

INVESTMENT DECISION IN MERGED COMPANIES AND FORECASTING PRICE MOVEMENTS USING TECHNICAL INDICATORS WITH SELECTED EQUITY STOCK IN INDIAN STOCK MARKET

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ABSTRACT: Of late stock trading has become a key profession and day by day many people are showing interest to enter into stock trading. In stock trading there is always a risk of losing the money. So, the investors use fundamental analysis and technical analysis in order to forecast price movements of shares and understand risk minimization. This current study is mainly focused on various technical indicators used in technical analysis of stock market. Technical analysis is more reliable in forecasting short term price movements, and not the long-term price. In technical analysis future prices of shares are predicted based on the historic data like price movements, trade volumes, and buy or sell patterns of investors. In general, there are four major types of technical indicators namely trend, momentum, volume and volatility. For the purpose of this study we have selected SBI and Bank of Baroda stock. In this study we try to understand functioning of various indicators used in analyzing the stock market and also try to figure out the range up to what extent an investor can rely on technical analysis.

Key words: Stock market, technical, indicator, Investment, Price movements, Stock trading.

I. INTRODUCTION

Technical analysis has started back in 18th century when a person called Munehisa Homma, highly successful business men from Japan, started recording high price volatility and trading patterns with the images that evolved into today's candlestick charts. The trading study should be well planned with a proper ground work and the technical indicators forecasting future price based on historic data. The analysis is clear where we the study of various forces in the market and their effect on the share prices through technical analysis. So, all the parameters should be factored in for conducting technical analysis on the stock trading

. In the past, experts of equity market performed technical indicator analysis to understand and to reflect on price charts for price movements registered at the market and we have use various technical indicators to asses and to foresee the future price fluctuations. Using these technical indicators one can essentially take a good investment decision for short and medium term, and also determine one van enter or exit the financial market.

Technical analysis here is a broad field and the technical indicators are labelled fewer than four categories, with each indicator different from another in forecasting the price moments. The SMA (Simple Moving Average) and (Moving Average Convergence Divergence) MACD are the technical indicators that reflect the trend in the market. RSI (Relative Strength Index) and Stochastic Oscillator are the indicators that indicate the momentum in the market. Bollinger Band, Standard Deviation, and Average True Range show volatility in the market. Finally, Chaikin Money Flow and (On Balance Volume) OBV indicate volumes in the market. Although the technical analysis is a study of charts, graphs and historic data related to price and volume of a share, it is to be noted that technical understanding is entirely based on price and does not include B/S (balance sheet) and P&L (profit and loss) accounts of a company. In this study certain assumptions were taken which made the market "efficient" and all possible "price sensitive" information is included in price graph of a "security/index". Besides, major technical indicators which are broadly used in literature are studied along with their functionalities.

II. LITERATURE REVIEW

In the research work conducted by J. Sharmila et al [1] on "Forecasting Stock Trend Using Technical Indicators", the author tried to study the different technical indicators effectiveness and its forecasting ability on the selected share price. Study was carried out on 22 technical indicators and it was concluded that in order to effectively execute the trade plan, it is necessary to understand the technical indicators. It was also demonstrated that technical indicators help investor to take crucial decisions primarily like the enter or exit strategy in the market at the right price / time thereby resulting in increasing the profitability proportion. In one of his research works titled "Forecasting the Equity Risk Premium: The Role of Technical Indicators",

Christopher J et al [2] compared the forecasting ability of the traditional technical indicators with macro-economic variables, and they found that the technical indicators exhibit statistically and has significant ability to forecast future. Furthermore, it was also found that technical indicators and macroeconomic variables capture various types of information which is relevant for forecasting. In his work related to trading titled “Study on Use of Technical Analysis in Forecasting Price Moments of Selected Companies of NSE & BSE”, Rahul Berry et al [3] explained that the traders should be well versed with all the methods and charts of technical analysis. Authors also found that out of four different methods used for the study, (Exponential moving average) EMA and (Moving average convergence/divergence) MACD are most accurate, and also help the investors to take buy/sell decisions correctly using technical analysis. Lawrence Blume et al [4] conducted research on a project titled “Market statistics and technical analysis: the role of volume”, and explored the function of volume and its relevance for technical analysis. The study demonstrates how the volume traded and the price is related to each other, and implicates how trader who uses information from the statistics of the market, to better performs than those of other traders who could not. In his paper titled “Profitable Technical Trading Rules for the Austrian Stock Market”, Massoud Metghalchi et al [5] studied moving averages in well designed technical trading present in the Austrian stock market. The results from the study undertaken indicate that the moving average rules certainly trading prospects to have an predictive ability and have the capability to separate the repeating price patterns for a profitable trading. Adrian Taran [6] conducted research work titled “The Relative Strength Index (RSI) revisited” and examined that RSI is one of the best indicators which is used for technically analysis. The study aimed at empirically investigating the function of the RSI in its classic structure.

III. RESEARCH METHODOLOGY

Research Gap

With reference to the earlier literature, various studies were taken up on technical analysis on the equity stock market with selected stocks to gain understanding about the capital market and its further course, however the technical sound and knowledge traders would set their trading strategies accordingly, this was to scrutinize the ability and its applicability of technical indicators to forecast future movements of the stock market, to evaluate the efficiency of technical analysis, But no study has been made on the technical analysis of merged companies, but past years shows that the merger has become inevitable in the banking sector in Indian stock market for instance SBI and Bank of Baroda.

The effort that was made to understand the fundamental analysis of selected company to know fundamental variables and its effect and equity returns that were made and sustained, to look into the GDP progress and equity stock returns, in a bigger picture it also make an effort to take into consideration of macroeconomic factors that would have long term effect on the stock market,. But no study has been made on technical indicators used in the stock trading. More recent time the research works foreign markets were been made on with technical and fundamental indicators. But where it come to Indian background, not much merged company research studies has been taken up with technical analysis and technical indicators and a separate research work has been done on technical analysis and indicators. Therefore, the present study entitled “Investment decision in Merged companies on forecasting price movements using technical indicators with selected equity stock in Indian stock market” has been conducted to solve the problem.

A. Objective of the Study

- a) To understand the functioning of different technical indicators used in forecasting price movements stock trading.
- b) To analyze the reliability of technical indicators in forecasting price moments of shares.

B. Sampling

For sampling purpose, 6 technical indicators have been selected for the study.

C. Source of Data Collection

The sources that are used for the data collection process of this study include NSE (National Stock Exchange), Money control, Investopedia, and trading view.

Theoretical frame work

1. Relative Strength Index

Formula for calculation of RSI:

$$RSI = 100 + \left[\frac{100}{1 + RS} \right]$$

$$RS = \frac{\text{AVERAGE GAIN}}{\text{AVERAGE LOSE}}$$



Figure 1: Chart showing RSI Indicator of State Bank of India

Figure 1 which represents the chart of SBI stock shows that on 1st April 2017, the RSI indicator was in overbought area which is above the range of 70. Coincidentally, it was the date of merger of SBI with its associate banks. After this the price of the stock started to fall from Rs 300 to Rs 270 in 3 months, but due to the strong fundamentals of the company the stock recovered and started moving uptrend.



Figure 2: Chart showing RSI Indicator of Bank of Baroda

Figure 2 represents the RSI indicator of Bank of Baroda stock. On 1st April 2019 the merger of Bank of Baroda with associate banks has taken place and it can be observed that, on that date the RSI of Bank of Baroda was above the range of 38 which means the stock is nearing to oversold. It can also be seen from Figure 2 that the RSI again nearing to cross oversold but it didn't cross to oversold range. Hence, the price of the stock remained in the downtrend.

2. Stochastic Oscillator:

Formula for calculation of Stochastic Oscillator:

$$\%K = \left[\frac{C - L14}{H14 - L14} \right] \times 100$$



Figure 3: Chart showing Stochastic Oscillator of State Bank of India

Figure 3 which represent the chart showing Stochastic Oscillator of SBI, indicates that on 1st April 2017 the stock attained overbought range but there was no sudden drop in price even though the stochastics crossed below the oversold range. However, after two months the stock has recovered and the uptrend can be seen afterwards.



Figure 4: Chart showing Stochastic Oscillator of Bank of Baroda

Figure 4 depicts the chart showing Stochastic Oscillator of Bank of Baroda. It can be seen that on 1st April the stochastic was above the range of 80 and the price started dropping from Rs 135 to Rs 102 within one month. Later, in the middle of month of May, it slightly moved upward but did not recover thereafter, as a continuous downtrend followed and price went down up to Rs 90.

3. Simple Moving Average

Formula for calculation of SMA:

$$SMA = \frac{A1 + A2 + \dots + An}{n}$$

An= closing price of a share at n periods.

n= total number of periods.



Figure 5: Chart showing 3-day Simple Moving Average of State Bank of India

Figure 5 indicates the Chart showing the Simple Moving Average of SBI. After the merger on April 1st, lot of volatility is observed but from July onwards strong uptrend can be seen and the SMA also pointing in upward direction which means the uptrend has initiated.



Figure 6: Chart showing 3-day Simple Moving Average of Bank of Baroda

Figure 6 indicates the chart representing SMA of Bank of Baroda where it can be observed that the price of the stock is very volatile and apparently followed a downtrend as it went down from Rs 130 to Rs 90. SMA also started pointing downwards which means the price is further moving downward.

4. Exponential Moving Average:

Formula for calculation of EMA

$$EMA = [close - EMA(previous\ day)] \times multiplier + EMA(previous\ day)$$

$$multiplier = \frac{2}{time\ period + 1}$$



Figure 7: Chart showing 9-day Exponential Moving Average of State Bank of India

Exponential Moving Average of SBI is depicted in the chart in Figure 7. EMA is considered more responsive to the price change because it gives more weightage to the most recent data so EMA is more reliable when compared to SMA in this chart the EMA is pointing upwards which means the price is further moving upward



Figure 8: Chart showing 9-day Exponential Moving Average of Bank of Baroda

Figure 8 shows the chart for representing EMA of Bank of Baroda. In the chart it can be seen that the stock approached a downtrend in the month of April where the stock which was trading at Rs 136 went down up to Rs 90 within 3 months. Also, the EMA is pointing downwards which means there will be a continuous downward trend.

5. Moving Average Convergence Divergence:

Formula for calculation of MACD:

$$\text{MACD} = 12 \text{ period EMA} - 26 \text{ period EMA}$$



Figure 9: Chart showing MACD indicator of State Bank of India

The chart depicted in Figure 9 shows the MACD indicator of State Bank of India. In the chart it can be seen that the MACD lines are above 0 for most of the time period which means the stock is in an uptrend. The price of the stock is seen to be trading at Rs 313 and there are chances that the price may go further upwards.



Figure 10: Chart showing MACD indicator of Bank of Baroda

Figure 10 indicates the chart of MACD indicator for Bank of Baroda. It shows that the MACD indicator was above 5 in the month of April and the price of the stock was Rs 135, however the MACD line crossed below the signal line indicating the reversal of trend. Indicating the same, the price went down to Rs 90 by the end of August.

6. Bollinger Bands

Formula for calculation of Bollinger Bands:

Middle line = 20 period Simple Moving Average (SMA)

Upper line = 20 period SMA + (20 period standard deviation*2)

Lower line = 20 period SMA – (20 period standard deviation*2)



Figure 11: Chart showing Bollinger Bands indicator of State Bank of India

The chart shown in Figure 11 represents the Bollinger Bands indicator of SBI. The Bollinger Bands show how volatile the market is. In this chart we can see that the gap between Bollinger bands lines are less in the beginning of the month of May and also in the middle of June fluctuating in between shows volatility of market.



Figure 12: Chart showing Bollinger Bands indicator of Bank of Baroda

The chart shown in Figure 12 interprets the Bollinger Bands of Bank of Baroda. It can be seen that in the month of April, May, July and August the volatility is less because the Bollinger bands are narrower whereas in the month of June volatility is high because the bands are wider.

V. FINDINGS

From the study undertaken it is found that when the RSI crosses the range of 70 and enters the overbought region the price tends to fall substantially. Also, when the RSI crosses the range of 30 and enters oversold region then the price of the stock tends to increase. It is also observed that if the stochastic line surpasses the moving average line while it is in the oversold

region, it indicates that there will be an increase in price of the stock. If the stochastic line surpasses the moving average line while it is in the overbought region that indicates the fall in price in future. It is found that EMA is more responsive to the change in price when compared to the SMA. As the EMA gives more weightage to the most recent data it quickly reacts to the price changes in the market. It is validated that when the MACD line converges and crosses the signal line and moves downward, it is the signal of upcoming downtrend.

Similarly, if the MACD line surpasses and moves above the line of signal that signals the possible uptrend. The study reveals that the Bollinger Bands indicate the volatility in the market. When the positive and negative standard deviation moves away from the moving average line then it indicates that there will be high volatility in the market whereas if the standard deviation lines come close and narrow the area then the volatility tends to be low.

From the study it is observed that the stock price of SBI is indicating the possible uptrend and the stock of Bank of Baroda is showing the downtrend. From the study it is found that MACD in the stock of SBI shows the MACD line crossed the signal line and moving above and diverging which shows the possible uptrend in the future, whereas in the stock of Bank of Baroda MACD line crossed and moving below the signal line so it indicates the downtrend in the future. The Bollinger Bands are showing that there is a high volatility in the stock of SBI and low volatility in the stock of Bank of Baroda which shows the chances of increase in price of SBI stock are more than the stocks of Bank of Baroda.

VI. CONCLUSION

In today's world, as the technology is improving and information is being passed all over the world, people are getting aware of different investment opportunities available for them. As a result, more and more people started investing in equities and exchanging securities in stock market. The investor's interest is growing in high risk investments. It is necessary to understand how one can minimize the risk. At the same time, to minimize the risk and get good returns on investment we use the technical tools and indicators. The study that we have undertaken with the keen interest in merged banking stocks is because there is high risk and high return. In the study RSI indicates SBI in overbought and BOB starting show the oversold region where EVA projects that SBI in uptrend but BOB towards downtrend, MACD quotes both in the opposite direction SBI in overbought and BOB starting to show the oversold situation because both had high volatility, which translates adverse signs in the future trade as the stocks are in the overbought region in expectation of the future when it comes SBI but BOB is already negative trend it is expecting a big fall in price in future trading sessions. It is necessary that the traders are aware of the functioning of those indicators to predict the future directional movement of the stock, so that he can ensure by implementing strategically trade to maximising their profit.

VII. REFERENCES

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