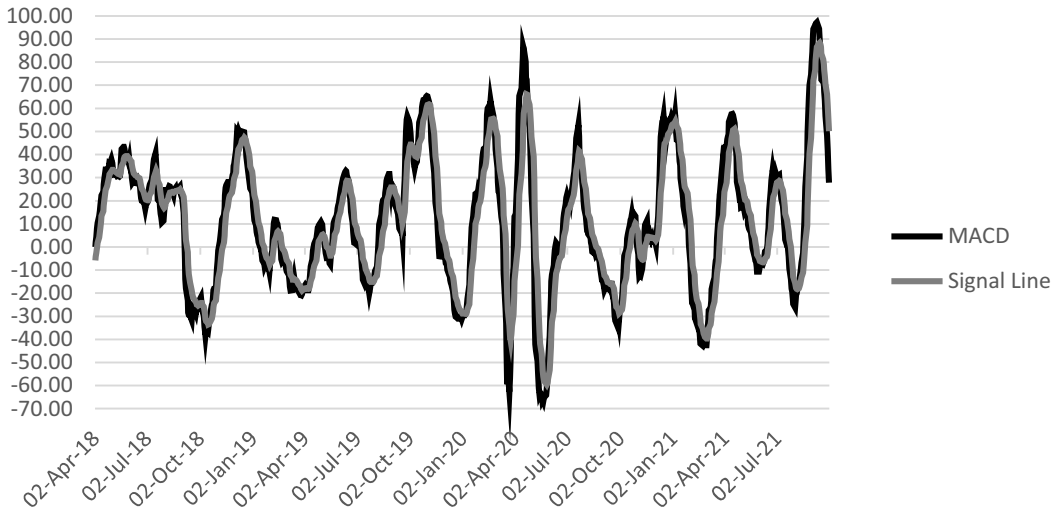
Graph 2 shows LEMA & SEMA and Graph 3 MACD with its 9-day signal line. From graph 3, it is observed that MACD generated a downfall signal in the stock price of HUL on 29th August, 2018 and entered into the negative zone on 5th Sep, 2018. During this period, SEMA was observed below LEMA (graph 2). A look at the closing price will reveal that it also started sliding down during this period. A closer observation of movement of closing price of HUL (graph 1), SEMA & LEMA movement (graph 2) and MACD with signal line (graph 3) will reveal that fall signals were generated in advance by these technical indicators. However, the signals generated by MACD were more precise and early. Similar movements were observed on 26th March, 2020 when MACD started reversal from negative zone towards positive zone. The signal line crossed the MACD from below to set the positive trend. During this time SEMA also intersected LEMA from below. This trend was again reversed at the end of April 2020 as the MACD line was intersected by signal line to drag it towards negative zone and also the SEMA was below LEMA for next one month. During this period, downward trend was observed in stock price. Similar rhythmic movements were observed all through the period of study which shows that MACD and Exponential Averages were able to generate advance signal of price movements.

Graph 2: Exponential Moving Averages for 12 & 26 Days for HUL Ltd



Source: Author's compilation

Graph 3: MACD with Signal Line for HUL Ltd



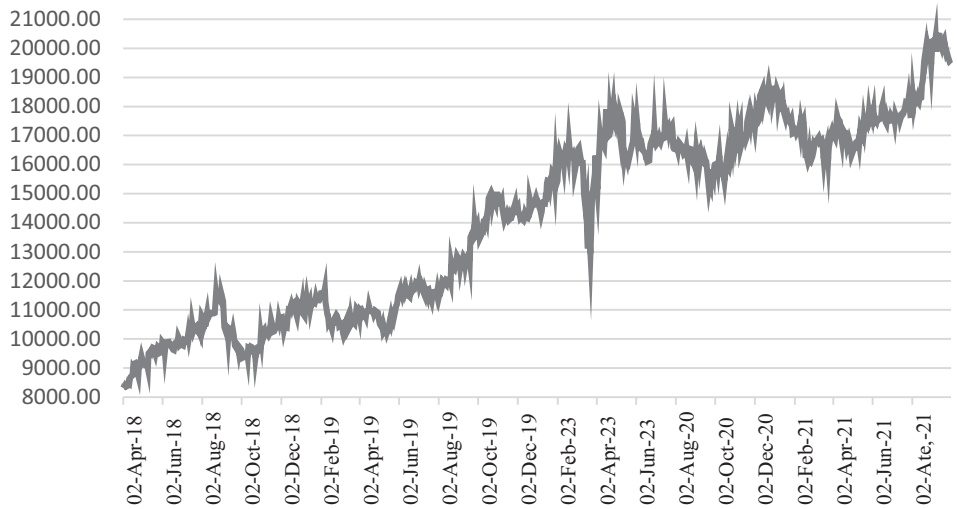
Source: Author's compilation

Nestle India Ltd.:

Graph 6 shows the signal line with MACD. From the graph 6, it is evident that MACD generated a downfall indication on 28th August 2018 and signal line intersected it from upward. This trend is also depicted from the exponential averages as SEMA slides below LEMA. This downward slide in stock price is confirmed by the price movement as it continued to be in negative zone for about four weeks. The reversal trend was observed in MACD in the first week of October 2018 wherein signal line intersected MACD from below setting a rising trend. During this period SEMA prevailed over LEMA (Graph 5). This trend is confirmed by the upward price movement till first week of February 2019. Another signal was generated by MACD on 19th February 2020 depicting a downward movement. Later on, exponential averages also generated same signal as SEMA intersected LEMA from above and slide below LEMA. This price movement is confirmed by the stock price of Nestle India Ltd. which showed a downfall in prices for about a month. Many similar movements in prices were identified in advance by these technical analysis tools during the period of study which can

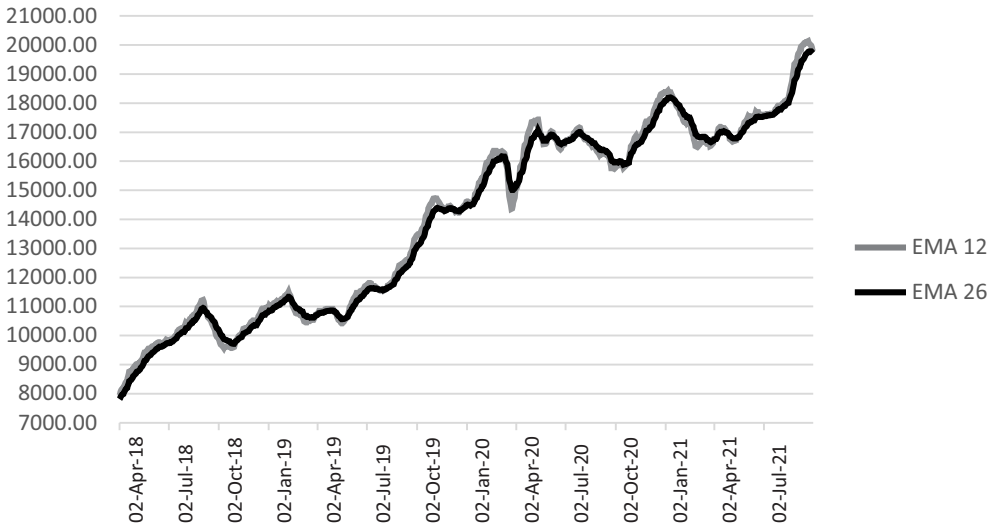
be used as an early warning for investment management.

Graph 4: Closing Price of Nestle India Ltd.



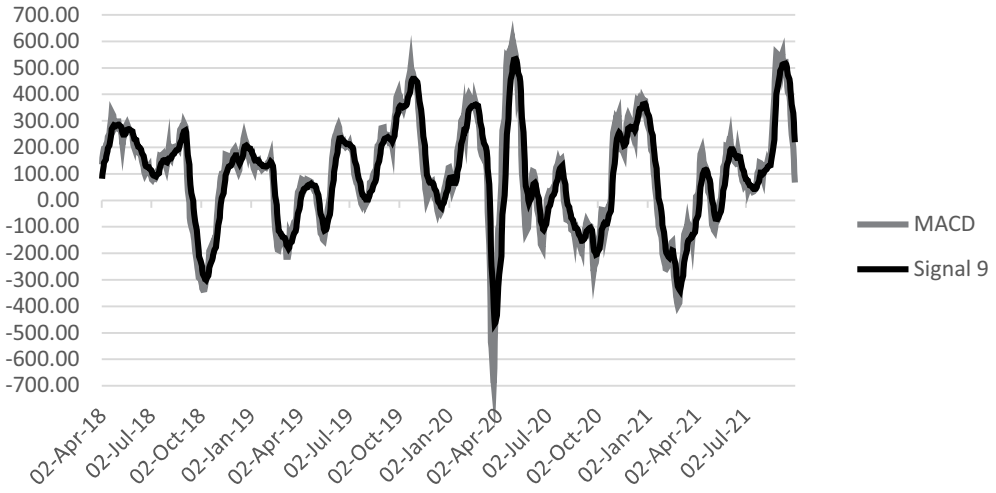
Source: Author's compilation

Graph 5: Exponential Moving Averages for 12 & 26 Days for Nestle India Ltd.



Source: Author's compilation

Graph 6: MACD with Signal Line for Nestle India Ltd.

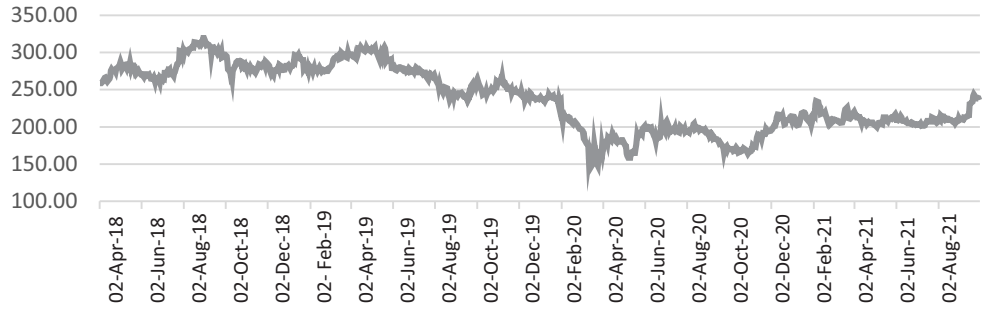


Source: Author's compilation

ITC Ltd.:

From the graph 9, it can be observed that MACD and signal line has been in negative zone for most of the time. It has followed a zig-zag movement and the stock prices have been sailing on a lower note. If we go through the graph, we will observe that MACD with its signal line has generated adequate signals beforehand indicating future price movements. A signal was generated on 2nd July, 2018 wherein signal line intersected MACD from below setting an upward price trend. During this period SEMA also prevailed over LEMA (Graph 8) and the stock prices were on an increasing trend for about six weeks (Graph 7). The trend reversed by the end of Aug 2018 of which signal was generated in advance when signal line intersected MACD from above. Exponential averages also generated same signal, although they were slightly late in generating signals. Similar downward signal was generated on 28th Jan 2020 by MACD and signal line predicting stock price falling which appeared to be true as prices fell to a new low from 1st Feb 2020 and lost about 33% by the mid of March 2020. During this period, SEMA also prevailed below LEMA. However, reversing trend was set in March 2020 end when signal line cut from below the MACD line on 26th March 2020. This is also depicted by the exponential averages as SEMA intersected above LEMA on 30th March 2020 (Graph 8). The stock price trend also confirmed the prediction and moved upward (Graph 7). Thus, adequate warning signals were generated through these tools for the stock prices of ITC Ltd.

Graph 7: Closing Price of ITC Ltd.



Source: Author's compilation

Graph 8: Exponential Moving Averages for 12 & 26 Days for ITC Ltd.

Source: Author's compilation

Graph 9: MACD with Signal Line for ITC Ltd.

Source: Author's compilation

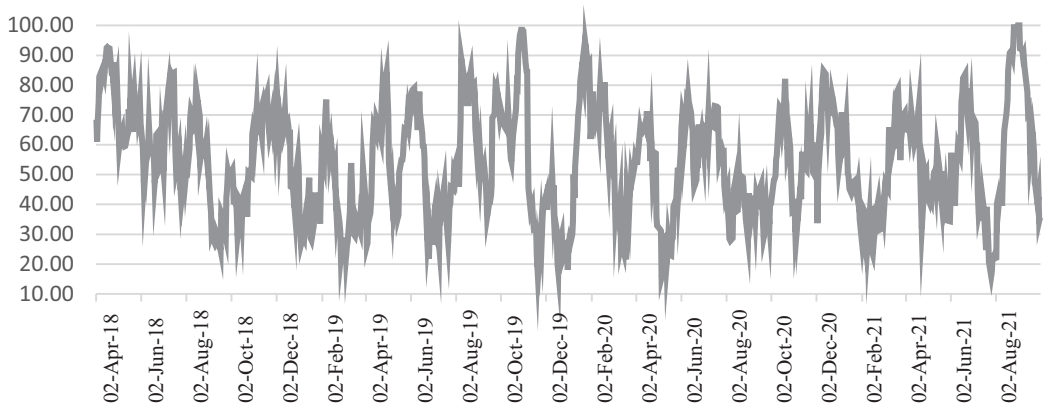
Relative Strength Index (RSI):

Developed by J. Welles Wilder, RSI comes under the category of momentum oscillator which reflects the condition of stock prices as a result of oversold or overbought. It ranges between 0 to 100, below 30 being oversold condition, which generally an indication of price rise and above 70, being the condition of overbought anticipating a downfall in prices of stock. Keeping these conditions in mind, we can now analyze the RSI for the selected three companies.

Hindustan Unilever Ltd.:

From graph 10, it can be observed that the price movement of HUL have been quite volatile during study period. The RSI has oscillated on both the side frequently. Graph 10 revealed that RSI value was below 30 on 24th Sep 2018 immediately after which the stock prices of HUL jumped up for next one week. The reversal trend was observed in Feb 2019 when HUL stock prices crossed the overbought mark of 70. Similarly, when RSI was nearing 100 mark on 1st Nov, 2019, a fall signal was generated and the fall in the stock prices for next eight weeks confirmed that RSI generated advanced signals. Prior indications were similarly generated for remaining period of study indicating an early warning for detecting futuristic price movement of the stock.

Graph 10: Relative Strength Index Values of HUL

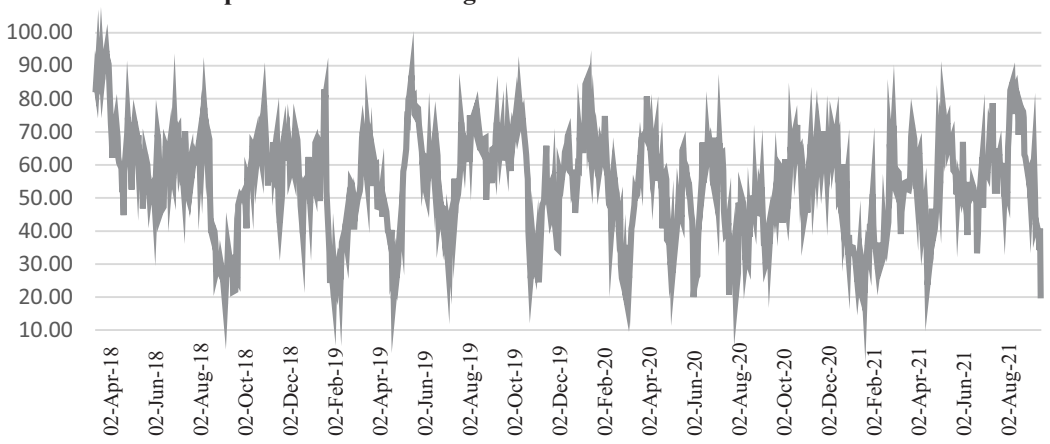


Source: Author's compilation

Nestle India Ltd.:

From graph 11 of RSI for Nestle India Ltd., it can be observed that it has been around overbought (70) mark for most of the time. This shows that these stocks are in high demand. The RSI went below 20 mark on 24th Sep, 2018 indicating a rise in stock price and there was a rise in the stock price of about 21% till the first week of Feb 2019. Similar zig-zag movements were observed throughout the study period and RSI have generated advance signal almost every time.

Graph 11: Relative Strength Index Values of Nestle India Ltd

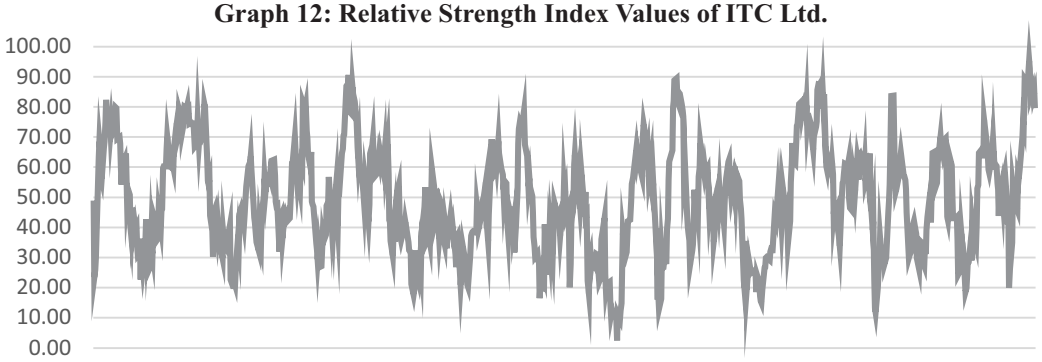


Source: Author's compilation

ITC Ltd.:

From graph 12, it is observed that RSI for ITC Ltd has been more concentrated on the lower side. It has shown a zig-zag pattern throughout the study period. However, it is being observed that as soon as it crosses overbought mark, there has been a correction in the stock price. One can observe that from the start of the study period till Jan 2020, the prices of the stocks of ITC Ltd have been hovering in the range of Rs. 250 – Rs. 300 showing only minor corrections which could be overlooked. Beyond this, there was a steep fall in the prices due to the impact of pandemic. This movement was, although, indicated through the RSI graph wherein it tried to touch overbought mark on 15th Jan, 2020. The prices, however, actually started to decline from the end of Jan 2020, losing about 37% within next two months. Thus, RSI provided an early warning to investors to enable them to take protective action.

Graph 12: Relative Strength Index Values of ITC Ltd.



Source: Author's compilation

Findings & Conclusion

The MACD and Exponential Average tools generated adequate signals to illustrate the price patterns in the stock prices during the study period. These methods can be used to accurately predict short-term price fluctuations for any company. These tools grow more successful as the study period lengthens, i.e. when the data set is huge (above 200), they produce more accurate predictions. Furthermore, these instruments must be utilized in combination with one another, as no one tool is capable of accurately forecasting price movements.

Throughout the study, it was observed that all three tools were accurate in predicting buy or sell signals. The results produced by MACD and EMA, on the other hand, were faster and steeper, allowing for less time to react.

Implication of the Study

Momentum Oscillator tools can be used to accurately predict the movement of any scrip in the short term. They generate quick signals to indicate buy and sell points and can be used in tandem to create effective trading strategies. These tools are typically used with a standard data period (14 days for RSI, 12 days for SEMA, and 26 days for LEMA), but this can be adjusted depending on the purpose of the study. When used with short-term data, these tools provide faster results and become less sensitive to price changes when used over time. Furthermore, when the data set is larger than 200, the chances of accurate prediction increase.

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