A study Impact of Technical Analysis on Stock Market Indices

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Abstract: A type of securities study known as technical analysis uses price and volume data, which are frequently graphically displayed in charts. The charts are reviewed using a variety of indicators to offer investing advice. Technical indicators, which are typically plotted as chart patterns to try and forecast the market trend, are a crucial part of technical analysis. Indicators are typically superimposed on price chart data to indicate price direction or if they are in an "overbought" or "oversold" state. Technical analysis looks at previous data, primarily price and volume, to forecast price moves. It helps traders and investors navigate the gap between intrinsic value and market price by applying techniques like statistical analysis and behavioural economics. market signals. The constant buying and selling on the stock market causes daily fluctuations in share values. Prices for stocks fluctuate in cycles and trends and are never stable. A stock market investor who wants to see a big return on his investment buys shares at a discount and sells them at a premium. But, it is not simple to make a profit from investments in a turbulent stock market. An investor should have sufficient knowledge of how the stock and securities markets operate as well as the types of risks involved. The markets' price fluctuations and clearly defined information about the securities being traded there give investors a fundamental comprehension of the markets.

Keywords: Technical analysis, Moving average, RSI, MACD, SENSEX, NIFTY 50, BANK NIFTY

Introduction:

Financial market activity is the subject of technical analysis. The technician examines price variations that take place daily, weekly, or over any other fixed time period and are represented graphically, or in charts. Therefore, chart analysis gets its name. Technical analysts utilise indicators to forecast future price changes by evaluating historical data.

A. Moving average: A common stock indicator in technical analysis is the moving average (MA). In order to assist smooth out price data, it generates a continuously updated average price. If a security's moving average is rising, that indicates an uptrend; if it is falling, that indicates a downtrend. Many market indicators take into account the percentage of equities that are above or below significant moving averages, such as the 50- and 200-day moving averages.

B. RSI: A momentum indicator that measures recent price changes, the relative strength index (RSI) oscillates between 0 and 100. The RSI offers instant buy and sell indications and is used to monitor an asset's overbought and oversold levels. Fundamental investors believe an asset is oversold when its price is lower than its fair or intrinsic value.

C. MACD: One of the most often used technical trading indicators is moving average convergence divergence (MACD). Since it may be used as a trend or momentum indicator and to alert traders to opportunities to enter and exit positions, the MACD is admired by traders all over the world for its simplicity and adaptability. The MACD histogram is not a reflection of highs and lows but rather the difference between the MACD and its nine-day EMA. When the MACD is higher than its nine-day EMA, the histogram is positive; conversely, when it is lower, it is negative. The zero line is the point on the histogram where momentum is zero.

Literature review:

Kaur, Ravinder, (2015) Price behaviour of selected Sensex stocks Fundamental and technical analyses: In this direction, impact of various macroeconomic indicators on stock price and nature of volatility in Indian stock market are investigated to forecast the risk and return available in stock market. This research work compares financial strength and market trends of price to find out the best or least performing industry/company among all selected options and suggests different strategies for improving investment. Investors' perspectives related to the analysis of the decision of investment is analyzed to extract the most significant factor which influences the decision of investment. The study also aims to differentiate various groups of investors with respect to investment decisions. Therefore, investors re-appraise and re-evaluate their various investment commitments regularly due to the new information. Investment choices are made at some point in time in accordance with the personal investment ends and in contemplation of an uncertain future. This study analyses the behaviour of selected Sensex stocks by considering fundamental and technical analyses to find out the real worth of a security by considering changes.

N. Ravikumar, (2022) A study of bank nifty using technical analysis. The objective of the study is to share prices of banks present in bank nifty, to forecast the future price movements of bank nifty, to help investors before investing in bank nifty. Investing is one of the most crucial decisions that every earning individual must make at one point in time or the other. The best options available are the investment in the shares and securities of the companies. Investment in a share market is highly rewarding but highly risky. A proper analysis helps in reducing the risk of investment in the share market and in choosing a less risky and highly rewarding investment avenue. This paper aims at carrying out technical analysis of the banks present in bank nifty and to assist investment decisions in this nifty, since banking sector is one of the most upcoming sectors in the Indian market. It has also proven to be one of the leading and fastest growing sectors of the Indian economy.

Chinthakumar Manjunath, Balamurugan Marimuthu, Bikramaditya Ghosh, (2021) A study on Deep learning for stock market index price movement forecasting using improved technical analysis: Equity market forecasting is difficult due to the high explosive nature of stock data and its impact on investor's stock investment and finance. The stock market serves as an indicator for forecasting the growth of the economy. Because of the nonlinear nature, it becomes a difficult job to predict the equity market. But the use of different methods of deep learning has become a vital source of prediction. These approaches employ time-series stock data for deep learning algorithm training and help to predict their future behaviour. In this research, deep learning methods are evaluated on the India NIFTY 50 index, a benchmark Indian equity market, by performing a technical data augmentation approach.

Azhar, A,(2010) Evaluation of technical analysis as a predictive tool, a study on Indian stock markets. Objective is to analyse the importance of technical analysis in the formulation of Trading Strategies, to verify the importance of relative strength index as a stock specific indicator. India is among the emerging economies of the world which is largely as a result of the Economic planning. Economic planning has been instrumental in removing backwardness, improving GDP, developing industrial base, reorienting agriculture and improving the performance of the public sector. The state policies have enhanced the Indian economy, but the implementation of policies has created a major imbalance in input and output level. The present study concentrates on technical analysis and stock specific indicators such as Moving Averages, Relative Stock Index and Trading volume which are integral parts of technical analysis. In order to study the above objectives, the following hypotheses have been formulated.

Francesco Audrino, Fabio Sigrist, Daniele Ballinari , (2016) Research on Evaluating the impact of technical indicators on stock forecasting. The application of time series analysis and forecasting to stock markets is particularly relevant to Technical Analysis, which uses historical values to obtain indicators that highlight possible trends in stock prices. In practice, most of these indicators are evaluated graphically and their direct impact on the quality of stock price forecasting has not been appraised so far. The results have led to two main conclusions: (i) lagging technical indicators such as the Exponential Moving Average and Weighted Moving Average, when used as isolated inputs of the neural networks, can improve the accuracy of the stock forecast when compared to forecasts made with the original series of closing prices; and (ii) the combination of different indicators as inputs to the same neural network can improve even more the forecasting performance.

Research Methodology:

The indicators used are price to earnings ratio, price to book value ratio, and dividend yield. These indicators are used to measure the performance of the indexes and determine how the different indicators have impacted the performance of the indexes over the three-year period. The indices that are been studied in the paper are NIFTY 50, SENSEX, BANK NIFTY, NIFTY IT. And the different ways of drawing the conclusion is MACD, RSI and Moving Average. Data are collected from the offical websites which includes NSE - National Stock Exchange of India Ltd: Live Share/Stock Market News & Updates, Quotes-Nseindia.com
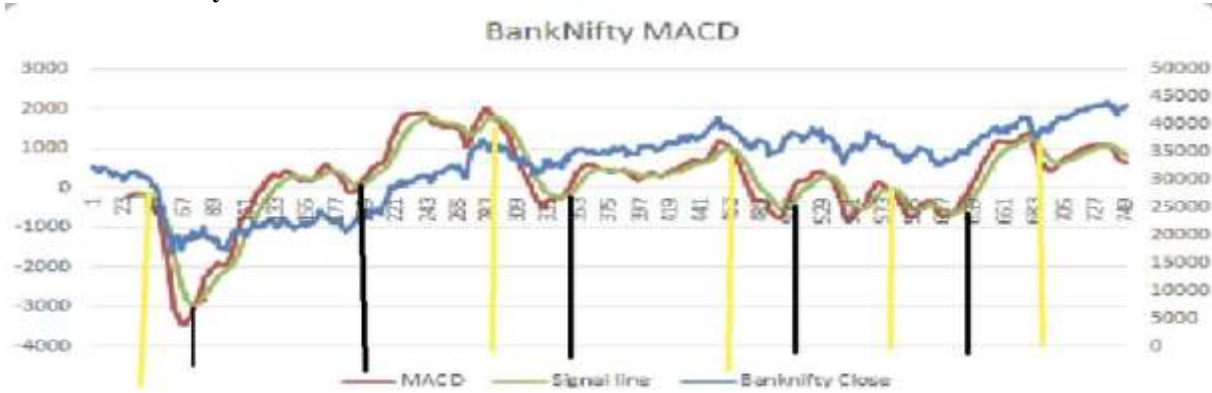
Data analysis:
    i.   **MACD (Moving Average Convergence/Divergence):**
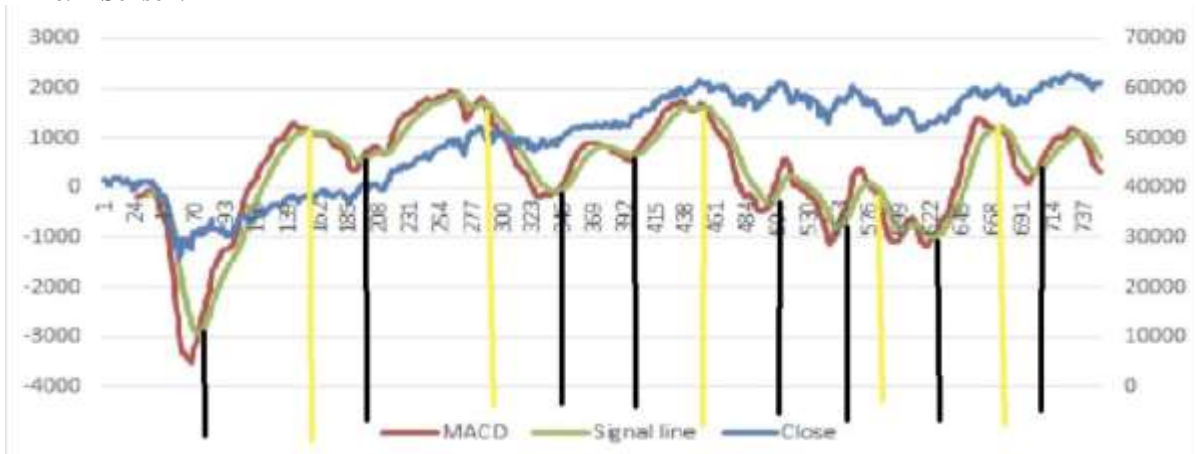   a.   **Nifty 50:**
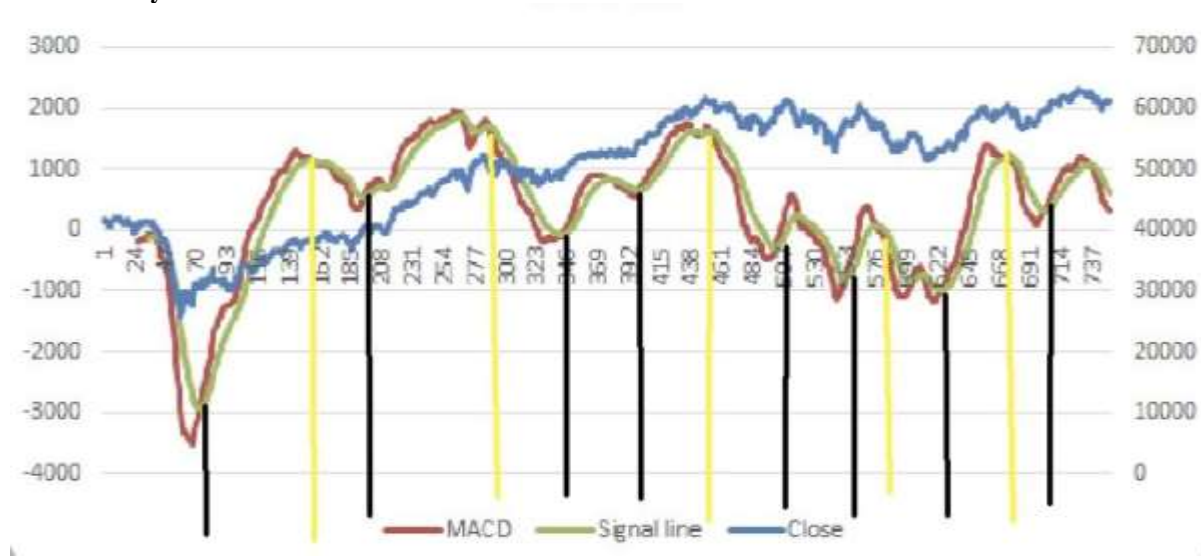
MACD chart for Nifty50 from 1/1/20 to 3/1/2023. The MACD line (red line) crosses above the signal line (purple line) when it crosses from below to above

b. Bank Nifty:

The graph below shows the MACD chart for Bank Nifty from 1/1/2020 to 3/1/2023.When the MACD line crosses from below to above the signal line (purple line), it is considered bullish and generates a buy signal.
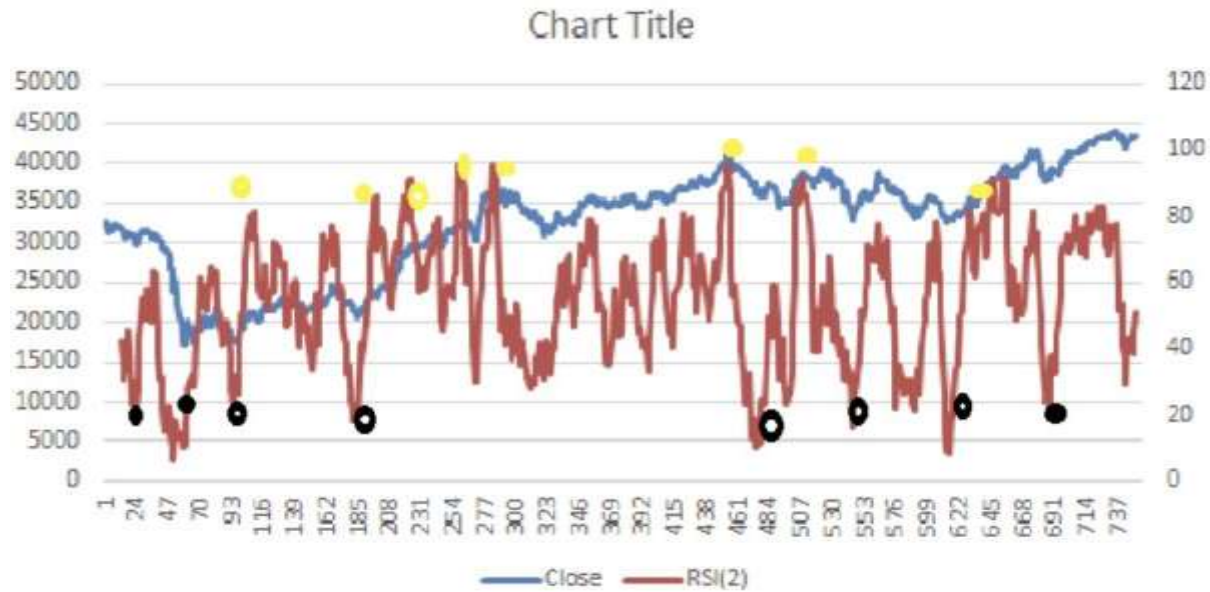
c. Sensex:

As displayed in the above chart, When the MACD and signal lines cross, the indicator can be used to identify potential buy and sell signals and increase the accuracy of trading decisions.

**ii.   RSI:**
a. Nifty 50:

This indicates that when the RSI crosses 80, it is considered to be in an overbought state, and if it crosses 20, it is considered to be in an oversold state. As such, traders and investors can use the RSI to identify levels of overbought and oversold conditions to take action accordingly.

b. Bank Nifty:

Chart Title (Close, RSI(2))

This is indicative of the market being more volatile, as the threshold of oversold and overbought is higher. This can be seen when analysing the extreme points which indicate an overbought and oversold market.
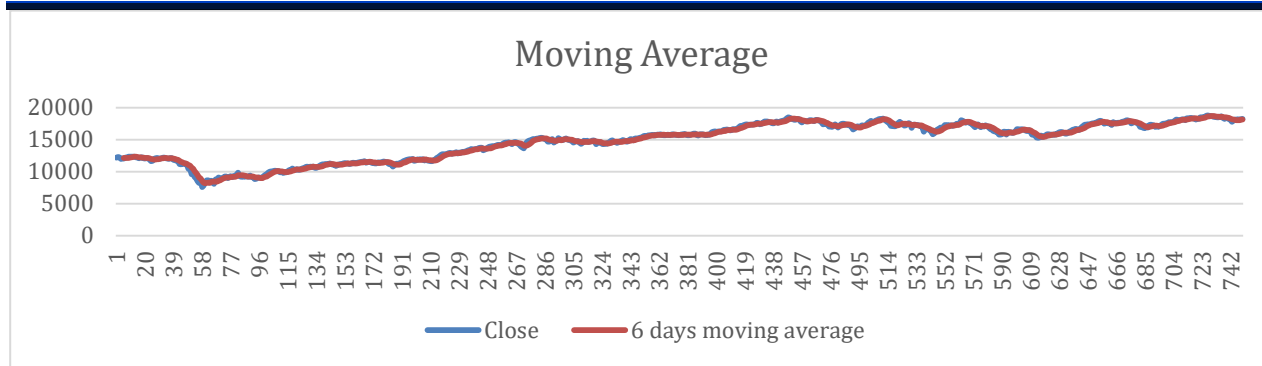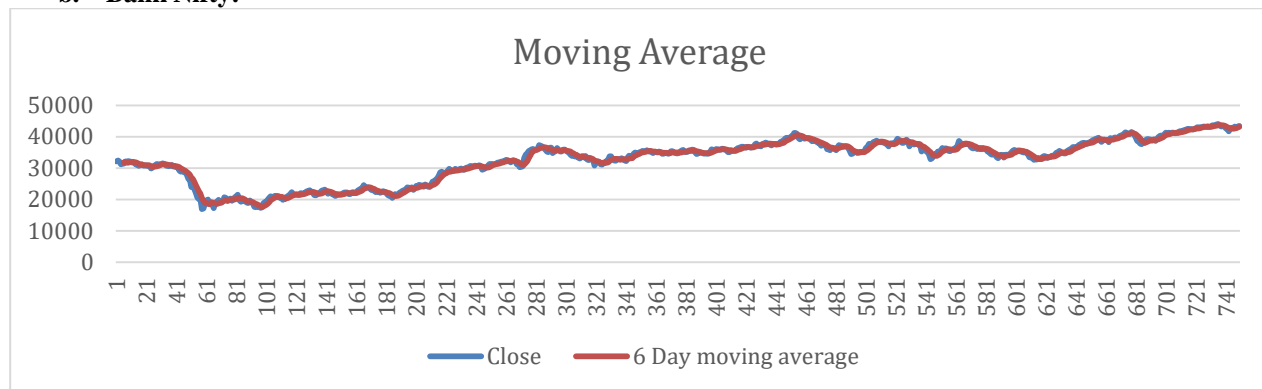
c. Sensex:

RSI Sensex (RSI(2), Close)
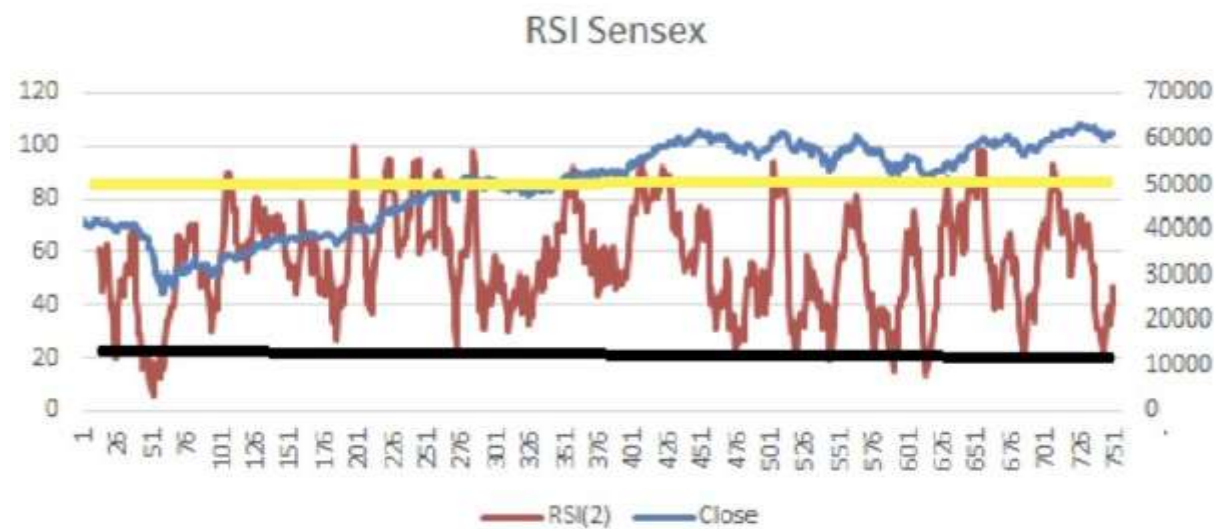
This indicates that the RSI for the Sensex is highly volatile and can fluctuate rapidly, making it essential for researchers to monitor the RSI consistently to make informed decisions.
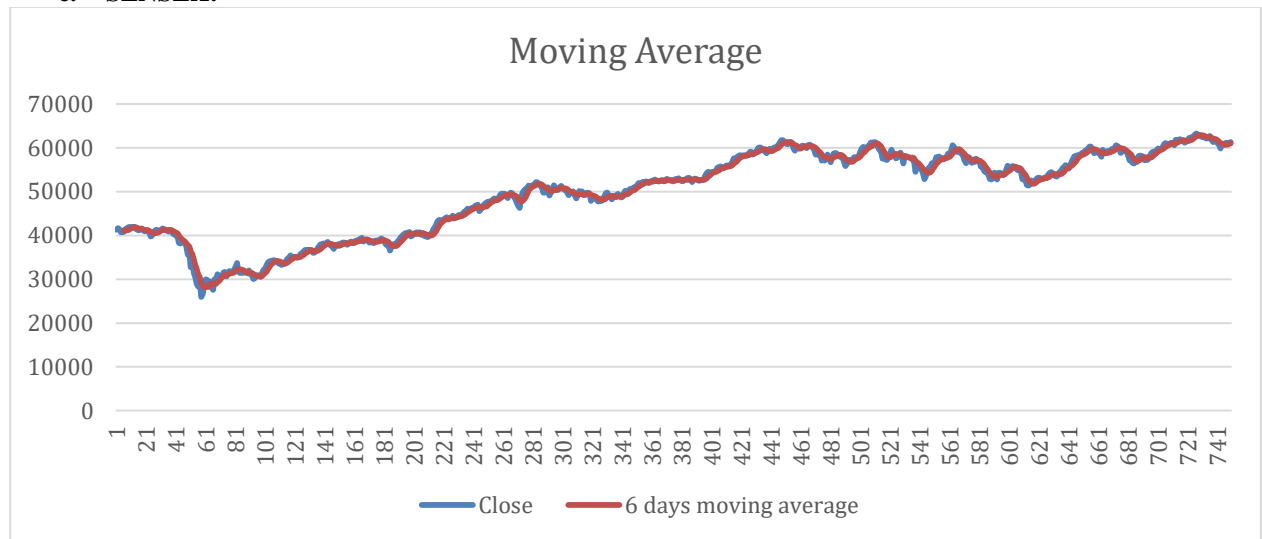
iii. Moving average:
a. Nift50

b. **Bank Nifty:**

c. **SENSEX:**

The three graphs shown above show the Nifty50, Bank Nifty and SENSEX moving averages from January 1, 2020, to March 1, 2023. It is assumed that each index has a six-day moving average to identify trends and generate buy and sell signals, but moving averages do not reliably indicate when to buy or sell any particular index. According to the Nifty IT index chart above, there is a bullish trend in Covid 19 as well.

Conclusion:
An understanding of the market's trends and cycles is essential for an investor to achieve profitable returns in a volatile stock market, as stock prices are unpredictable and continually fluctuating. Technical analysis also looks for patterns in the data to anticipate future price movements, allowing traders to better capitalise on profit opportunities.By analysing the historical data of prices and volumes, technical analysis can provide clues and insights into where the market is heading and whether prices are overbought or oversold.Technical analysis takes the analysis further by applying strategies such as statistical analysis and behavioural economics to help traders and investors determine the true value of an item. This approach allows them to make informed decisions, as well as

understand the factors behind price movements.As a result, the MACD is an important tool in the arsenal of any technical analyst. It can provide valuable insight into market trends and momentum, helping traders to identify opportunities and make informed decisions.

Reference:

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