

# **Comparative effectiveness of various oscillators such as RSI (Relative Strength Index), Stochastic Oscillator, MACD (Moving Average Convergence Divergence), and others in predicting share price trends.**

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## **Abstract**

*Indicator indicates. This may sound simple, but sometimes traders ignore the behavior of the price of the securities and focus only on the indicators. The indicators filter the pricing actions with formulas. Therefore, it is a derivative and does not directly reflect the behavior of the price. This should be considered when applying the analysis. The analysis of the indicators must take into account the prices. What are the indicators of price behavior in security? Are the price behaviors stronger? Is weak?*

**Keywords:** *NSE, Stock, Bear and bullish signal, Shares, indicator, MACD.*

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## **I. INTRODUCTION**

The technical indicators provide different perspectives to analyze the behavior of prices. Some, like mobile averages, are derived from simple formulas, and the mechanisms are relatively easy to understand. Others, like Stochastic, have complex formulas and need more research to understand and understand them completely(1). Regardless of the complexity of the formula, technical indicators can provide a unique perspective on the power and direction of fundamental pricing decisions.

The simple moving average is an indicator that calculates the average price of security during a specific period of time. If security is highly volatile, moving averages will help you optimize your data(2). The moving average filters the random noise and provides a smoother view of the price action. Veritas (VRTSE) represents great volatility and analysts may have trouble identifying trends. By applying a simple 10-day moving average to prices, you can easily identify trends by mitigating fluctuations.

The indicator performs three functions that warn, identify and predict to a large extent.

The indicators can serve as a warning to continue studying the behavior of prices. The reduced impulse can be a signal to be taken into account. Or, if there is a large positive branching, it can be an alert to monitor resistance waves(3).

The indicators can be used to identify other technical analysis tools. If you have a break in the price chart, the corresponding moving average crossover can help identify outbreaks. Alternatively, if the stock is no longer compatible, the corresponding low price of the On-Balance-Volume (OBV) can help identify the weakness(4).

Some investors and traders use indicators to predict the direction of future prices. Even though it may be obvious when indicators generate buy and sell signals, the signals should be taken in context with other technical analysis tools(5). An indicator may flash a buy signal, but if the chart pattern shows a descending triangle with a series of declining peaks, it may be a false signal.

## **NSE (NATIONAL STOCK EXCHANGE)**

There are thousands of companies listed on the National Stock Exchange. There are many indices in the National Stock Exchange i.e. NIFTY 50, NIFTY NEXT 50, NIFTY 100, NIFTY 200, NIFTY 500, NIFTY MIDCAP 50, NIFTY MIDCAP 100 FREE, NIFTY SML 100 FREE, INDIA VIX ETC (6). It is very difficult to conduct technical and fundamental analyses of all listed companies on NSE or all indices of NSE. So, the researcher decided to study the NIFTY 50 because NIFTY 50 is the barometer of Indian Capital Market and all the companies of SENSEX are well established and financially sound, and dominant company in their respective(7).

All the companies listed on National Stock Exchange or all indices of Bombay Stock Exchange is the population/universe. In the present study, NIFTY 50 has been considered(8).

## **OSCILLATORS**

Researchers are using a basic "oscillator" to show the trends of the selected companies. The oscillators represent the market impulse or the impulse to the scratch. The oscillator shows the movement of the state through the reference point from one end to the other end. The impulse shows the following(9).

- Terms of purchase and overselling for scrip or market.
- Possible trend reversal signals
- Increase or decrease the impulse.

Vibration is the means to move a specific element back on the same path with the same frequency as the pendulum wall clock. A vibrator indicates a trend inversion that must be confirmed by the price change of the script(10). The price changes must be related to the changes at the moment, and only trading signals can be generated. You only need to take action when the price and the moment agree. Oscillators are constructed at daily, weekly or monthly closing prices. Short sale prices are useful.

This oscillator is a great tool, since it can predict the future of these movements long before the move, and leave enough time to make a decision based on it(11).

Prominent oscillator is following a trend analysis of the selected company is studying with the average monthly closing price.

## **MOVING AVERAGE CONVERGENCE AND DIVERGENCE (MACD)**

It is used to predict movements in the market. Analysts typically have a dilemma about whether to use either a long-term or a short-term moving average moving average. The solution to this type of dilemma is MACD(12). MACD is the difference between the short-term moving average and the long-term moving average. This difference helps to identify if recent prices rose or fell compared to long-term movements. A variety of signals can be generated thanks to the MACD line.

MACD = short-term moving average - long-term moving average

The simple signal indicates the number of copies can be generated due to the MACD help, the MACD is more likely to increase in the future stock price when the positive area.

On the contrary, the MACD indicates that the near future, the lower part of the market (South) of the movement when in the negative zone, the stock should be sold.

## **Advanced signals with the help of MACD**

- Whenever the MACD is above zero mark line, it indicates the signal of bullish market for the scrip.
- Whenever the MACD is above zero mark line, but declining it is early warning signal of a bearish market.
- Whenever the MACD is below zero mark line, it indicates the signal of bearish market for the scrip.
- Whenever the MACD is below zero mark line, but rising it is early warning signal of a bullish market ahead.
- Whenever MACD forms a peak at the top it give signals that the market will soon turn bearish, i.e. it represents overbought situation.
- Whenever MACD reaches its bottom it signifies oversold situation i.e. that is the market will start becoming bullish.

## **Brief Description Of Companies Selected For Study**

### **State Bank of India**

The company belongs to the banking business. The bank was founded in 1955. The bank's president is Pratip Chaudhuri and the bank's managing director is Hemant G Contractor. The registered office of the bank is located in Mumbai (Maharashtra). The bank is listed in Ahmedabad, Chennai, Delhi, Kolkata, London, Mumbai and NSE.

State Bank of India offers a wide range of products and services to individuals, companies, large corporations, government agencies and institutional clients. Its segment includes the Treasury, which includes the entire investment portfolio and currency contracts and derivative transactions. Corporate accounts Group, Corporate medium group accounts and stressed that it consists of loan activities of the / Corporate Wholesale Banking Asset Management Group; Banca Comercial Banca Nacional consists of Group points mainly from bank branches and tied banking and non-banking relationships of all SBI Life Insurance Co., which includes private banking activities, including credit activities to corporate clients and OSE Banking Group National subsidiaries / joint ventures other than General Insurance Co., Ltd. owns approximately 22,500 branches and 58,000 ATM.

### **Maruti Suzuki India Ltd. Company**

The company belongs to the turnkey engineering industry. The company was founded in 1981. The president and CEO of the company is R C Bhargava and the company's secretary is S Ravi Aiyar. The company's registration office is located in New Delhi. The company is listed in Mumbai and NSE.

Maruti Suzuki India Limited is a holding company. The company is dedicated to the manufacture, purchase and sale of automobiles, parts and components (automobiles). Other activities of the company include promotion of used car sales, vehicle management and automotive financing. Its geographic segment includes domestic segments that include sales to customers located in India and segments abroad that include sales to customers outside of India. The company's product portfolio includes the Alto 800, Alto K10, Wagon R, Celerio, Ritz, Swift, DZire, Ertiga, Omni, Eeco, Gypsies and Ciaz. The services provided include Maruti Finance, True Value, Maruti Genuine Parts, Maruti Original Accessories, Maruti Suzuki Maruti driving schools and the car card. Palam Gurgaon Road (Palam Gurgaon Road), Gurgaon (Gurgaon), Haryana (Haryana), Kharkiv Nana Gurgaon, there are about five factory installed approximately more than 1.5 million vehicles a year (Gurgaon Industrial City).

### **Tata Steel Corporation**

The company belongs to the steel industry. The company was founded in 1907. Ratan N Tata is the general manager of the company, H M Nerurkar and the company secretary is Anjeneyan. The registered office of the company is located in Mumbai (Maharashtra). The company is listed in London, Luxembourg, Mumbai, NSE and Singapore.

TATA Steel Limited is a diversified steel producer. The company is engaged in the business of steelmaking, including raw materials and finishing work. The Company's sector is steel and other sectors. The work is mainly related to the manufacture of steel. Other business units consist of tubes, bearings, refractories, pigments, port operations and city services. The products include flat products such as hot rolled, cold rolled, metal coated, direct rolled, tubes, free steel, pavement steel, galvanized steel, electric steel and narrow strips. Architectural products, including structural steel, floors, walls, ceilings, modular and building components; Agricultural tools and bearings. Automatic mounting parts, ball bearings, tapered roller bearings, magneto bearings, clutch release assemblies, fan support assemblies and cylindrical roller bearings. Our brands include Tata Structura, TISCON, Tata Shaktee, Tata Astrum and Tata Steelium.

### **Bharti Airtel Ltd. Company**

The company belongs to the telecommunications services industry. The company was founded in 1995, the president and CEO of the company is Sunil Bharti Mittal and the company's secretary is Makesh Bhavnani. The company's registration office is located in New Delhi. The company is listed in Mumbai and NSE.

Bharti Airtel Limited is a global telecommunications company that operates in 17 countries in Asia and Africa. India offers business services that include 2G, 3G and 4G wireless services, mobile commerce, wireline services, high-speed domestic broadband, DTH and national and international long distance services. The rest of the region offers 2G, 3G and 4G wireless services and mobile commerce. These include mobile services, telemedia services, digital television services, Airtel Business and Tower Infrastructure Services. The mobile services offer postpaid, prepaid, roaming, internet and m-commerce services. Telemedia Services offers fixed and broadband telephony services in 87 cities in India. The Direct-To-Home platform provides digital television services. Airtel Business provides information and communication technology services. Its subsidiary Bharti Infratel Ltd provides towers and related infrastructure.

### **Reliance Industries Co., Ltd.**

The company belongs to the refining industry. The company was founded in 1973. The president and CEO of the company is Mukesh D Ambani and the company's secretary is K Sethuraman. The registered office of the company is located in Mumbai (Maharashtra). The company was listed in London, Luxembourg, Mumbai, NASDAQ and NSE.

Reliance Industries Limited is engaged in refining, including the manufacture of refined petroleum products and petrochemicals, including the manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in basic form. The division of the company includes refining, petrochemicals, oil and gas, retail sale of fabrics and others. The refining sector includes the operations of production and commercialization of petroleum products. The petrochemical division includes activities of production and commercialization of petrochemical products, including polyethylene, polypropylene, polyvinyl chloride, polybutadiene rubber, butadiene, acrylonitrile, caustic soda and polyethylene terephthalate. The oil and gas sector includes the exploration, development and production of crude oil and natural gas. The organized retail

segment includes retail sales organized in India. Other sectors include textiles, development of EEZ, telecommunications or broadband businesses and media.

**Data Collection And Result Interpretation**

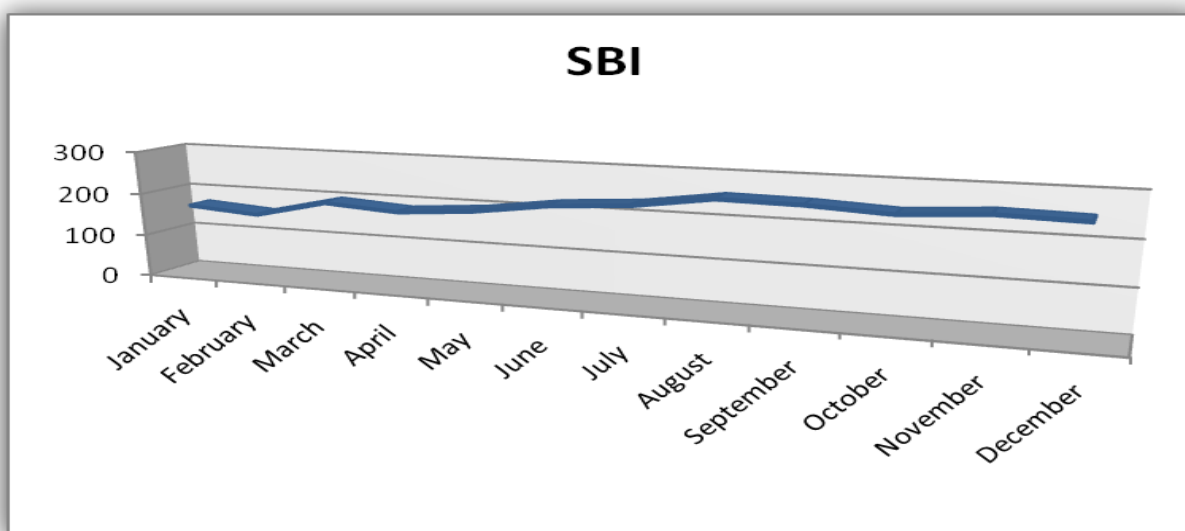
On the basis of buying and selling parameters most 5 prestigious shares were selected from NIFTY 50 list, and were observed for one year time period from January to december, and the data were evaluate by MACD oscillating Graph for bear-bull signal and Buy and sell analysis. In table 1 we tabulate the one year closing price of selected companies.

**Table 1: Price per share of the selected companies over one year time period from January to December.**

Month 2021	SBI	Maruti	Tata Steel	Airtel	Reliance
January	168.8	3731.4	235.75	307	1036
February	157	3567	290	331.7	1007
March	195.25	3720	316.7	333.95	1035
April	184.15	3825	329.6	359.5	969
May	196.25	4213	337.85	356.95	958
June	219.2	4166	327.4	367	974
July	230.15	4765	354.45	361	1016
August	254.6	5165	373.05	317.25	1013
September	252	5490.2	375.55	313.5	1084
October	243.1	5875.9	405.05	318.95	1056
November	254.1	5051	407	318.45	995
December	250.3	5315.3	391	305.65	1080

**State Bank of India**

The closing price per share of SBI bank was found increasing in the one year time period, the maximum was in August (254.6) and November (254.1) month, while minimum in February (157) Figure 1.



**Figure 1: Closing price per share of SBI Bank in One year duration in 2021.**



Figure 2: Trends of the market share of SBI in terms of volume and price in year 2021.

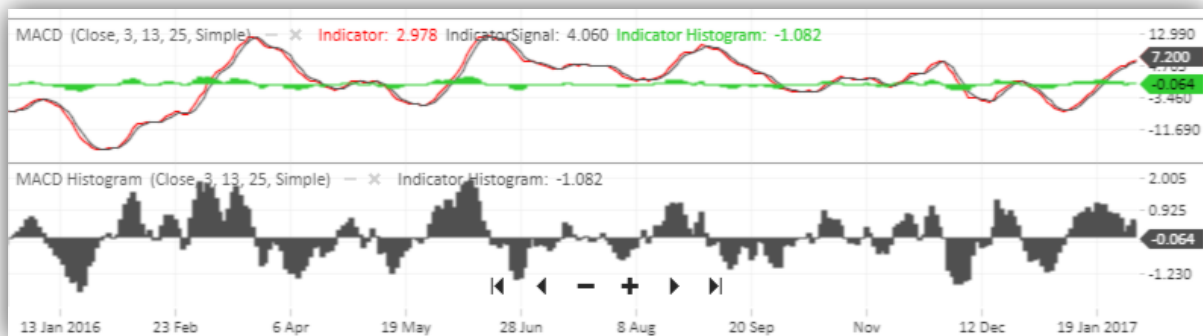


Figure 3: MACD and MACD Histogram Graph of SBI shares in Year 2021

### BULLISH AND BEARISH TRENDS

On analysis the MACD and MACD histogram of SBI shares we will find that before March the MACD line was below zero line but upward direction which shows a bullish signal for shares or the price increased continuously, there was a good bullish signal after the end of May, while the decreasing trends from September show the bearish signal that is not a good sign to invest.

### BUY AND SELL SIGNAL

On the chart, MACD improved from January to May, forming a positive divergence. All the earmarks of a MACD buying opportunity were present, but the stock failed to break above the resistance and exceed its previous reaction high. This non-confirmation from the stock should have served as a warning sign against a long position. For the record, a sell signal occurred when the stock broke support from the descending triangle after May up to December, This may indicate a sell signal but not a reliable fluctuation in mid-way may break the consistency in sell signal.

### Maruti Suzuki India Ltd. Company

The closing price per share of Maruti Suzuki India Ltd. Company was found increasing in the one-year time period, the maximum was in October month, while minimum in February, June and November Figure 4.

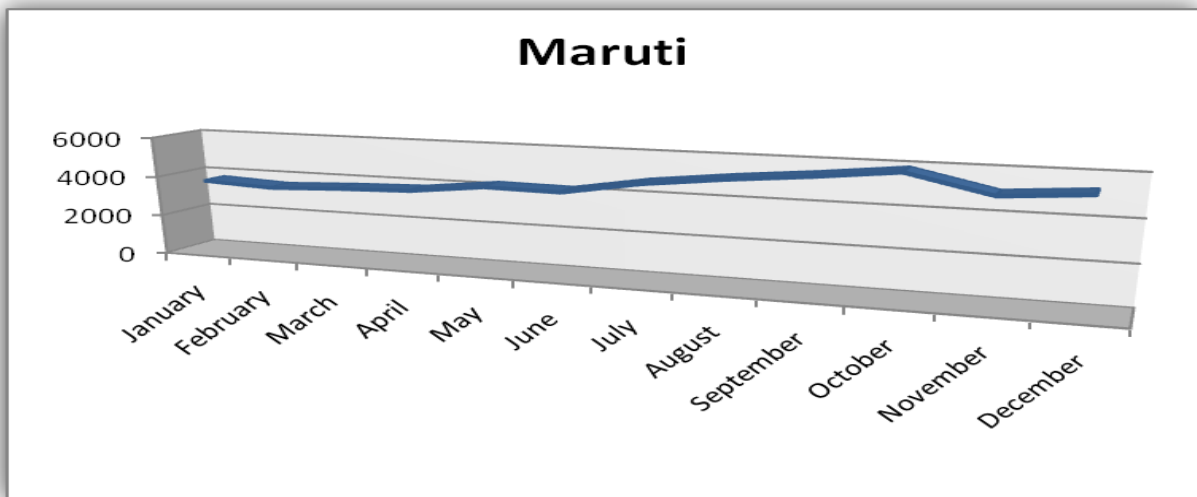


Figure 4: Closing price per share of Maruti Suzuki India Ltd. Company in One year duration in 2021.



Figure 5: Trends of the market share of Maruti Suzuki India Ltd. Company in terms of volume and price in year 2021.

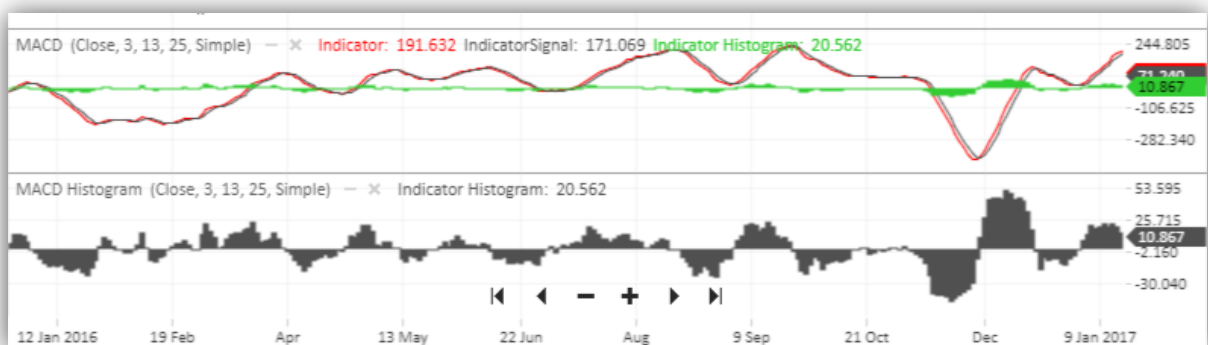


Figure 6: MACD and MACD Histogram Graph of Maruti Suzuki India Ltd. Company shares in Year 2021

### BULLISH AND BEARISH TRENDS

On analysing MACD Graph of maruti shares it will strongly recommend to purchase because of high bullish area than bearish area. There were a sharp bearish curve area in month of december shows the high fall in market price of shares.

### BUY AND SELL SIGNAL

On the chart, MACD improved from February to Mid September, forming a positive divergence. All the earmarks of a MACD buying opportunity were present, and the stock broke above the resistance and exceed its previous reaction high. This confirmation from the stock should have served as a sign for a long position with buying signal. For the record, a sell signal occurred when the stock broke support from the descending triangle in December which were found accurate for selling.

### Tata Steel Ltd. Company

The closing price per share of Tata Steel India Ltd. Company was found increasing in the one year time period from January to December, the maximum was in October and november month, while minimum in January month according to Figure 7.

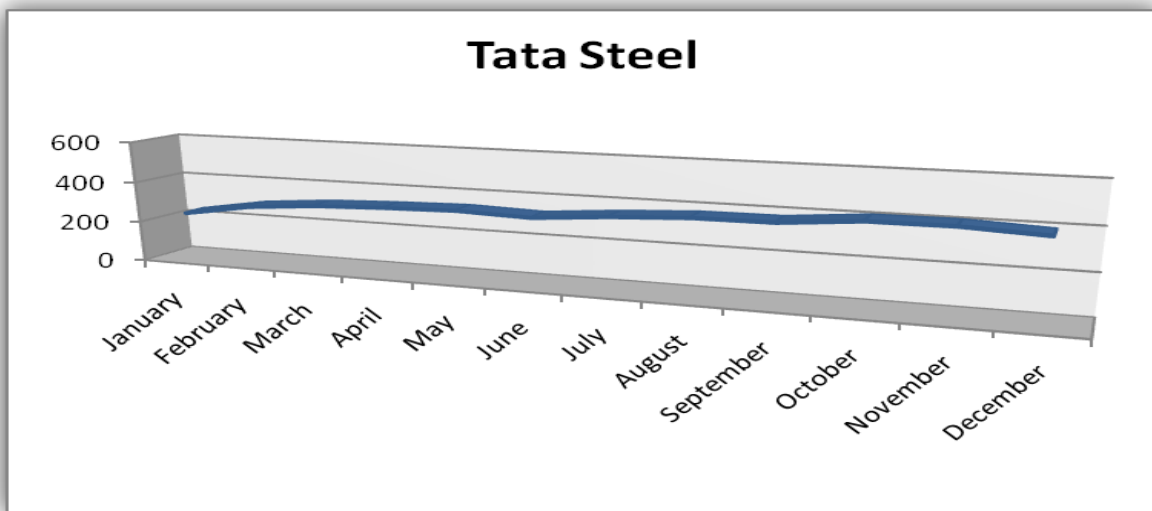


Figure 7: Closing price per share of Tata Steel Ltd. Company in One year duration in 2021.

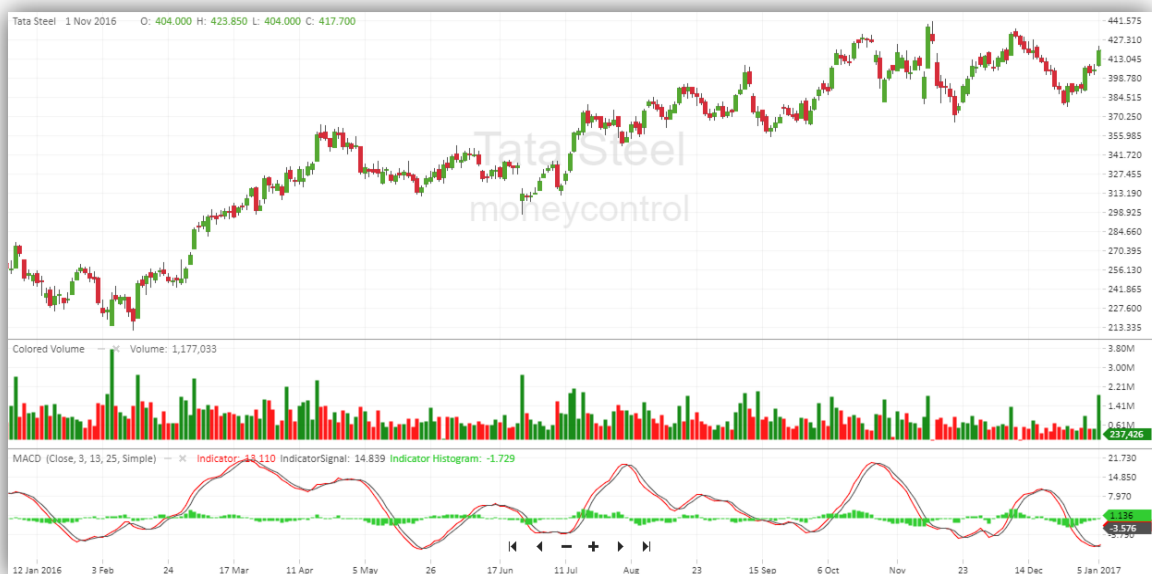
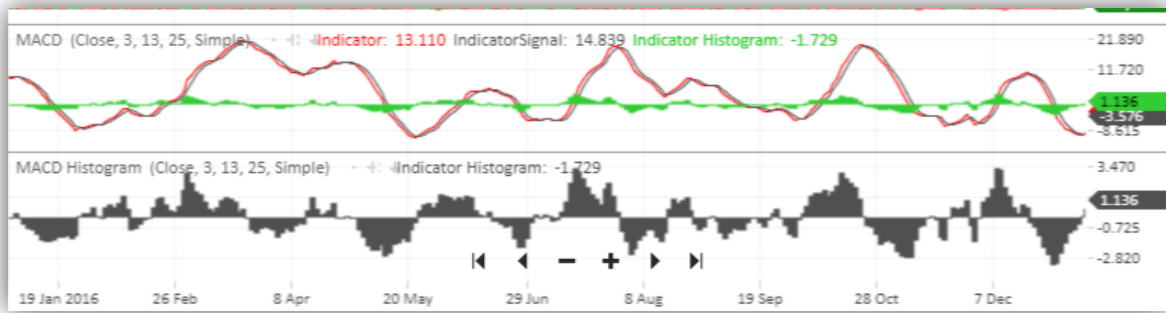


Figure 8: Trends of the market share of Tata Steel Ltd. Company in terms of volume and price in year 2021.



**Figure 9: MACD and MACD Histogram Graph of Tata Steel Ltd. Company shares in Year 2021**

**BULLISH AND BEARISH TRENDS**

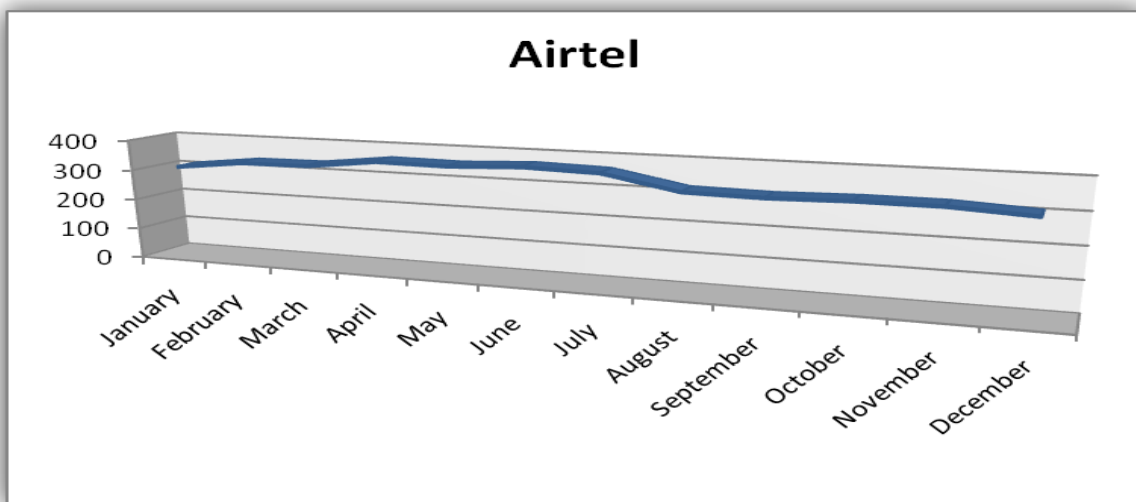
On analysis in the MACD and MACD histogram of Tata Steel Ltd. shares we will find that before March the MACD line was above zero line but in a downward direction which shows a bearish signal for shares or a sell continuously, there was a good bearish sign in May, while the decreasing trends from August and October show the bearish sign that is not a good sign to invest in the long term.

**BUY AND SELL SIGNAL**

On the Tata Steel Ltd. chart, MACD improved from May to October, forming a positive divergence. All the earmarks of a MACD buying opportunity were present, but the stock broke below the resistance and exceeded its previous reaction high. This non-confirmation from the stock should have served as a warning sign against a long position. For the record, a sell signal occurred when the stock broke support from the descending triangle in March to May, this share shows a good sign for short-term sell and purchase but no benefits for long-term investment.

**Bharti Airtel Ltd. Company**

The closing price per share of Bharti Airtel India Ltd. Company was found increasing in the first half of the year from January to July and after that a slight decrease in price in one year time period, the maximum was in June and July month, while the minimum in August and December month was found according to Figure 10.



**Figure 10: Closing price per share of Bharti Airtel Ltd. Company in One year duration in 2021.**





Figure 11: Trends of the market share of Bharti Airtel Ltd. Company in terms of volume and price in year 2021.

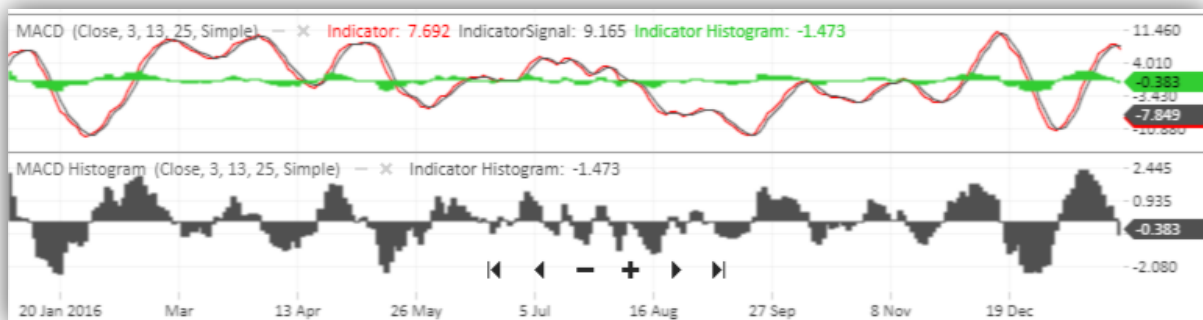


Figure 12: MACD Histogram Graph of Bharti Airtel Ltd. Company shares in Year 2021

### BULLISH AND BEARISH TRENDS

On analysing the MACD and MACD histogram of Bharti Airtel shares we will find that more bearish triangles and curve area rather than bullish perspective, it will clearly indicate the short term sell and purchase opportunity while a alarming situation for long term investment.

### BUY AND SELL SIGNAL

On the Bharti Airtel chart, From January to September the MACD shows the downward trends which were not a good sign for bulk investment, the slight fluctuations may provide a opportunity to earn but for short term, it will be risky for long term investment, well its rather more appropriate for sell signals. MACD improved from September to December, forming a positive divergence. All the earmarks of a MACD buying opportunity were present, but the stock failed to break above the resistance and exceed its previous reaction high. This non-confirmation from the stock should have served as a warning sign against a long position. For the record, a sell signal occurred when the stock broke support from the descending triangle in December month.

### Reliance Industries Ltd. Company

The closing price per share of Reliance Industries Company was found Decreasing in the first half of the year from January to July and after that slight increase in price in one year time period, the maximum was in September and December month, while minimum in April and May month was found in according to Figure 13.

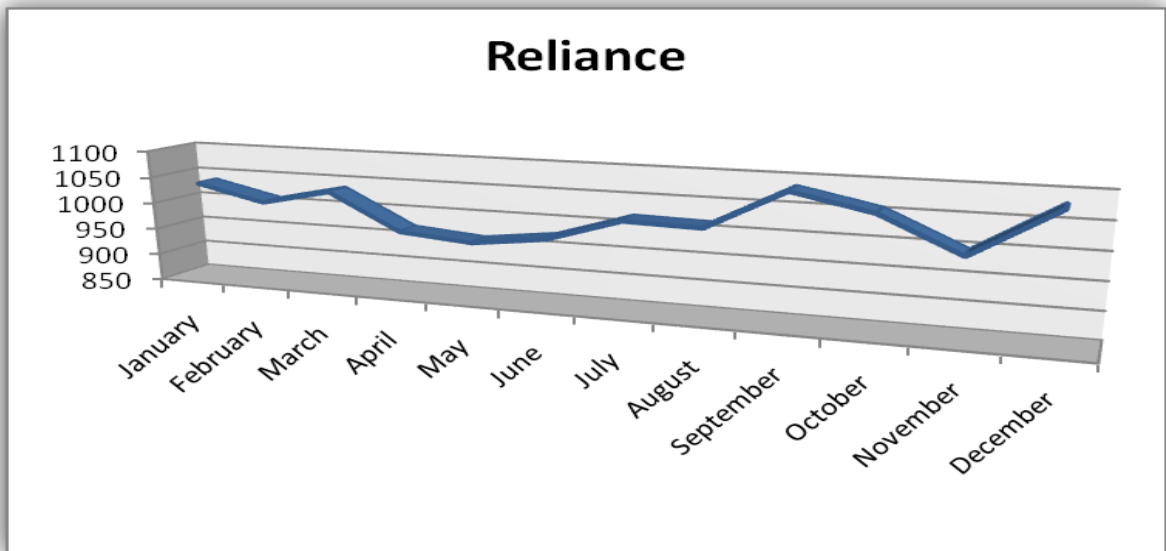


Figure 13: Closing price per share of Reliance Industries Ltd. Company in One year duration in 2021.



Figure 14: Trends of the market share of Reliance Industries Ltd. Company in terms of volume and price in year 2021.

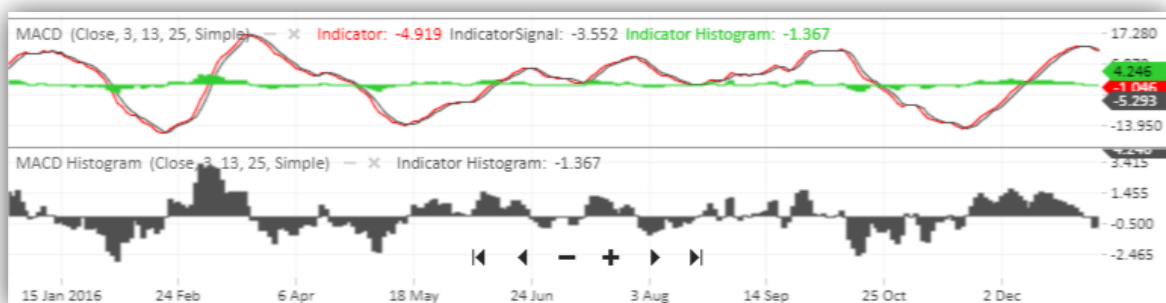


Figure 15: MACD and MACD Histogram Graph of Reliance Industries Ltd. Company shares in Year 2021

### **BULLISH AND BEARISH TRENDS**

On analysing the MACD and MACD histogram of Reliance Industries shares we will find that before the MACD line was below zero line but upward direction which shows a bullish signal for shares or buying continuously, there was a good bullish sign after the end of August, while the decreasing trends from October show the bearish sign that is not a good sign to invest. Being more bullish triangle in the graph but large bearish area provides not a good sign for long term investment.

### **BUY AND SELL SIGNAL**

On the Reliance Industries chart, MACD improved from May to October, forming a positive divergence. All the earmarks of a MACD buying opportunity were present, but the stock broke above the resistance and failed to exceed its previous reaction high. This non-confirmation from the stock should have served as a warning sign against a long position. For the record, a sell signal occurred when the stock broke support from the descending triangle in April to May and October to December.

## **II. CONCLUSION**

The short term investment and long term investment were rather subjected to market risk as a bulk purchase or bulk selling will alter the market trends but a good knowledge of indicators and fine technical analysis will help to right investment of the capital. When choosing an indicator to use for analysis, choose carefully and moderately. Attempts to cover more than five indicators are usually futile. It is best to focus on two or three indicators and learn their intricacies inside and out. Try to choose indicators that complement each other, instead of those that move in unison and generate the same signals.

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