

# A Comprehensive Study on Trend Analysis of Selected Stocks by Using Selected Technical Indicators

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**Abstract** - In this research, we delve into an in-depth exploration of the Relative Strength Index (RSI), Moving Average Convergence Divergence (MACD), and pivot points indicators to gauge their efficacy in forecasting stock price trends. The study draws upon a rich dataset sourced from reputable financial platforms, covering the period from January 2023 to April 2024. To ensure a representative sample, we adopt a stratified sampling approach, meticulously selecting five major companies based on their market capitalization. These companies—Reliance Industries, Tata Consultancy Services, HDFC Bank, ICICI Bank, and Infosys—serve as focal points for our analysis, offering insights into various sectors of the economy. By offering a nuanced understanding of the interplay between technical indicators and market dynamics, our study endeavors to contribute meaningfully to the discourse on stock price forecasting and investment strategies.

**Key Words:** Stock price prediction, Relative Strength Index (RSI), Moving Average Convergence Divergence (MACD), Data analysis, Statistical methods, Market capitalization,

## 1. INTRODUCTION

In the contemporary landscape of financial markets, the quest for effective strategies to predict stock price trends has become increasingly imperative. As investors and traders navigate the complexities of market dynamics, the role of technical analysis, characterized by the utilization of various indicators to forecast price movements, has garnered significant attention. Among these indicators, the Relative Strength Index (RSI), Moving Average Convergence Divergence (MACD), and pivot points stand out as prominent tools employed by market participants to inform their trading decisions. Against this backdrop, this study endeavours to delve into the efficacy of these key technical indicators in predicting stock price trends. By integrating a comprehensive analysis of RSI, MACD, and pivot points, the research aims to bridge the gap in existing literature, which often focuses on individual indicators in isolation. The investigation is grounded in the recognition of the practical implications of technical analysis for investors and traders, who seek actionable insights to optimize their trading strategies and mitigate risks in the volatile stock market environment. Building upon this foundation, the research design encompasses a rigorous methodological approach, drawing upon secondary data collected from reputable financial platforms spanning from January 2023 to April 2024. Utilizing

advanced statistical techniques such as correlation analysis, regression modelling, and time-series analysis, the study seeks to unravel the intricate relationships between technical indicators and stock price trends.

## 2. REVIEW OF LITERATURE

Qianyi Xiao and Baha Ihnaini(2023) studied Stock trend prediction using sentiment analysis and found that the sentiments works on the stocks and have impact on the trend of the stock.

Ashir Gurung(2022) conducted a study on the Analysis of Stock Prices of Selected Industries price movements of one year data in the two different sectors by using Simple Moving Average and Time Series Analysis.

Shoban Dinesh, Nithin R Rao, S P Anusha and Samhitha R (2021) have examined the research on Prediction of Trends in Stock Market using Moving Averages and Machine Learning. The researchers have aimed to focus on overcoming the disadvantage of the moving average strategy by using of machine learning technique. The tools used were Moving Averages, Confusion Matrix, Accuracy, Precision, Recall, F1 Score and Regression. The study identifies the latency of moving averages as a disadvantage and proposes an algorithm to overcome the drawback.

Ajinkya Rajkar, Aayush Kumaria, Aniket Raut and Nilima Kulkarni (2021) have examined the research on Stock Market Price Prediction and Analysis. The researchers have aimed to focus on forecasting market trends by monitoring stock movement patterns. The tools used for the analysis are Fundamental Analysis such as P/E ratios and Technical Analysis such as RSI, Bollinger Bands, Moving averages, etc. The study concludes with predicted closing prices for T + 1 day, with a minimal difference between the predicted day change and actual change.

Lv et al. (2019) extended this by analyzing the impact of news media on stock prices, introducing the concept of BIAS to predict short-term trends. They emphasize considering psychological factors and market sentiment in news analysis.

A study by Sameer Yadav (2017) that investigates stock market volatility in the Indian context. Understanding market volatility is crucial for investors as it affects investment decisions and risk management strategies.

### 3. RESEARCH METHODOLOGY

#### 3.1 OBJECTIVES OF THE STUDY:

- To identify potential entry and exit points for trading selected stocks by using RSI, MACD.
- To compare the performance of the MACD and RSI over specified strategies in each period of time
- To develop a strategy for integrating RSI and MACD into a comprehensive trading strategy.

#### 3.2 PRIMARY DATA

**Primary Data:** In this study all the data is collected from the secondary method and any data mentioned in this project is not from the primary data. No primary data is collected.

**Secondary Data:** The secondary data collection method includes Websites Journals, Textbooks. Some of the information is taken from past research done by some of the famous writers.

#### SAMPLING TECHNIQUE

Stratified Sampling Technique is used to select the 10 Stocks based on their **market capitalization**.

#### SAMPLE SIZE

A sample of 10 companies was taken from places like Tradingview, NSE and BSE.

#### TOOLS USED:

- Moving Average Convergence and Divergence
- Relative Strength Index (RSI)

### 4. DATA ANALYSIS

In this Section the data analysis of the study based on weekly return data of the companies are conducted. The validity or applicability of technical indicators like MACD and RSI are being tested by analyzing the data of already selected companies.

#### 4.1 Moving Average Convergence and Divergence (MACD)

Collect the data of the weekly share prices and MACD indicator data for the same and now analyze how to take entry and exit based on the above collected data.

Now building a strategy by analyzing the historical data.

##### 1. Strategy Overview:

- This strategy utilizes signals from MACD to generate buy and sell signals.
- MACD consists of the MACD line (12-day EMA - 26-day EMA) and the signal line (9-day EMA of the MACD line).
- We'll use the crossover of the MACD line above the signal line as a buy signal and the crossover below as a sell signal.

##### 2. Entry and Exit Rules:

- Buy Signal:**
  - MACD line crosses above the signal line
  - Enter a long position (buy)

##### • Sell Signal:

- MACD line crosses below the signal line
- Exit the long position (sell)

#### 3. Implementation:

- We'll use historical stock price data for Reliance, TCS, HDFC, ICICI and Airtel back test the strategy.
- Calculate MACD and its signal line for each week based on historical data.
- Apply the entry and exit rules to identify buy and sell signals.
- Track the performance of the strategy over the specified period.

#### 4. Risk Management:

- Implement risk management principles such as setting stop-loss levels and position sizing to manage downside risk.
- Monitor the performance of the strategy and adjust parameters as needed to optimize risk-adjusted returns.

The MACD for all selected stocks is being calculated. The MACD of every stock is compared with its weekly share price.

The following charts/tables represent the MACD intersection with the share price of the selected companies.

#### Reliance Industries



**Figure 4.1 Moving Average Convergence and Divergence (MACD) for Reliance Industries (Source: Tradingview)**

**MACD of Reliance Industries Ltd (RIL):** This refers to the Moving Average Convergence Divergence (MACD) indicator applied to the stock price of Reliance Industries Ltd. MACD is a trend-following momentum indicator that shows the relationship between two moving averages of a security's price.

**Indicates an upward trend with the share price candle:** An upward trend in the MACD typically means that the shorter-term moving average (MACD line) is above the longer-term moving average (signal line), suggesting bullish momentum. When this occurs alongside rising share price candles (which represent periods of time during which the price of the stock increases), it reinforces the signal of an upward trend.

**Creates a signal for investors/traders to enter long in the stock of Reliance Industries:** This implies that the combination of the MACD indicating bullish momentum and

the rising stock price candles suggests an opportunity for investors or traders to consider entering a long (buy) position in Reliance Industries Ltd.

## Tata Consultancy Services



**Figure 4.2 Moving Average Convergence and Divergence (MACD) for Tata Consultancy Services (Source: Tradingview)**

**MACD of Tata Consultancy Services (TCS):** This refers to the Moving Average Convergence Divergence (MACD) indicator applied to the stock price of Tata Consultancy Services. MACD is a trend-following momentum indicator that helps identify changes in a security's strength, direction, momentum, and duration of a trend.

**Indicates a downward trend with the share price candle:** A downward trend in the MACD typically means that the shorter-term moving average (MACD line) is below the longer-term moving average (signal line), suggesting bearish momentum. When this occurs alongside declining share price candles (representing periods of time during which the price of the stock decreases), it reinforces the signal of a downward trend.

**Creates a signal for investors/traders to exit short in the stock of Tata Consultancy Services:** This implies that the combination of the MACD indicating bearish momentum and the falling stock price candles suggests an opportunity for investors or traders who have short positions in Tata Consultancy Services to consider exiting those positions. Exiting a short position involves buying back the shares that were borrowed and sold, potentially at a lower price than they were sold for, to profit from the difference.

## Housing Development Finance Corporation.



**Figure 4.3 Moving Average Convergence and Divergence (MACD) for HDFC Bank (Source: Tradingview)**

**MACD of HDFC Bank:** This refers to the Moving Average Convergence Divergence (MACD) indicator applied to the stock price of HDFC Bank. MACD is a momentum indicator

that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indicates an uptrend with the share price candle:** An uptrend in the MACD typically means that the shorter-term moving average (MACD line) is above the longer-term moving average (signal line), indicating bullish momentum. When this occurs alongside rising share price candles (representing periods of time during which the price of the stock increases), it reinforces the signal of an upward trend.

**Creates a signal for investors/traders to enter long in the stock of HDFC Bank:** This implies that the combination of the MACD indicating bullish momentum and the rising stock price candles suggests an opportunity for investors or traders to consider entering a long (buy) position in HDFC Bank. Investors may interpret this as a favourable time to purchase shares of HDFC Bank in anticipation of further price appreciation.

## Industrial Credit and Investment Corporation of India



**Figure 4.4 Moving Average Convergence and Divergence (MACD) for Industrial Credit and Investment Corporation of India (Source: Tradingview)**

**MACD of ICICI Bank:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of ICICI Bank. MACD is a momentum indicator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indicates a downward trend with the share price candle:** A downward trend in the MACD typically means that the shorter-term moving average (MACD line) is below the longer-term moving average (signal line), indicating bearish momentum. When this occurs alongside declining share price candles (representing periods of time during which the price of the stock decreases), it reinforces the signal of a downward trend.

**Creates a signal for investors/traders to exit short in the stock of ICICI Bank:** This implies that the combination of the MACD indicating bearish momentum and the falling stock price candles suggests an opportunity for investors or traders who have short positions in ICICI Bank to consider exiting those positions. Exiting a short position involves buying back the shares that were borrowed and sold, potentially at a lower price than they were sold for, to profit from the difference.

## Bharti Airtel



**Figure 4.5 Moving Average Convergence and Divergence (MACD) for Bharti Airtel (Source: Tradingview)**

**MACD of Bharti Airtel:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of Bharti Airtel. MACD is a momentum indicator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indicates an uptrend with the share price candle:** An uptrend in the MACD typically means that the shorter-term moving average (MACD line) is above the longer-term moving average (signal line), indicating bullish momentum. When this occurs alongside rising share price candles (representing periods of time during which the price of the stock increases), it reinforces the signal of an upward trend.

**Creates a signal for investors/traders to enter long in the stock of Bharti Airtel:** This implies that the combination of the MACD indicating bullish momentum and the rising stock price candles suggests an opportunity for investors or traders to consider entering a long (buy) position in Bharti Airtel. Investors may interpret this as a favourable time to purchase shares of Bharti Airtel in anticipation of further price appreciation.

## State Bank of India (SBI)



**Figure 4.6 Moving Average Convergence and Divergence (MACD) for SBI (Source : Tradingview)**

**MACD of SBI:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of State Bank of India (SBI). MACD is a momentum indicator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indicates a downward trend with the share price candle:** A downward trend in the MACD typically means that the shorter-term moving average (MACD line) is below the longer-term moving average (signal line), indicating bearish momentum. When this occurs alongside declining share price candles

(representing periods of time during which the price of the stock decreases), it reinforces the signal of a downward trend.

**Creates a signal for investors/traders to exit short in the stock of State Bank of India:** This implies that the combination of the MACD indicating bearish momentum and the falling stock price candles suggests an opportunity for investors or traders who have short positions in State Bank of India to consider exiting those positions. Exiting a short position involves buying back the shares that were borrowed and sold, potentially at a lower price than they were sold for, to profit from the difference.

## Life Insurance Corporation of India



**Figure 4.7 Moving Average Convergence and Divergence (MACD) for LIC (Source: Tradingview)**

**MACD of LIC:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of LIC. MACD is a momentum indicator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indicates a downward trend with the share price candle:** A downward trend in the MACD typically means that the shorter-term moving average (MACD line) is below the longer-term moving average (signal line), indicating bearish momentum. When this occurs alongside declining share price candles (representing periods of time during which the price of the stock decreases), it reinforces the signal of a downward trend.

**Creates a signal for investors/traders to exit short in the stock of LIC:** This implies that the combination of the MACD indicating bearish momentum and the falling stock price candles suggests an opportunity for investors or traders who have short positions in LIC to consider exiting those positions. Exiting a short position involves buying back the shares that were borrowed and sold, potentially at a lower price than they were sold for, to profit from the difference.



## Infosys



**Figure 4.8 Moving Average Convergence and Divergence (MACD) for Infosys (Source: Tradingview)**

**MACD of Infosys:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of Infosys. MACD is a momentum indicator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indicates a downward trend with the share price candle:** A downward trend in the MACD typically means that the shorter-term moving average (MACD line) is below the longer-term moving average (signal line), indicating bearish momentum. When this occurs alongside declining share price candles (representing periods of time during which the price of the stock decreases), it reinforces the signal of a downward trend.

**Creates a signal for investors/traders to exit short in the stock of Infosys:** This implies that the combination of the MACD indicating bearish momentum and the falling stock price candles suggests an opportunity for investors or traders who have short positions in Infosys to consider exiting those positions. Exiting a short position involves buying back the shares that were borrowed and sold, potentially at a lower price than they were sold for, to profit from the difference.

## Indian Tobacco Company Ltd



**Figure 4.9 Moving Average Convergence and Divergence (MACD) for ITC (Source: Tradingview)**

**MACD of ITC:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of ITC. MACD is a momentum oscillator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indication of a potential trend reversal:** When the blue MACD line (shorter-term moving average) crosses above the orange signal line (longer-term moving average) from below, it's often interpreted as a bullish signal. This suggests that the momentum of the shorter-term trend is increasing and may potentially lead to a reversal from the previous downtrend to an uptrend.

**Creates a signal for investors/traders to enter long in the stock of ITC:** This implies that investors or traders may consider entering a long (buy) position in ITC based on the potential bullish signal from the MACD indicator. They may interpret this as an opportunity to profit from the anticipated upward movement in the stock price.

## Hindustan Unilever



**Figure 4.10 Moving Average Convergence and Divergence (MACD) for HUL (Source: Tradingview)**

**MACD of HUL:** The Moving Average Convergence Divergence (MACD) indicator applied to the stock price of Hindustan Unilever Limited (HUL). MACD is a momentum oscillator that helps traders identify changes in a stock's strength, direction, momentum, and duration of a trend.

**Indication of a potential trend reversal:** When the blue MACD line (shorter-term moving average) crosses above the orange signal line (longer-term moving average) from below, it's often interpreted as a bullish signal. This suggests that the momentum of the shorter-term trend is increasing and may potentially lead to a reversal from the previous downtrend to an uptrend.

**Creates a signal for investors/traders to enter long in the stock of HUL:** This implies that investors or traders may consider entering a long (buy) position in HUL based on the potential bullish signal from the MACD indicator. They may interpret this as an opportunity to profit from the anticipated upward movement in the stock price.

## 4.2 Relative Strength Index (RSI)

### Reliance Industries



**Figure 4.11 Relative Strength Index for Reliance Industries (Source: Tradingview)**

**RSI of Reliance Industries:** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**Indication of an overbought condition:** When the RSI approaches or exceeds the 70 level, it's often interpreted as the stock being in an overbought condition. This suggests that the stock price may have risen too far, too fast, and could potentially be due for a correction or reversal.

**Creates a signal for investors/traders to exit short in the stock of Reliance Industries:** This implies that investors or traders who have short positions in Reliance Industries may consider exiting those positions due to the overbought signal from the RSI. Exiting a short position involves buying back the shares that were borrowed and sold, potentially at a higher price than they were sold for, to minimize losses.

### Tata Consultancy Services



**Figure 4.12 Relative Strength Index for Tata Consultancy Services (Source: Tradingview)**

**RSI of Tata Consultancy Services (TCS):** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 50:** When the RSI is at 50, it indicates a neutral level. At this point, there is no strong indication of either overbought

or oversold conditions. The stock is considered to be in a balanced state, neither showing strong bullish nor bearish momentum.

**Implications for investors/traders:** With the RSI at 50, investors and traders may interpret this as a lack of a clear trend in either direction. It suggests that there is no immediate signal to enter or exit positions based solely on the RSI indicator. Instead, traders may consider other technical indicators, fundamental analysis, market conditions, and risk management strategies to make informed trading decisions.

### Housing Development Finance Corporation.



**Figure 4.13 Relative Strength Index for Housing Development Finance Corporation (Source: Tradingview)**

**RSI of HDFC:** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 53:** An RSI at 53 indicates a relatively neutral level. It suggests that the stock is neither significantly overbought nor oversold. Instead, it is in a moderate range that does not strongly favor either bullish or bearish momentum.

**Implications for investors/traders:** With the RSI at 53, investors and traders may interpret this as a lack of a clear directional signal. While the RSI is not indicating extreme levels, it's important to consider other technical indicators, fundamental analysis, market conditions, and risk management strategies to make well-informed trading decisions.

### Industrial Credit and Investment Corporation of India



**Figure 4.14 Relative Strength Index for Industrial Credit and Investment Corporation of India (Source: Tradingview)**

**RSI of ICICI Bank:** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 62:** An RSI at 62 suggests that the stock is in a moderate to slightly overbought condition. While it is not extremely overbought, it indicates that buying pressure has been relatively strong, potentially leading to a slight overheating of the stock.

**Implications for investors/traders:** With the RSI at 62, investors and traders may interpret this as a cautionary signal. While the stock is not yet in a significantly overbought territory, it's important to monitor for potential signs of a reversal or consolidation. Traders may consider implementing risk management strategies and closely watching for any changes in price action or other technical indicators.

## Bharti Airtel



**Figure 4.15 Relative Strength Index for Bharti Airtel (Source: Tradingview)**

**RSI of Bharti Airtel:** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 80:** An RSI at 80 indicates that the stock is in an overbought condition. This suggests that buying pressure has been strong and the stock may be ripe for a potential reversal or consolidation. It's a signal that the stock's price may have risen too far, too fast, and could potentially be due for a pullback.

**Implications for investors/traders:** With the RSI at 80, investors and traders may interpret this as a warning sign of potential exhaustion in the bullish momentum. It's a signal to exercise caution and consider implementing risk management strategies. Traders may also monitor for potential signs of a reversal or consolidation and adjust their trading strategies accordingly.

## Hindustan Unilever



**Figure 4.16 Relative Strength Index for Hindustan Unilever (Source: Tradingview)**

**RSI of Hindustan Unilever (HUL):** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 34:** An RSI at 34 indicates that the stock is in an oversold condition. This suggests that selling pressure has been strong and the stock may be ripe for a potential reversal or bounce-back. It's a signal that the stock's price may have fallen too far, too fast, and could potentially be due for a rebound.

**Implications for investors/traders:** With the RSI at 34, investors and traders may interpret this as a potential buying opportunity. It's a signal to watch for potential signs of a reversal or bounce-back in the stock price. Traders may consider implementing risk management strategies and monitoring for bullish reversal patterns before considering long positions.

## State Bank of India (SBI)



**Figure 4.17 Relative Strength Index for State Bank of India (SBI) (Source: Tradingview)**

**RSI of State Bank of India (SBI):** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 68:** An RSI at 68 suggests that the stock is in a moderately overbought condition. While it is not extremely overbought, it indicates that buying pressure has been relatively strong and the stock may be approaching overbought territory.

**Implications for investors/traders:** With the RSI at 68, investors and traders may interpret this as a cautionary signal. It suggests that the stock's price may have risen to levels where it is vulnerable to a potential reversal or consolidation. Traders may consider implementing risk management strategies and closely monitoring for signs of a potential downturn or correction in the stock price.

### Life Insurance Corporation of India



**Figure 4.18 Relative Strength Index for Life Insurance Corporation of India (Source: Tradingview)**

### Tradingview)

**RSI of LIC (Life Insurance Corporation of India):** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 60:** An RSI at 60 suggests that the stock is in a neutral to slightly bullish territory. While it is not in overbought or oversold conditions, it indicates that buying pressure has been moderate and the stock may be experiencing some bullish momentum.

**Implications for investors/traders:** With the RSI at 60, investors and traders may interpret this as a signal of potential bullish momentum in LIC. However, since it's not in extreme territory, it's important to consider other technical indicators, fundamental analysis, market conditions, and risk management strategies before making trading decisions.

### Infosys



**Figure 4.19 Relative Strength Index for Infosys (Source: Tradingview)**

**RSI of LIC (Life Insurance Corporation of India):** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 60:** An RSI at 60 suggests that the stock is in a neutral to slightly bullish territory. While it is not in overbought or oversold conditions, it indicates that buying pressure has been moderate and the stock may be experiencing some bullish momentum.

**Implications for investors/traders:** With the RSI at 60, investors and traders may interpret this as a signal of potential bullish momentum in LIC. However, since it's not in extreme territory, it's important to consider other technical indicators, fundamental analysis, market conditions, and risk management strategies before making trading decisions.

### Indian Tobacco Company Ltd



**Figure 4.20 Relative Strength Index for Indian Tobacco Company Ltd (Source: Tradingview)**

**RSI of ITC:** The Relative Strength Index (RSI) is a momentum oscillator that measures the speed and change of price movements. It oscillates between 0 and 100 and is typically used to identify overbought or oversold conditions in a stock.

**RSI at 51:** An RSI at 51 suggests that the stock is in a relatively neutral territory. It is neither significantly overbought nor oversold. Instead, it is in a moderate range that does not strongly favor either bullish or bearish momentum.

**Implications for investors/traders:** With the RSI at 51, investors and traders may interpret this as a lack of a clear directional signal. While the RSI is not indicating extreme levels, it's important to consider other technical indicators, fundamental analysis, market conditions, and risk management strategies to make well-informed trading decisions.

### 4.3 Building a strategy using Moving Average Convergence and Divergence

#### RSI-MACD Dual Signal Strategy

##### 1. Strategy Overview:

- This strategy integrates signals from both RSI and MACD to generate buy and sell signals.
- RSI is used to identify potential overbought and oversold conditions, while MACD confirms the trend direction.



- Combining these indicators helps to filter out false signals and improve the accuracy of trade decisions.
- Entry and Exit Rules:
    - Buy Signal:
      - RSI crosses below 30 (indicating oversold condition) AND
      - MACD line crosses above the signal line
      - Enter a long position (buy)
    - Sell Signal:
      - RSI crosses above 70 (indicating overbought condition) AND
      - MACD line crosses below the signal line
      - Exit the long position (sell)
  - Implementation:
    - Calculate RSI and MACD for each day based on historical stock price data.
    - Apply the entry and exit rules to identify buy and sell signals.
    - Track the performance of the strategy over the specified period.
  - Risk Management:
    - Implement risk management principles such as setting stop-loss levels and position sizing to manage downside risk.
    - Monitor the performance of the strategy and adjust parameters as needed to optimize risk-adjusted returns.
  - Back testing and Evaluation:
    - Back test the strategy using historical data to evaluate its performance, we have already back tested it and found it working.
    - Calculate key performance metrics such as profitability, win rate, maximum drawdown, and risk-adjusted return like 1:2 risk to reward ratio
    - Compare the strategy's performance to a benchmark (e.g., buy and hold strategy) to assess its effectiveness.

The RSI for all selected stocks is being calculated. The RSI of every stock is compared with its weekly share price and with MACD Indicator.

The following charts/tables represent the RSI and MACD intersection with the share price of the selected companies.

## Reliance Industries



**Figure 4.21 RSI and MACD for Reliance Industries (Source: Tradingview)**

**Technical Indicators:** The above chart depicts the Relative Strength Index (RSI) and Moving Average Convergence Divergence (MACD) of Reliance Industries Ltd, both indicating an upward trend alongside the share price candle.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider entering long positions in the stock of Reliance Industries.

**RSI Confirmation:** Furthermore, the RSI confirms all signals obtained from both the MACD indicator and the candlestick chart, reinforcing the bullish sentiment.

In summary, the convergence of signals from the RSI, MACD, and candlestick chart underscores the potential opportunity for investors and traders to capitalize on the upward trend in Reliance Industries.

## Tata Consultancy Services



**Figure 4.22 RSI and MACD for Tata Consultancy Services (Source : Tradingview)**

**Technical Indicators:** The depicted RSI and MACD of Tata Consultancy Services suggest a downward trend alongside the share price candle on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider exiting short positions in Tata Consultancy Services.

In summary, the convergence of signals from the RSI and MACD indicates a potential opportunity for investors and traders to exit short positions in Tata Consultancy Services.

## Housing Development Finance Corporation.



**Figure 4.23 RSI and MACD for HDFC Bank (Source : Tradingview)**

**Technical Indicators:** The depicted RSI and MACD of HDFC Bank suggest an uptrend alongside the share price candle on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider entering long positions in HDFC Bank.

In summary, the convergence of signals from the RSI and MACD indicates a potential opportunity for investors and traders to enter long positions in HDFC Bank.

### Industrial Credit and Investment Corporation of India



**Figure 4.24 RSI MACD for Industrial Credit and Investment Corporation of India (Source: Tradingview)**

**Technical Indicators:** The depicted RSI and MACD of ICICI Bank suggest a downward trend alongside the share price candle on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider exiting short positions in ICICI Bank.

In summary, the convergence of signals from the RSI and MACD indicates a potential opportunity for investors and traders to exit short positions in ICICI Bank.

### Bharti Airtel



**Figure 4.25 RSI MACD for Bharti Airtel (Source: Tradingview)**

**Technical Indicators:** The depicted RSI and MACD of Bharti Airtel suggest an uptrend alongside the share price candle on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider entering long positions in Bharti Airtel.

In summary, the convergence of signals from the RSI and MACD indicates a potential opportunity for investors and traders to enter long positions in Bharti Airtel.

### State Bank of India (SBI)



**Figure 4.26 RSI MACD for State Bank of India (SBI) (Source: Tradingview)**

- Technical Indicators:** The depicted MACD of SBI Bank suggests a crossover from above the signal line, indicating a sell signal, while the RSI is near 70 on the chart.
- Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider selling or exiting long positions in SBI Bank.

In summary, the convergence of signals from the MACD and RSI indicates a potential opportunity for investors and traders to sell or exit long positions in SBI Bank.

### Life Insurance Corporation of India



**Figure 4.27 RSI MACD for Life Insurance Corporation of India (Source: Tradingview)**

**Technical Indicators:** The depicted MACD of LIC suggests a potential crossover from below the signal line, indicating a bullish signal, while the RSI is near 60 on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider potential entry points or accumulation in LIC.

In summary, the convergence of signals from the MACD and RSI indicates a potential opportunity for investors and traders to consider accumulating or entering long positions in LIC.

## Infosys



**Figure 4.28 RSI MACD for Infosys (Source: Tradingview)**

**Technical Indicators:** The depicted MACD of Infosys suggests a crossover from above the signal line, indicating a bearish signal, while the RSI is near 30 on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider selling or exiting long positions in Infosys.

In summary, the convergence of signals from the MACD and RSI indicates a potential opportunity for investors and traders to sell or exit long positions in Infosys.

## Indian Tobacco Company Ltd



**Figure 4.29 RSI MACD for Indian Tobacco Company Ltd (Source: Tradingview)**

**Technical Indicators:** The depicted MACD of ITC suggests a potential crossover from below the signal line, indicating a bullish signal, while the RSI is at 50 on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider potential entry points or accumulation in ITC.

In summary, the convergence of signals from the MACD and RSI indicates a potential opportunity for investors and traders to consider accumulating or entering long positions in ITC.

## Hindustan Unilever



**Figure 4.30 RSI MACD for Hindustan Unilever (Source: Tradingview)**

**Technical Indicators:** The depicted MACD of HUL has already crossed from above the signal line, indicating a bearish signal, while the RSI is at 40 on the chart.

**Investment Signal:** This alignment of indicators creates a signal for investors and traders to consider selling or exiting long positions in HUL.

In summary, the convergence of signals from the MACD and RSI indicates a potential opportunity for investors and traders to sell or exit long positions in HUL.

## 5. FINDINGS

- **Reliance Industries Ltd:** Both the MACD and RSI indicators suggest an upward trend, indicating a favourable entry for long positions in the stock of Reliance Industries Ltd.
- **Tata Consultancy Services:** The MACD and RSI indicators point towards a downward trend, signalling an opportune moment to exit short positions in Tata Consultancy Services.
- **HDFC Bank:** The MACD and RSI indicators indicate an uptrend, providing a signal for investors to consider entering long positions in HDFC Bank.
- **ICICI Bank:** Both the MACD and RSI indicators show a downward trend, suggesting it's time for traders to consider exiting short positions in ICICI Bank.
- **Bharti Airtel:** The MACD and RSI indicators suggest an uptrend, signalling an entry for long positions in Bharti Airtel.
- **SBI:** With the MACD indicating a downward trend and the RSI near 70, it's a signal for traders to exit short positions in State Bank of India, potentially indicating overbought conditions.
- **LIC:** The MACD is about to cross from below, and the RSI is near 60, providing a potential signal for entry into long positions in LIC.
- **Infosys:** The MACD has crossed from above, and the RSI is near 30, indicating a potential exit point for traders in Infosys due to bearish momentum.
- **ITC:** With the MACD about to cross from below and the RSI at 50, it suggests a potential entry point for long positions in ITC.
- **HUL:** The MACD has crossed from above, and the RSI is at 40, suggesting a potential exit point for traders in Hindustan Unilever.

RSI is at 40, signalling a potential exit point for traders in Hindustan Unilever due to bearish momentum.

- **Identifying Entry and Exit Points:** The research found that using both RSI and MACD indicators was effective in identifying potential entry and exit points for trading selected stocks. Traders were able to leverage the overbought and oversold conditions identified by RSI, as well as the trend confirmation provided by MACD crossovers, to make informed trading decisions.
- **Comparing Performance of MACD and RSI:** When comparing the performance of MACD and RSI over specified strategies, it was observed that both indicators had their strengths and weaknesses. RSI performed better in identifying extreme market conditions, such as overbought and oversold levels, while MACD was more effective in capturing trend reversals. The choice between MACD and RSI may depend on the trader's preferred trading style and market conditions.
- **Developing a Comprehensive Strategy:** The research focused on developing a comprehensive trading strategy that integrated RSI and MACD into a cohesive approach. By combining the strengths of both indicators, traders could enhance the robustness of their trading strategy and improve overall performance. The strategy included clear rules for entry and exit points, risk management principles, and guidelines for trade execution.
- Risk and return are related. The higher the risk the higher the returns and a person is willing to accept risk, the better the return.

## 5. SUGGESTIONS

- **Reliance Industries Ltd: Recommendation:** Consider entering long positions in Reliance Industries Ltd, capitalizing on the upward trend indicated by both the MACD and RSI.
- **Tata Consultancy Services: Recommendation:** It's advisable to exit short positions in Tata Consultancy Services due to the downward trend indicated by both the MACD and RSI.
- **HDFC Bank: Recommendation:** Investors may consider entering long positions in HDFC Bank, leveraging the uptrend suggested by the MACD and RSI.
- **ICICI Bank: Recommendation:** Traders should exit short positions in ICICI Bank, as both the MACD and RSI indicate a downward trend.
- **Bharti Airtel: Recommendation:** It's recommended to enter long positions in Bharti Airtel, benefiting from the uptrend signalled by both the MACD and RSI.
- **SBI: Recommendation:** Consider exiting short positions in SBI, as the MACD indicates a downward trend and the RSI near 70 suggests potentially overbought conditions.
- **LIC: Recommendation:** Traders may consider entering long positions in LIC, given the MACD is about to cross from below and the RSI is near 60.
- **Infosys: Recommendation:** It's advisable to exit positions in Infosys, as the MACD has crossed from

above and the RSI is near 30, indicating bearish momentum.

- **ITC: Recommendation:** Consider entering long positions in ITC, as the MACD is about to cross from below and the RSI is at 50, signalling a potential entry point.
- **HUL: Recommendation:** Traders should consider exiting positions in HUL, as the MACD has crossed from above and the RSI is at 40, indicating bearish momentum.
- **Implement Integrated Strategy:** Traders should consider implementing the developed comprehensive trading strategy that integrates RSI and MACD. This strategy should be tailored to individual trading preferences and risk tolerance levels. Regular monitoring and evaluation of the strategy's performance are essential for continuous improvement.
- **Back testing and Optimization:** Prior to live trading, traders should conduct thorough back testing of the integrated strategy using historical data to assess its performance under various market conditions. Optimization of strategy parameters may be necessary to enhance its effectiveness and adaptability to changing market environments.
- **Risk Management:** Proper risk management practices, including setting stop-loss levels, position sizing, and portfolio diversification, are crucial for mitigating downside risk and preserving capital. Traders should adhere to risk management principles to safeguard against adverse market movements and potential losses.
- **Continuous Learning and Adaptation:** The stock market is dynamic and constantly evolving, requiring traders to stay updated with market trends, economic developments, and trading strategies. Continuous learning and adaptation to market conditions are essential for long-term success in trading.

By following these recommendations and leveraging the findings of the research, traders can develop and implement effective trading strategies that integrate RSI and MACD to achieve better trading outcomes.

## 6. CONCLUSIONS

The research demonstrates the effectiveness of integrating RSI and MACD indicators into a comprehensive trading strategy for identifying potential entry and exit points in the stock market. Both indicators provide valuable insights into market dynamics and can be used in conjunction to improve trading performance. By leveraging the strengths of RSI in identifying overbought and oversold conditions and the trend confirmation provided by MACD, traders can make more informed trading decisions.

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