Understanding Stock Market Using Technical Analysis on Laurus Labs

Project Report

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DEPARTMENT OF B.COM BUSINESS ANALYTICS

LOYOLA ACADEMY

(Autonomous and affiliated with Osmania University)

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This is to certify that Astiker Vaishnavi (111720037002) Fizza Shujat (111720037005) Gudaru Mrudula (111720037007) Kokku Sathvika (111720037009) Shreya Panikkar(111720037013) Swathi D Nakrani (111720037015) have submitted a project report on **"Understanding Stock Market   Using Technical Analysis On Laurus Labs"** as partial fulfillment for the award of Degree in B.com (Business Analytics) from Loyola Academy, affiliated to Osmania University , Hyderabad during the academic Year 2022-2023.

Project Guide   **External Examiner**

Head of the Department   **Principal**

ACKNOWLEDGEMENT

We express our sincere gratitude to the college management, especially Rev Fr Dr. L Joji Reddy SJ, the Principal, and Rev Fr K Anil Kumar, the Vice-Principal for giving us an opportunity to work on this project, thereby enriching our knowledge.

We are also thankful to Ms.T. Swarna, Head of B.com Business Analytics for her inspirational and valuable guidance and we express our sincere thanks to her for also being our project guide.

For her suggestions and guidance in completing the project. We would also like to extend our gratitude to other faculty members without whose help this project would not have been successfully completed.

We also extend our gratitude to other people who were directly or indirectly involved in helping us in completing the project.

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DECLARATION

We the undersigned students of Loyola Academy (Autonomous) affiliated with Osmania University, hereby declared that the project report entitled **"Understanding Stock Market Using Technical Analysis On Laurus Labs"** has been prepared and submitted as a partial fulfillment for the award of B.com (Business Analytics) degree.

We further declare that it is an original work done as a part of our academic course and has not been submitted to any other university or institution or the award of any degree/diploma/certificate or published any time before.

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<u>CERTIFICATE</u>

This is to certify that the following students have successfully completed the project titled,

"<u>Understanding Stock Market Using Technical Analysis on Laurus Labs</u>"in Loyola Academy, Alwal.

Name of the Student	Reg. No.
Astiker Vaishnavi	111720037002
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They have done this project under the guidance and supervision of Ms. T. SWARNA, HOD of B.Com. Business Analytics, Loyola Academy. The project was completed to our satisfaction, and they showed keen interest and dedication to the project. The project duration is from December 2022 to March 2023. We place our appreciation on records for their best efforts.

Ms.T. SWARNA

B.Com. Business Analytics (HOD)

Loyola Academy

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1.ABSTRACT

With the growing finances in the world, people are looking for opportunities to invest their funds. A stock market is a place where investors can put their hard-earned money into multiple types of investment as it delivers a major advantage by providing diversification. The purpose of our paper is to provide the ability for the layman to understand how the stock market works and moves using technical analysis. Our paper provides a one-step solution to know all the basics required for a person to technically analyse the stock and invest more accurately.

Using the exploratory research methods, we utilized various technical indicators to explore, analyse and anticipate the movement of stock. The paper provides an understanding to the layman as to how to work with these indicators.

We used the following technical indicators.

  i.   TREND
  ii. MACD
  iii. RSI
  iv. VOLATILITY

2.<u>INTRODUCTION</u>

<u>Basic Terminology in Stock Market.</u>

<u>Bulls:</u>

Bulls are people who speculate rise in price of a stock and they buy with an intention to sell when the prices go high and to earn profits.

<u>Bears:</u>

Bears are people who speculate fall in price and gain profits by **<u>short selling</u>** the stock.(Short selling is when people "borrow" stocks from lenders at high price and sell it to others. And when the price falls they buy back the shares and give it back to the lenders. The difference they earned is gains for them.)

<u>Trend</u>

The general direction in which the stock market (or even an individual share) moves is known as a trend. For example, if the market has been rising up for the past one

month, you say that the market is on an upward trend. And if it is going down, the market has a downward trend. There is no specific time limit for a trend. A trend can happen for a short term, the medium term, or even the long term.

IPO- INITIAL PUBLIC OFFERING

An initial public offering (IPO) refers to the process of offering shares of a Companies must meet requirements by exchanges and the Securities and Exchange Commission (SEC) to hold an IPO. to the public in a new stock issuance for the first time. Companies must meet requirements by exchanges and the Securities and Exchange Commission (SEC) to hold an IPO.

Share:

A company's capital is divided into small equal units of a finite number. Each unit is known as a share. In simple terms, a share is a percentage of ownership in a company or a financial asset. Investors who hold shares of any company are known as shareholders.

MARKET CYCLES

"Whatever starts has to end and whatever ends has to start". As there is cycles and repetitions in all the things around us, the same happens with the stock market.
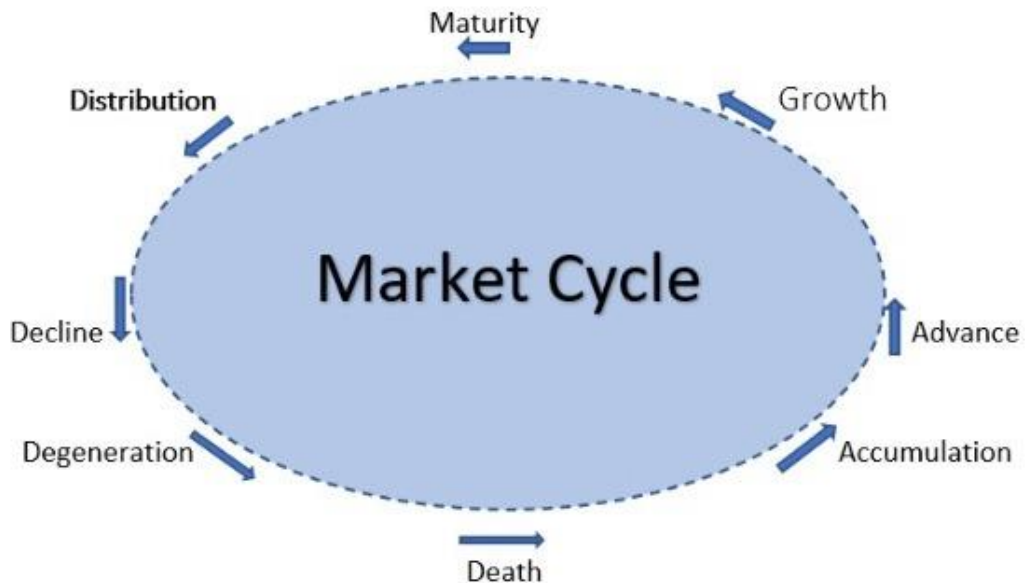
As shown in the above figure each market undergoes the cycle of:

Maturity ->Distribution ->Decline->Degeneration ->Death-> Accumulations-> Advance ->Growth.

The market cycle is nothing but the journey of price for indices or a particular stock from the bulls to the bear and vice versa. This cycle is constantly running for investors with different time frame. There are cycles within cycle. For e.g., a long-term investors cycle might take years or

months whereas day traders cycle completes within a few hours.

The detailed study of each stage of the cycle is quite interesting:

MATURITY:

This stage in the market is when the prices are at all-time high, and the Profit earnings ratio has also reached to its peak. The maturity stage usually comes when a big bull rally has come to its peak. There is a euphoric sentiment among the investors. At this stage the penny shares also start to perform. This stage can be identified when the prices are making higher highs and higher lows. All the trend indicators are below the market prices in an ascending order and are pointing upwards.

DISTRIBUTION:

This stage comes after maturity. The euphoric situation during the maturity stage tends to create panic among the investors. This panic and fear lead to profit booking. Most of the investors now turn to reap their profits which brings a pause to the bull market. The market will now see a range bound movement where each top is sold, and bottoms purchased. This stage can be identified when the prices are not making new highs and volatility is surged.

DECLINE:

This stage comes after distribution. During this stage there is rejection of higher prices. Any rise in price is used as an opportunity to book profits. The market comes down from its highs and takes support from the previous highs. There is high level of indecisiveness between the bulls and the bears, which leads to further panic in retail investors who tend to exit their positions. This sentiment brings more negative pressure on the market prices and drags it further down. This stage can be identified when prices take support on vital trend indicators. Note: make a different chapter on different types of investors and their contribution in the market.

DEGENERATION:

As we know, in simple terms degeneration means deterioration of a particular thing from a higher level to a lower level. In the same way, when the market comes below the decline level it starts rejecting any positive movement. Here the sentiment of the investors is very sceptical. They trade very cautiously and contribute more to taking the prices even lower. The investors sole motive is to earn profits by any means. Hence most of the bulls convert into bears dragging the prices lower. This stage can be identified when the prices keep breaking all the crucial supports.

DEATH:

This state occurs when the market has reached its bottom and starts to trade in a sideways range for a long period. The prices have now come down below all the crucial Moving Averages. Any upward movement in price is rejected. This stage can be identified when all the Moving Averages are above the market in a descending order. The slope of these indicators is either pointing downwards or in sideways trend.

ACCUMULATION:

Like everything that starts must end, in the same way, the market starts to resurrect. This is the stage where the smart money starts to accumulate. The smart investors, the long-term investors and the institutions find this price very cheap and start investing. Investments at this stage once again revives the market sentiments. Here the growth is slower, but consistent. This stage can be identified when the prices start to align towards the Moving Averages.

ADVANCE:

 At this stage the market is in positive sentiment, the retail investors start participating more efficiently at this stage. More and more institutions start investing in the market. The investors are stock selective at this stage. They usually pick Blue Chip stocks or Large Cap stocks at this stage as their money is opted to be safely invested in them. The prices will now start going above longer-term

moving averages which indicate that the Market has started to Advance.

GROWTH:

This is again the stage when the market has started to become more and more positive with each passing day. FII and DII keep investing in huge amounts. At this stage the Mid-Cap stocks also start performing along with the Blue-Chip stocks. Once again, the market is getting geared up to reach unattained goals. The prices at this stage start crossing the smaller moving averages and you can trace the smaller MA cross over the longer ones. This stage further advances to the Maturity stage and thus the cycle repeats itself again and again.

1.1 COMPANY PROFILE:

Laurus Labs is an Indian multinational pharmaceutical and biotechnology company headquartered in Hyderabad. Its focus areas include active pharmaceutical ingredients (APIs), generic formulations, custom synthesis (CDMO), and biotechnology. veterinary APIs and agrochemicals. The company was founded in 2005 by Dr. Satyanarayana Chava.

Laurus Labs has eight manufacturing plants located in Visakhapatnam, Hyderabad, and Bangalore. The manufacturing units have received one or more approvals

from USFDA, WHO, NIP Hungary, KFDA, MHRA, TGA, and PMDA. The company operates through its subsidiaries in Europe and the United States and offers its services in contract research, clinical research, and analytical research through its R&D centers. The R&D centers are based in Hyderabad, Visakhapatnam, and the United States.

Business divisions

The company has 4 business divisions, which are generic formulation (FDF), generic APIs, contract development and manufacturing (CDMO)-Synthesis, biotechnology and speciality chemicals.

Generic formulation (FDF)

In March 2020, Laurus Labs received US Food and Drug Administration approval to
market hydroxychloroquine tablets.

Generic APIs

Laurus Labs claims to be the "world's largest third-party API supplier for anti-retrovirals" and has one of the largest HI Potent API capacities in India.

The company also manufactures oncology and cardiovascular APIs. Laurus Labs supplies (APIs) to nine of the 10 largest generic pharma companies in the world.

CDMO-Synthes

Laurus Synthesis is the company's CDMO subsidiary. The US, European Union and Japan are the three most important markets for Laurus Synthesis.

Laurus Bio

Laurus Bio is the company's biotechnology subsidiary. Laurus Labs entered the biotechnology sector in 2020, by acquiring the Indian biotech company.

1.2 OBJECTIVES

1. To identify the fluctuations in the stock value based on technical analysis and assumption.
2. Analysing the data of various time periods to meet different investment needs of the investors.
3. Understanding the stock market from the beginner's point of view.
4. Learning the fundamentals of candlesticks and its patterns.
5. Identifying the best time to invest and sell in a stock.
6. Deciding whether Laurus Lab's is a good stock to invest.

1.3 SIGNIFICANCE

1. Understanding technical analysis of a stock helps the investor make safer investment decisions.
2. Investor will be able to take more accurate decisions based on his knowledge.
3. Gaining insights on upward and downward movement of the stock.
4. Identifying the best method to analyse a stock before investing.
5. Understanding the importance of investment in stock market.

1.4 SCOPE

1. Studies the use of technical indicators in stock market.
2. Studies the different types of investing options available in the stock market.
3. Studies the various aspects of a particular stock.
4. Studies the candlesticks of a stock using its body and wicks.
5. Studies the growth and fall of a specific stock.

1.5 RESEARCH DESIGN

1. This study uses "Exploratory Research Design" where we utilize technical indicators to understand the trends of the stock of Laurus labs.
2. This study uses "Descriptive Research Design" where we will be using the secondary data from https://www.moneycontrol.com/ to analyse and interpret the movement in the stock value.
3. This study uses the <u>archival</u> procedures to gain the required information.

1.6 RESEARCH METHODOLOGY

This study includes secondary data:

Secondary Data:
The secondary data was acquired from various sources to analyse the stock value. In this study the various types of secondary data used includes previous stock market charts, articles related to the specific stock, previous analysis report on the stock, reports on the investors in the specific stock and closing and opening price of the stock.

Technical Indicators:

1. Trend
2. MACD

3. RSI
4. Volatility

1.7 LIMITATIONS

1. The study does not include all the types of technical indicators.
2. The study does not provide in depth analysis of the stocks.
3. The knowledge for analysis is limited to a single company.
4. The accuracy in the data may differ as this study includes assumptions.
5. This study does not include understanding of all the candlestick patterns.

3.<u>REVIEW OF LITERATURE</u>

<u>Article 1:</u>

Matheus José Silva de Souza and Marina Garcia Pena,(2018)3 in their paper entitled-Examination of the profitability of technical analysis based on moving average strategies in BRICS has provided evidence that technical analysis and fundamental analysis can complement each other in these markets and they have created a comprehensive portfolio containing the assets traded in the markets of each BRICS member. They have also developed an automated trading system that simulates transactions in this portfolio using technical analysis techniques. At the end of this research paper, the results showed that the returns obtained by the automated system, on average, exceeded the value invested. There were groups of assets from each country that performed well above the portfolio average, surpassing the returns obtained using a buy-and-hold strategy. The returns from the sample portfolio were extraordinarily strong in Russia and India. They have also concluded that technical analysis can help fundamental analysis identify the most dynamic companies in the stock market.

<u>Article 2:</u>

Aman Bhatia, (2021)9 in his paper entitled-Technical Analysis and Its Use in The Stock Markets is based on understanding whether the charting patterns that is the

Japanese candlesticks and classical price patterns work for the charts of small capital and middle capital companies. Also, to understand whether charting patterns can be relied upon as a tool for technical analysis or not. This study considers various charting patterns (both, Japanese candlestick patterns and classical price patterns) and sees if they work for these companies as well. Systematic sampling was chosen and companies were categorized based on their market capitalization in this article. Three companies from both, mid-capital and small-capital categories were considered as the samples for this study. Thus, concluded through analysis saying, it was found that there were 16 patterns (11 Japanese candlestick patterns and 5 classical price patterns) that existed in the sample considered for the purpose of the study and those patterns had a success rate of 75% and the number of patterns so found were more in the small capital companies than the mid capital companies.

Article 3:

Dev Shah, Haruna Isah and Farhana. H in their paper entitled - Stock Market Analysis: A Review and Taxonomy of Prediction Techniques is on the Stock market prediction that has always caught the attention of many analysts and researchers. In this article, they refer to popular theories which suggest that stock markets are essentially a random walk, and it is a fool's game to try and predict them. Predicting stock prices is a challenging problem in

itself because of the number of variables which are involved. In the short term, the market behaves like a voting machine but in the longer term, it acts like a weighing machine and hence there is scope for predicting the market movements for a longer timeframe. They also mentioned that the Application of machine learning techniques and other algorithms for stock price analysis and forecasting is an area that shows great promise. In this paper, they first provide a concise review of stock markets and the taxonomy of stock market prediction methods. And then focused on some of the research achievements in stock analysis and prediction. And later discussed technical, fundamental, short- and long-term approaches used for stock analysis. Finally, they concluded by presenting and showcasing some challenges and research opportunities in this field.

Article 4:

Jingyi Shen and M. Omair Shafiq (2020)7, in their paper entitled - Short-term stock market price trend prediction using a comprehensive deep learning system explained that in this era of big data, deep learning for predicting stock market prices and trends has become even more popular than before. And they have also collected 2 years of data from the Chinese stock market and proposed a comprehensive customization of feature engineering and deep learning-based model for predicting trends of stock markets. The proposed solution is comprehensive as it

includes pre-processing of the stock market dataset, utilization of multiple feature engineering techniques, and combined with a customized deep learning-based system for stock market price trend prediction. They even conducted a comprehensive evaluation of frequently used machine learning models and concluded that their proposed solution outperforms due to the comprehensive feature engineering that they built. The system achieves overall high accuracy for stock market trend prediction. With the detailed design and evaluation of prediction term lengths, feature engineering, and data pre-processing methods, this work contributes to the stock analysis research community both in the financial and technical domains.

Article 5: -

George Joseph, Saranya G Das and Amrudha Romeo (2015)5 in their paper entitled - A Study on The Formation of Candlestick Patterns With Reference To Nifty Index For The Past Five Years explained in their article that Candlesticks are one of the most powerful technical analysis tools in the trader's toolkit. Candlestick Charting originates back to Japan centuries ago. It is a method of looking at data differently than has been developed in western cultures. The advantage of using candlestick charting in place of Bar charts is that they could use some techniques and analysis that bar charts offer plus the diversity and unique signals that candlesticks generate. Their study on the formation of candlestick pattern was

done to find out the different candlestick patterns and identify their accuracy. It will help the investors to check whether the candlestick patterns are dependable for trading decisions or not. This study is conducted based on the past five years 'Nifty indexes. The main findings from this study are candlestick patterns that are not 100% accurate as per the past five-year Nifty index. And these patterns are not very much supported by technical indicators. From this study, we can conclude that investors should consider other factors along with candlestick patterns. It helps to improve the accuracy level.

Article 6:

Dr. S. Uma Prabha (Associate Professor, Shrimati Indira Gandhi College, Tiruchirappalli) and M. Malavika (Research scholar, Shrimati Indira Gandhi College, Tiruchirappalli.) volume:6, conducted research to evaluate the stocks listed on NSE with reference to pharmaceutical industries. The study covers a period of three months from 1st April 2014 to 30th June 2014. Companies from Pharmaceutical sector is selected on Stratified sampling technique in which top 3 Pharmaceutical companies (Dr Reddy's Laboratory, Lupin and Sun pharma) were selected out of the total population of 50 companies. The strength of the stocks was evaluated using three technical tools i.e., beta, Relative strength index and simple moving average. The results indicated the positive note of the stock price of the selected companies giving a green

signal to the investors to trade. From the above 3 company's beta value, investor can give first priority in investing Dr Reddy's Laboratories, Lupin, Sun Pharma respectively.

Article 7:

Kuldeep Kumar Associate Professor, IIMT (ISM), School of Management, Gurgaon (International Journal of Research in Management & Social Science Volume 3, Issue 2 (III) conducted a study on price movement and stock volatility on selected pharmaceutical companies listed on BSE namely Lupin Pharma, Sun Pharma, Cadila and Cipla Ltd. The analysis of the study is based on three months 'of data regarding stock price from 1st January to 31st March 2015. The data has been collected from BSE India for the study period. The study uses technical analysis. The different values like Standard Deviation, Beta, and Volatility are calculated to investigate share price movement. The findings indicated that based on Price movement and stock volatility analysis higher stock volatility has been noted in Cadila Ltd which is placed at the first position, Sun Pharma stood at the second position, Cipla Ltd. at third position, and Lupin Pharma at last position with respect to their volatility. So, the study concludes that there is a higher risk in Cadila Ltd and in Sun Pharma Ltd.

Article 8:

Shruti Sandeep Chavarkar1 and Keyur Kumar M Nayak (Volume 6, Issue 1) examined the stock random behaviours of price movement of pharmaceutical sector of the Indian stock market with reference to pre and during covid-19 pandemic. The study is divided into two periods I. Pre-pandemic (1st April 2019 to 19th March 2020) and II. During the pandemic (20th February 2020 to 31st December 2021). The research conducted descriptive research of the top 10 pharmaceutical companies of India, listed in NSE which are to analyse the randomness of the stock market of the Indian pharma sector in the selected time period, series of tests viz. Parametric (Augmented Dicky- Fuller - unit root, Variance ratio) and non-parametric (Runs) tests were adopted. It is also done to examine the weak form efficiency (overall market is not influenced by past events).

According to run test results, all top NSE-listed pharmaceutical companies' share prices have moved randomly, as a result, it implies that the stock market prices are under the impact of any pattern i.e., they are independent of each other. In such a case future price hypothesis is difficult to make as they cannot use past price information.

Article 9:

Papia Mitra & Gholam Syedain Khan (Department of Commerce, University of Calcutta, volume:3) conducted a study on the intraday effect on The SE stock market adopting a day-of-the-week analysis to find out the

significant day-of-the-week effect in the emerging Indian stock market. The research includes the daily opening and closing price of the NSE index along with the SPDR Global Dow ETF (DGT) Index. Data is gathered from Yahoo India and the official website of NSE covering the period between 2 January 2001 and 31 December 2012. The study includes the estimation of 5 models in which each risk factor differs from the other.

As a result, concluded that NSE Nifty50 does not depict any such day-of-the-week effects on the intraday and inter-day stock returns. While the index shows that Wednesday effect on the inter-day return of the index, Monday gives the lowest return but maximum volatility. However, in certain cases, Friday also suffers from the lowest return.

Article 10:

Varadharajan, P.; Vikkraman, P. (Journal of Contemporary Management Research. Mar2011, Vol. 5) seeks to study the candlestick charts for eight companies from various sectors or the financial year 2009-2010 and find the best stocks for investment for the next financial year, i.e., 2010-2011. The opening, closing, and high and low prices of the eight stocks were taken to create candlesticks along with the month wise data. Based on the price movement of these stocks, the best stocks for investments were found to be SBI and ICICI from banking

sector and ONGC from the power sector. The study also indicated the emergence of certain inefficiencies due to the short period of prices considered and the limited number of stocks. The difference in investment pattern will be seen based on the considered stock along with the associated risk factors.

ARTICLE 11:

Madhur Raj Jain statistics generated by market activities like stock's past prices or volume to predict future price movements. Conversely, fundamental analysis looks at economic factors to forecast the price movements of stocks in future. Suresh A.S. (2015) tried to emphasize the importance as the firm belongs and the projected performance of the company. Technical tools like line charts, bar chart, point and figure charts, trend charts, moving average analysis, relative strength, resistance and support levels, break-out theory, head and shoulders pattern, double top and bottom formation to predict future stock prices and assess the effectiveness of technical analysis by studying U.S. stocks from 1962 to 1996. Authors proposed new approaches to evaluating the efficacy of technical analysis such as nonparametric kernel regression. They found that technical analysis provides incredible information about the stocks over the time period, but technical analysis can be improved by using automated algorithms such as head-and-shoulders and rectangles chart patterns.

Article 12:

Yu Shan-Chen This study applied artificial neural networks to explore the influences of the quantitative and qualitative patent indicators upon corporate market value in the US pharmaceutical industry. The results showed that US pharmaceutical companies should not concentrate most of their R&D resources on one particular technological field but create wider technological capabilities to avoid missing new technological opportunities and to decrease the risk of the lock-in effect. Moreover, in order to enhance their market values, they should invest more resources in R&D activities to increase their advantage in their most important technological fields. In addition, this study found out that patent citations have an inverse U-shaped influence upon corporate market value and there exists an optimal value for patent citations. If patent citations are below the optimal value, they are positively associated with corporate market value. However, if patent citations are beyond the optimal value, they are negatively associated with corporate market value because of the significant spill over effect of R&D in the pharmaceutical industry.

Article 13:

Ms. Kirtee D. Khubchandanee & Prof. Riddhi Sanghvi Hemal Pandya (2013), in this paper, technical analysis of securities of the selected companies from IT sector is carried out which is one of the leading and fastest growing

sectors of Indian economy. Secondary Data of the last two years is collected office leading IT companies: HCL, Infosys, MPHASIS, Wipro and TCS are taken for the study. Line chart, column chart, candlestick chart, exponential moving average (EMA), Moving average convergence divergence (MACD), Relative strength index (RSI) and Rate of change (ROC) are the tools and techniques used in the study. The analysis tells that the future trend would be known by technical indicator and the investment in these IT companies will be benefitted for the investors.

Article 14:

Wong, Manzurand Chew (2003) looked at the importance of technical research in predicting when to Enter and exit the stock market. Test statistics are used to evaluate the performance of the Moving Average, the most well-known pattern follower, and the Relative Strength Index, the most widely used Counter-trend predictor. The findings, based on Singapore data, showed that the indicators can be used to generate a substantial positive return. It was concluded that members of SES enjoy substantial profits by applying technical analysis.

Article 15:

Hudson, Dempsey, and Keasey (1996) investigated whether technical trading rules would forecast the stock market in the United Kingdom. Their paper also looked at

whether technical analysis could provide investors with higher returns in a high-cost trading scenario. Study also concluded that although the technical Companies must meet requirements by exchanges and the Securities and Exchange Commission (SEC) to hold an IPO. © 2021 IJCRT | Volume 9, Issue 5 May 2021 | ISSN: 2320-2882 IJCRT2105561 International Journal of Creative Research Thoughts (IJCRT) www.ijcrt.org F206 rules investigated have predictive potential in terms of UK data, their use does not enable investors to make excessive returns in the case of expensive trading.

Article 16:

Hongxing He, Jie Chen, Jin Huidong, Chen Shu-Heng studied on Stock Trend Analysis and Trading Strategies.This paper outlines a data mining approach to analysis and prediction of the trend of stock prices. The approach consists of three steps, namely partitioning, analysis and prediction. A modification of the commonly used k-means clustering algorithm is used to partition stock price time series data. After data partition, linear regression is used to analyse the trend within each cluster. The results of the linear regression are then used for trend prediction for windowed time series data. The approach is efficient and effective at predicting forward trends of stock prices. Using our trend prediction methodology, we propose a trading strategy TTP (Trading based on Trend Prediction). Some preliminary results of applying TTP to stock trading are reported.

Article 17:

Author Puchong Praekhaow, Department of Mathematics, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand, determines trading points using Moving Average Method. This paper is focused on the net profit of trading points using three moving average techniques based on pattern determinations. Stocks' samples were selected by simple random sampling method from the stocks in the set 50 stocks indexes of the Thailand Stock Market. The net profits of the investment in each trading methods on the experiments were compared. The results indicated that all of the moving average technique can make profit for trading. Moreover, the simple moving average technique can give profit-making up to 9%, which is better than other methods.

Article 18:

Batra, Amita investigates the Stock Return Volatility Patterns in India. This paper analyses the time variation in volatility in the Indian stock market during 1979-2003.They examine if there has been an increase in volatility persistence in the Indian stock market on account of the process of financial liberalization in India. Further, they examine the shifts in stock price volatility and the nature of events that apparently cause the shifts in volatility. They also make an attempt to characterize the evolution of the stock market cycles over time in India and examine if in

recent times the stock market cycles have exhibited greater amplitude and volatility. In an overall sense, therefore, the aim of this paper is to give economic significance to changes in the pattern of stock market volatility in India during 1979-2003. This analysis reveals that the period around the BOP crisis and the initiation of economic reforms in India is the most volatile period in the stock market. Structural shifts in volatility are more likely to be a consequence of major policy changes and any further incremental policy changes may have only a benign influence on stock return volatility. Stock return volatility in India seems to be influenced more by the domestic political and economic events rather than global events.

Article 19:

Dr. Anurag Agnihotri, Shagun Arora studies the Financial Information and the Movement of Stock Prices of Indian Pharmaceutical Companies. The volatility of the stock price is a critical concern for investors. It is believed that financial information significantly affects the movement of stock prices. The study examines the relationship between the value relevance of financial performance and stock price in the Indian pharmaceutical sector. The top ten pharmaceutical companies, in-terms of value, were studied during 2018-2021. In the current study, the relevance of financial information of pharmaceutical companies is the independent variable which includes liquidity performance, turnover performance, financial

performance, and profitability performance. The stock price of pharmaceutical companies is the dependent variable. By employing Correlation, Multiple regression, and ANOVA test, the study found that DPR, CR, ATR, EPS, ROCE, and NPM significantly influence the stock price of pharmaceutical companies. However, CR, DPR, and ATR have a statistically insignificant impact on the stock price. The study reveals that financial and profitability performance have a high explanatory power on the movement of stock prices. The outcome of the analytical research helps the current and prospective investors to determine a suitable investment decision.

Article 20:

Andreas Kiky and Ika Yanuarti examines Candlestick Accuracy and Investors Gain. Technical analysis has been well-known by traders as one of the important tools of buying and selling when investors are investing in the capital market. This analysis has been established a long time ago since late 1869 which investors know as Random Walk and in early 1900 as Dow theory. Speculation has been a major goal of technical analysis invented, and most approaches try to capture the right moment to buy, hold or sell the stocks. At the same time, candlestick charts have also been developed in Japan by Munehisa Homma, a Japanese rice trader. Later on, Steve Nisson brought this concept to the Western world. The problem arises with the question of which technical tools can be the most accurate. In this research, daily

price of a certain stock in Indonesia are examined by the authors and evaluate its accuracy based on its candlestick pattern. 1-day and 2-day patterns of these candlesticks are compared by the authors and hopefully can bring insight about this sophisticated method. This result showed that there is no difference in the candlestick accuracy of 1-day pattern and 2-day pattern. While this research also suggests that an investor that uses technical analysis, especially the candlestick method, tends to be more cautious. It is true this candlestick pattern shows about 40% accuracy, but the authors prefer to be cautious about 60% unpredicted market behaviour.

4.RESEARCH METHODOLOGY

4.1 CANDLESTICKS

4.1.1 MEANING

A *candlestick* is a type of chart used under technical analysis by stock traders to describe and understand the price movement of stocks. It was developed by Munehisa Homma, a Japanese rice trader to graphically display the nature of price movements using different colours to denote the differences between prices. It represents four important pieces of information i.e.

   i.   Open price
  ii.   Closing price
 iii.   Low price
 iv.   High price

The rectangular part is called the body of the candlestick whose ends represent the open and close price. And the line above and below the body is called the wick of the candle or the shadow of the candle and the ends of the shadows denote the low price and high price. Shadow is the distance between the end of the body of the candle to the high/low prices of the candle.

4.1.2 THE ANATOMY OF CANDLE:

A *Bearish Candle* represents the large number of bears in the picture when compared to bulls. It means the bears are dominating the market bringing the prices down. In a bearish candle the opening price is at the top of the body and the closing price is at the bottom of the body of the candle. The end of the upper shadow represents the high price, and the end of the lower shadow represents the low price. A bearish candle is red in colour. It indicates the decline of prices.

(Explanation: Suppose the price opened at ₹100 for the day and now suppose the bulls tried to bring up the price to ₹120, but the bears took over the market and brought the prices down to ₹60. Now the bulls tried to bring up the price but couldn't overpower the bears and hence could only bring the price up to ₹80 at the end of the day.

Therefore, in this case **₹100** is the open price, **₹120** is the high price, **₹60** is the low price and **₹80** is the close price.)

A *Bullish candle* represents the dominance of bulls over bears in the market. In a bullish candle the opening price is at the bottom of the body and the closing price is at the top of the body of the candle. The end of the upper wick represents the high price, and the end of the lower wick represents the low price. A bullish candle is green in colour.

(Explanation: Suppose the price opened at **₹100** and the bears tried to bring it down to **₹80**, but the bulls took over and brought the price up to **₹140**, although the bears tried to bring the prices down but couldn't overpower the bulls and hence only brought it down up to **₹120** at the end of the day.

Now here, **₹100** is the open price, **₹80** is the low price, **₹140** is the high price and **₹120** is the close price.)
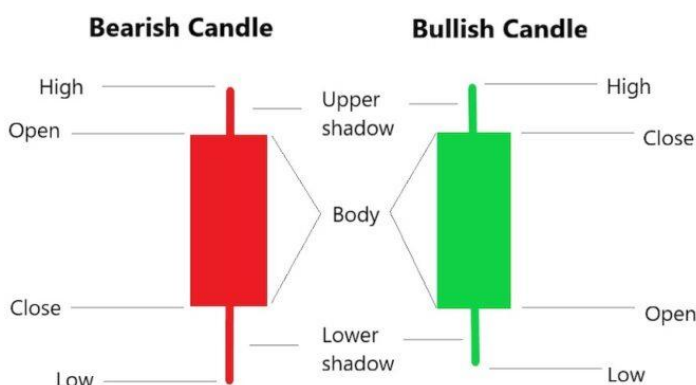
The bullish and the bearish candles represents the upward and the downward movements in the prices respectively. A bearish pattern indicates that the prices are likely to fall whereas a bullish pattern indicates that the prices are likely to rise.
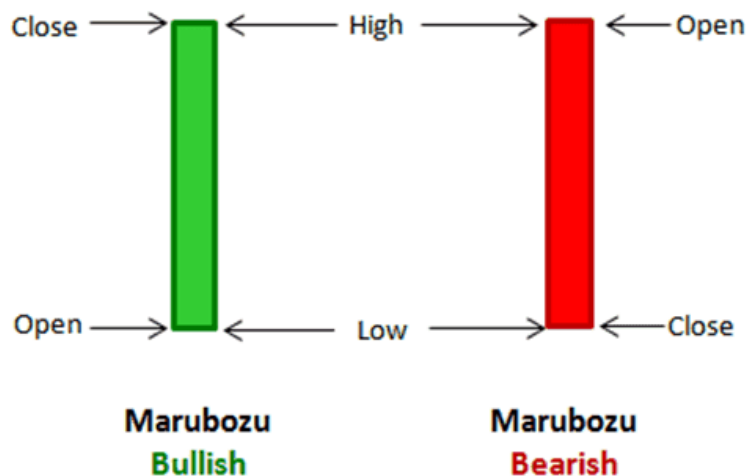
4.1.3 CANDLESTICK PATTERNS

MARUBOZU:

Marubozu is a Japanese word for dominance. They are extremely powerful candles with small or no shadow to their body.

A **green marubozu** i.e a **bullish marubozu** candle indicates that the price opened at a certain level and kept on rising. The opening price and the low price are the same. Similarly, the closing price and the high price are the same. Since there is no lower shadow, it means the price did not fall. It indicates a powerful domination of the bulls in the market. If you spot a high volume bullish marubozu you can be sure that there is a really high possibility for the market price to rise. It is because the candle represents a huge number of bulls in existence which gives other traders the confidence to invest in the market.

Similarly, a **red marubozu** i.e., a **bearish marubozu** candle indicates that the price opened at a certain level and kept on falling. The closing price and the high price are the same and similarly, the opening price and the low price are also the same. And since there is no upper wick,

it means that the prices did not rise. It indicates a powerful domination of the bears in the market. And if a high volume bearish marubozu is spotted you can be sure that there is a really high possibility for the market prices to fall. This is because once spotted a bearish marubozu makes the traders alert and cautious so as to not invest in the market because of the high dominance of the bears.


DOJI:

This is a type of candlestick pattern in which the opening price and closing price are the same or are very close to each other i.e., the body of the candle is very small. The shadow could of different lengths. It basically indicates that the traders are indecisive. It denotes the indecisiveness of traders. Neither the buyers have a dominance nor the sellers and hence, the open and close

price are same or have a very small difference between each other.

(NOTE: If a bullish marubozu(green) is seen next to a bearish doji(red), the market price/trend will definitely move upwards and similarly, if a bearish morubozu(red) is seen next to a bullish doji(green), then the market price/trend will definitely move downwards.

DOJI CANDLE
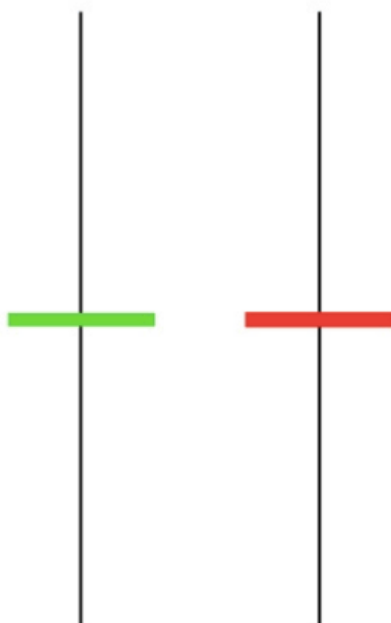
HAMMER:

In this pattern, the closing price and the high price are the same. It basically means that after the price opened at a certain level the bears tried to bring it down by selling but the bulls came into picture and tried to take the prices up by buying, overcommit and finally, the close is higher

when compared to the open. Now this is the case in a bullish hammer.

When it comes to a bearish hammer, what is happening here is that the price has opened at a certain level and the bears tried to pull down the prices (which is indicated by the wick), but the bulls also tried to bring up the prices but could not bring it up more than the opening price.
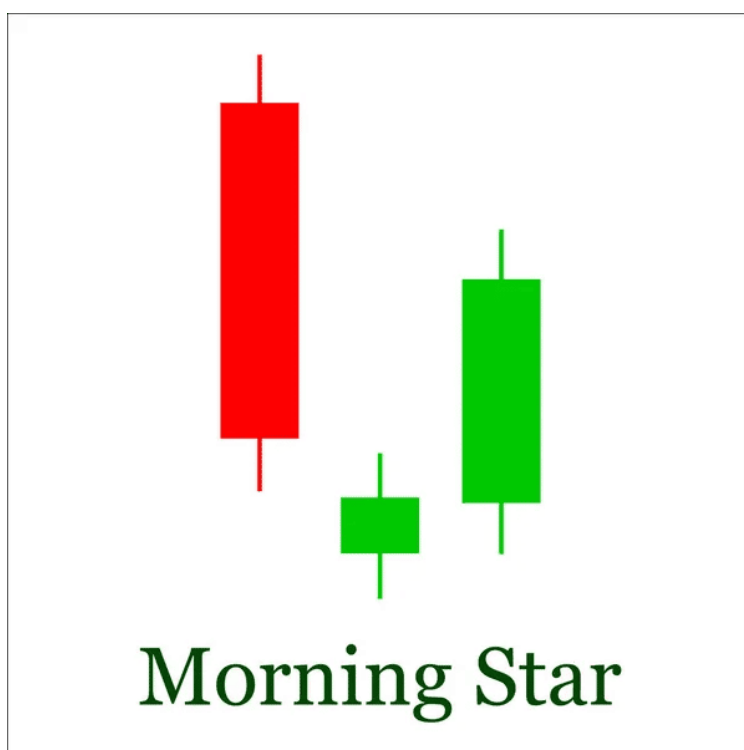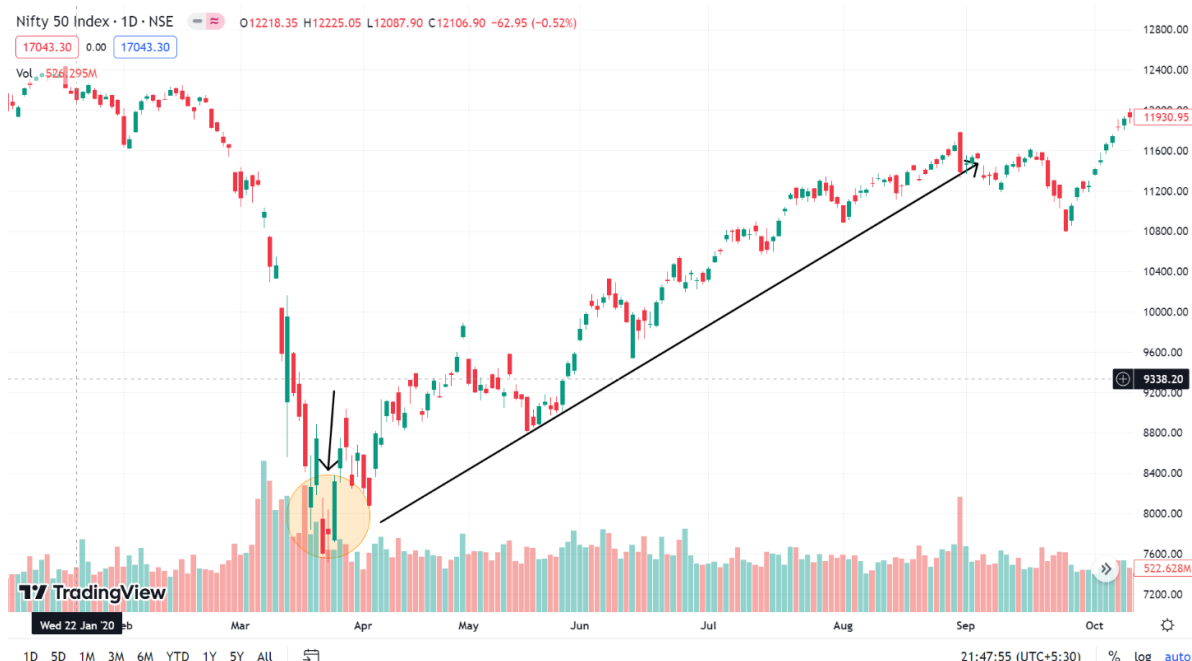
This is also a kind of a doji.
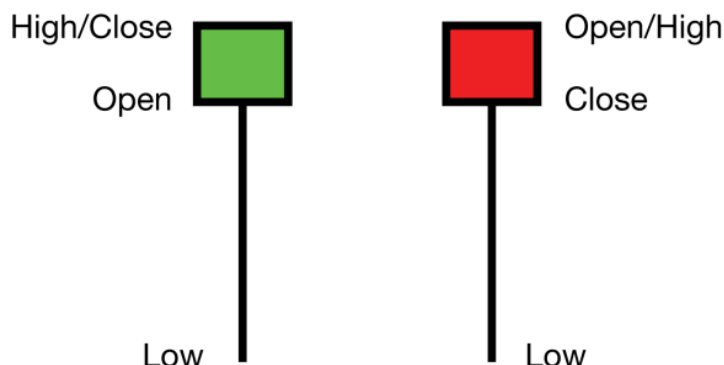
MORNING STAR PATTERN:

A morning star pattern is a three-candlestick pattern which denotes the start of an up-trend. It is seen at the bottom of a down-trend. It is a downtrend reversal pattern. A morning star pattern consists of three candlesticks (as given in the image below) i.e the first candle being a bearish candle with a long body and the second candle being a doji (note:- this 2nd candle need not necessarily be

bullish doji only, it could be either of bullish or bearish) followed by the 3rd candle being a bullish candle with a long body and the opening price of this bullish candle must cross the closing price of the 2nd doji candle. The 3rd candle is usually called the confirmation candle as it confirms the trend of the stock. This pattern when spotted at the end of a down-trend indicates the end of the downtrend and start of an up-trend, meaning the stocks will go up and it is wise for the trader to enter into the market at this stage to gain profits.
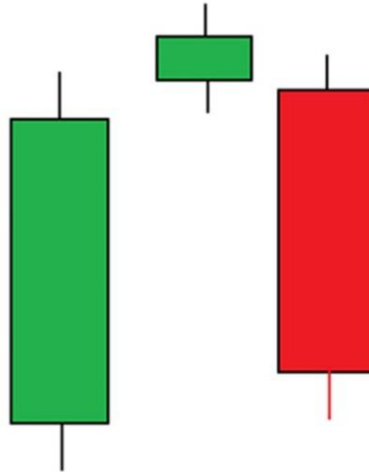

Morning Star

In the above graph, you can see a morning star pattern is formed at the end of a down-trend and then the start of an up-trend begins. The 1st candle in the pattern is a bullish candle and 2nd is a doji and the 3rd candle which is a confirmation candle is a bullish candle with long body and the open price of this 3rd candle is more than the close price of the preceding candle.

EVENING STAR PATTERN:

An evening star pattern is also a three-candlestick pattern which denotes the start of a down-trend. It is seen at the end of an up-trend. It is a bearish candlestick pattern unlike morning star, which is a bullish candlestick pattern. It starts with a bullish candle with a long body followed by a doji (could be bullish or bearish too) which is then followed by a confirmation bearish candle. And this

confirmation bearish candle must have an open price which is lower than that of the doji preceding it. This indicates start of a downtrend and is wise for a trader to sell their shares at this stage.

In the above chart, you can see an evening star pattern at the end of an up-trend, and you can see the start of a down-trend. The 1st candle in the pattern is a bullish candle and the 2nd candle being a gravestone doji and the

3rd candlestick which is a bearish candlestick has an open price which is lower than the closing price of the preceding candle.

4.2 TECHNICAL ANALYSIS

4.2.1 TREND

Trend analysis is one of the most used technical analysis indicators which uses historical data for predicting the movement of the investors stock price. Trend basically means the direction in which stock price is moving.

This analyses the bullish and bearish stock Patterns.

Basically, this technical analysis method tries to prove that the "history repeats itself". This trend analysis can be used for short term and long-term investments.

I. TYPES OF TREND ANALYSIS:

There are three types of trend analysis, which are as follows:
- Upward trend
- Downward trend
- Sideways

UPWARD TREND ANALYSIS:

According to investors upward trends are always seen as a profit i.e they are considered to be a bullish market pattern. This trend is called upward because this shows that the direction or the movement of the price is going higher. An uptrend is characterised by higher highs and higher lows where each consecutive high is higher than the previous high and simultaneously each consecutive low is higher than the previous low. An upward trend line is drawn by connecting lower lows of candlesticks. It is wise to invest in an uptrend because the prices will go up.

start of upward trend

In the above pic there are two arrows and the second arrow's low is higher than the first arrow's low depicting higher lows.

DOWNWARD TREND ANALYSIS:

According to investors downward trends are always seen as a loss i.e., they are considered to be a bearish market pattern. This trend is called downward because this shows that the direction or the movement of the price is reducing. One of the main characteristics of this analysis is it has lower highs and lower lows where each high of a candlestick is higher than the consecutive high and simultaneously each low of a candlestick is lower than the previous candlestick. A downward trend line is drawn by connecting lower highs of candlesticks. It is wise not to invest in a downtrend.

In the above pic there are two arrows, and the second arrow's high is lower than the first arrow's high depicting lower highs.

SIDEWAYS TREND ANALYSIS:

According to investors this is a trend pattern where the prices of a stock are within the support and resistance line . This pattern generally occurs when the buyers and sellers in the market are indecisive , i.e neither the bulls nor bears are able to over power the market and thus leading to fluctuations in the prices within a narrow range.During this trend patterns many of the investors would not want to invest in the market as it is a situation where one would gain neither profit nor loss.

This analysis is also called as the rangebound market.

II. MOVING AVERAGES:

According to this strategy, if the price is above a moving average, the trend is up. If the price is below a moving average, the trend is down. However, moving averages can have different lengths so one MA may indicate an uptrend while another MA indicates a downtrend.

There are two types of moving averages,which are:

- **SIMPLE MOVING AVERAGE**:

A three-day Simple moving average adds up the five most recent daily closing prices and divides the figure by three to create a new average each day. Each average is connected to the next, creating the singular flowing line.

- **EXPONENTIAL MOVING AVERAGE**:

Calculation of exponential moving average is more complex than simple moving average as it takes into consideration the recent price changes in the stock.

III. SUPPORT AND RESISTANCE

SUPPORT:

Support is like a benchmark where the bulls come into the picture and give support by not letting the price go further below the support line i.e the prices will bounce back when it reaches a certain price near the support level.

Here the support line is the common point where the stock price is relatively same during different time periods.

When the support line breaks it means that the prices of the stock are going to fall and there is going to be a downward movement in stock pattern. This is the time where the investors would prefer to sell the stocks as it indicates the start of a downtrend.

RESISTANCE:

Resistance is also like a benchmark where the bears come into the picture and make sure that the prices do not go beyond the resistance line.

Here the resistance line is the common point where the stock price is relatively the same during different time periods.

If resistance is broken it mostly indicates the start of an uptrend. For instance, if broken by a green bullish marubozu gives a confirmation that the prices will go up. This is the time when investors would like to buy their stocks.

4.2.2 MACD

MACD stands for Moving Average Convergence Divergence. It is a momentum indicator i.e it indicates the speed at which the price trend is going. It is a trend following momentum indicator. It basically reveals the relationship between moving averages of two different periods.

It has three main components –

i. MACD line
ii. Signal line
iii. MACD Histogram

CALCULATION OF THE COMPONENTS:

While selecting the time periods for moving average it is conventional to use a 12-period moving average and a 26-period moving average.

- MACD LINE is calculated by subtracting the 26-period EMA from 12-period EMA.

(NOTE: A 12-period EMA is faster than a 26-period EMA). Therefore, if the MACD line value is positive it means the 12-period EMA is higher than 26-period EMA.

- SIGNAL LINE is calculated by taking the 9 period EMA of MACD. If signal is more than MACD i.e MACD line is below signal line it means that the moving average of MACD is lower than its own 9 period moving aaverage (ignal Line). And if signal is less than MACD it means the moving average of MACD is working well because it outrun its own average (i.e signal line).
- HISTOGRAM is calculated by subtracting signal line from MACD line. Histogram value is -ve if Signal value is more than MACD value and histogram value is +ve when the Signal value is less than MACD value.

DAY	Price in Rs	12 EMA	26 EMA	MACD line	Signal line	Histogram	
1	100						
2	101						
3	103						
4	106						
5	110						
6	115						
7	121						
8	128						
9	136						
10	145						
11	155						
12	166	123.83					
13	178	130.33					
14	191	137.83					
15	205	146.33					
16	220	155.83					
17	236	166.33					
18	253	177.83					
19	271	190.33					
20	290	203.83					
21	310	218.33					
22	331	233.83					
23	334	248.75					the pace of price rise started to decrease from this day
24	339	263.17					
25	342	276.83					
26	340	289.25	204.85	84.404			
27	338	300.33	214	86.333			DEGROWTH FOR THE FIRST TIME
28	335	309.92	223	86.917			MACD LINE is still increasing
29	331	317.83	231.77	86.064			Pace of increase in price was declining from 23rd day,
30	326	323.92	240.23	83.686			but MACD line started to decrease only on 29th day - Hence lagging
31	320	328	248.31	79.692			
32	313	329.92	255.92	73.994			
33	305	329.5	263	66.5			
34	296	326.58	269.46	57.121	78.3012	-21.1802	MACD less than its own 9 day average
35	286	322.58	275.23	47.352	74.1843	-26.8323	

HOW TO USE MACD TO ANTICIPATE AND PREDICT STOCK TREND:

i. CROSSOVERS:

Golden Crossover: A golden crossover is a breakout(start) of a bullish trend in the stock. It is basically when a faster period moving average breaks and crosses above a slower moving average. In MACD, it is a case when the MACD line crosses the Signal Line from below. This could indicate start of an upward trend. It is wise for you to invest at this point and buy to earn profits but, to get better accuracy you can also check with simple moving averages of two different periods i.e 12 period moving average and 26 period moving average.

In the chart below, you can see that the MACD line (blue line) crossed and went above the signal line which is called golden crossover and you can see an uptrend in the price from that point.

Death Crossover: A death crossover is a breakout(start) of a bearish trend in the stock. It is basically when a faster moving average falls below and crosses a slower moving average downwards. In MACD, it is a case when the MACD line crosses the Signal Line downwards and goes below the Signal line. This could indicate start of a downtrend. It is wise for you to sell at this point to avoid loses, but to get better accuracy you are supposed to check with exponential moving average of two different time periods i.e 12- period ema and 26-period ema.

In the chart below, you can see that the MACD line (blue line) crossed and went below the Signal line which is a death crossover, and you can see a downtrend in the price from that point.

4.2.3 RSI

It is a popular momentum indicator developed by Welles Wilder in 1978. Momentum refers to velocity of the price trend i.e both speed and direction of the price. RSI stands for Relative Strength Index. RSI helps us to identify the velocity of the price trend i.e the speed and the direction in which the price is moves (upward or downward). It calculates and compares the recent gains and losses of the stock which helps in indicating the momentum. It is a banded oscillator ranging between 0 to 100.

FORMULA TO CALCULATE RSI:

RSI = 100 – 100/(1+RS)

RS= Average gains/average losses

Average Gains = sum of gains over last 14 periods/ 14

Average losses = sum of losses over last 14 periods/ 14

HOW TO INTERPRET MOMENTUM OF STOCK USING RSI:

To interpret the momentum of stock using RSI, we have two methods:

  i.   **Overbought And Oversold Method**
  ii. **RSI Divergence Method**

OVERBOUGHT AND OVERSOLD:

It is an intelligent point to anticipate reversals of trend. In this, the traders use a common safe range from 40 – 60.
Overbought:
If the RSI rises above the range of 70, it indicates overbuying of the stock by bulls and it can be seen as a reversal point where there is a probability for the prices to go down i.e the bears might come into the picture and take dominance.
This situation implies overbought where the traders must alert themselves for the reversal of the trend and they might have to sell their stocks.

In the picture given below, we can see the RSI went above the range of 70, depicting overbuying of stocks which became a reversal point from where the RSI went down up to 40 indicating downtrend.

<u>Oversold</u>:
Oversold is the situation where the RSI falls below the range of 30. It indicates over selling of stock by bears and can be seen as a reversal point where there is a probability for the prices to go up i.e bulls might come into the picture and take dominance.

At this point, there is an opportunity for the traders to invest in the stocks as it indicates the reversal of downtrend into an uptrend.

In the picture given below, we can see the RSI fell below the range of 30, depicting overselling of stocks which became a reversal point from where the RSI rose up to 78 indicating uptrend.

Relative Strength Index
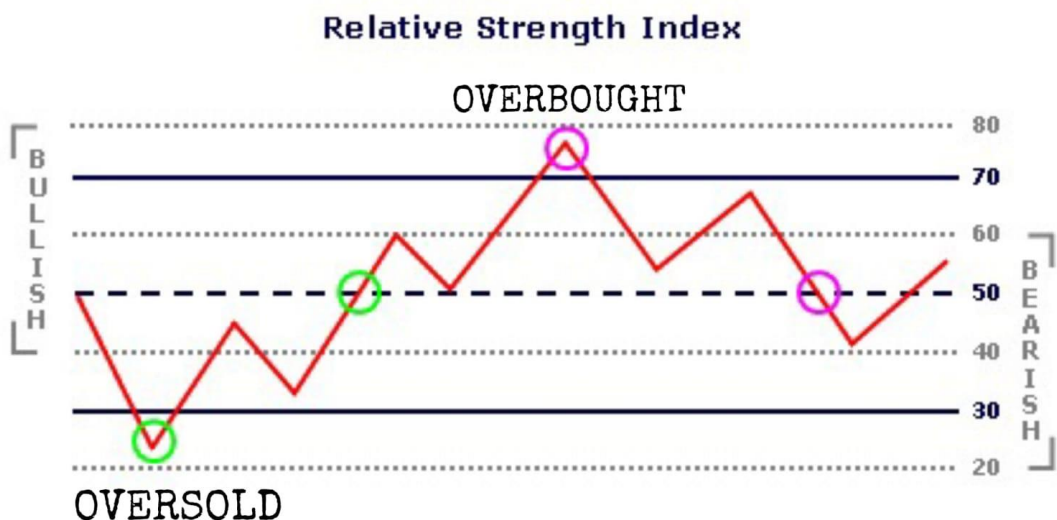
RSI DIVERGENCE:

The usual scenario which we see in the trends of price and RSI is that both move in the same direction i.e., a healthy trend. But the RSI divergence is a situation where both price and RSI move in the opposite direction. There is a high probability of a reversal of the trend in this scenario and it is seen as an early call for the traders. There are two types of RSI divergence namely:

i. Bullish Divergence
ii. Bearish Divergence

Bullish Divergence:

Bullish divergence is when the RSI is moving high, but the stock price is declining. As you can see in the picture below, the price is making lower highs and lower lows which depicts downtrend, on the other hand, RSI is making higher highs and higher lows depicting an upward trend. The traders while facing such situation must anticipate that the downtrend of prices might reverse into an uptrend.

Prices Making Lower Highs and Lowers Lows

RSI Making Higher Highs and Higher Lows

Bullish Divergence

Bullish Divergence

Price making lower lows

RSI 14 close SMA 14 2 47.76 51.97 n/a n/a

RSI making higher lows

Bearish Divergence:

Bearish divergence is when the RSI is moving down but the stock price is rising. As you can see in the picture below, the price is making higher highs and higher lows which depicts uptrend, meanwhile the RSI is making lower highs and lower lows depicting a downward trend. The traders while facing such a situation must anticipate that the uptrend of prices might reverse into a downtrend.

Prices Making Higher Highs and Higher Lows

RSI Making Lower Highs and Lower Lows

Bearish Divergence

Bearish Divergence

Price making higher highs

RSI 14 close SMA 14 2 49.19 52.08 n/a n/a

RSI making lower highs

4.2.4 VOLATILITY IN THE STOCK MARKET

Volatility in the stock market measures the price fluctuations of a stock or the overall market changes over a period It is concerned with the uncertainty of the stock market, and it can be used to identify both risks and opportunities for investors. In simple terms, it indicates the difference (fluctuation) in how much a stock varies from its price range.

Simply put Volatility refers to an upward and downward market movement. Let us assume that you expect a stock to be at one price, but over a period of time, it drastically goes up and down. These movements represent volatility in the stock market.
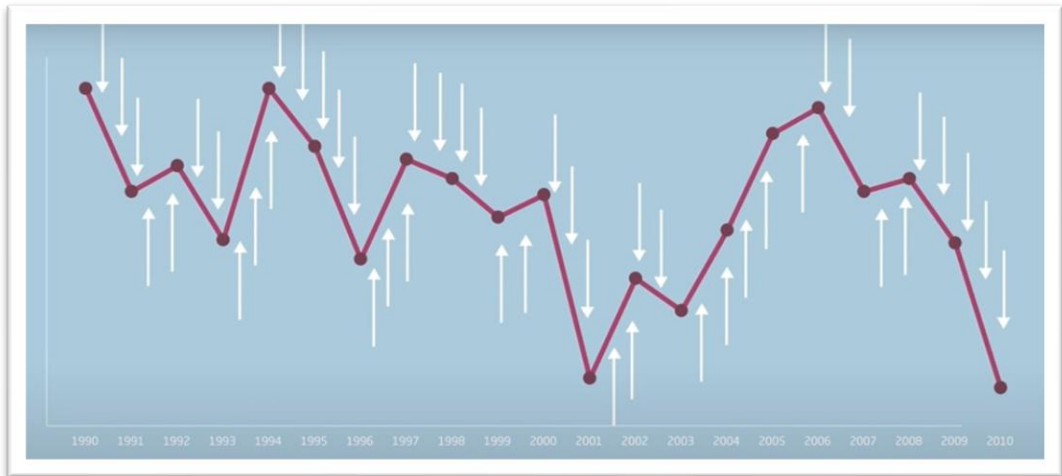
Volatility is often seen as a negative factor in the stock market, as it can lead to sudden and unpredictable changes which may lead to huge losses. However, it can also be used to identify an investment opportunity to earn higher returns. Investors can take advantage of the changing prices of the stock market by using various strategies in their favour to make profits. They can also buy stocks at a lower price at discount as in a volatile market, prices may drop according to the returns.

Volatility can be further divided into low volatility and high volatility.

HIGH VOLATILITY:

If a position goes through a remarkable change in value over a period of time, it is called as high volatility. In this, there is a very high chance of risk and uncertainties. At the same time, these can generate much profit if you are willing to take the risk.

The below pictures represent high volatility in the stock market.
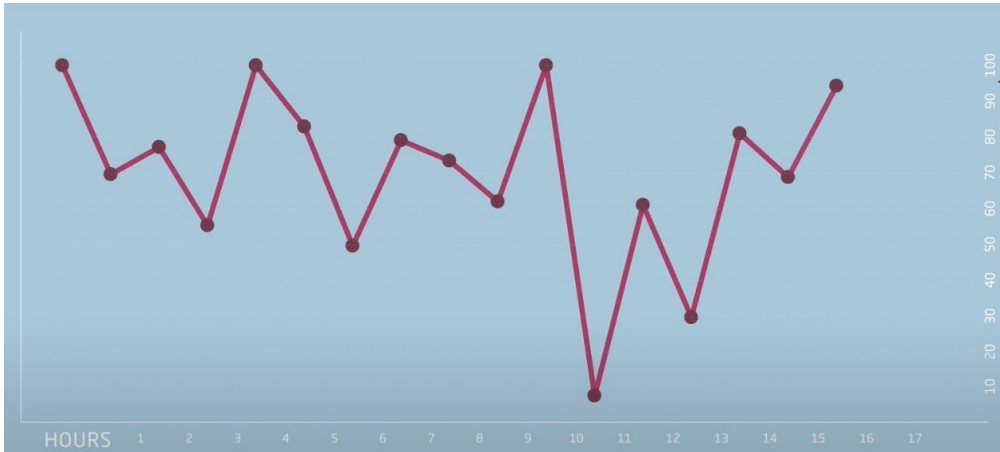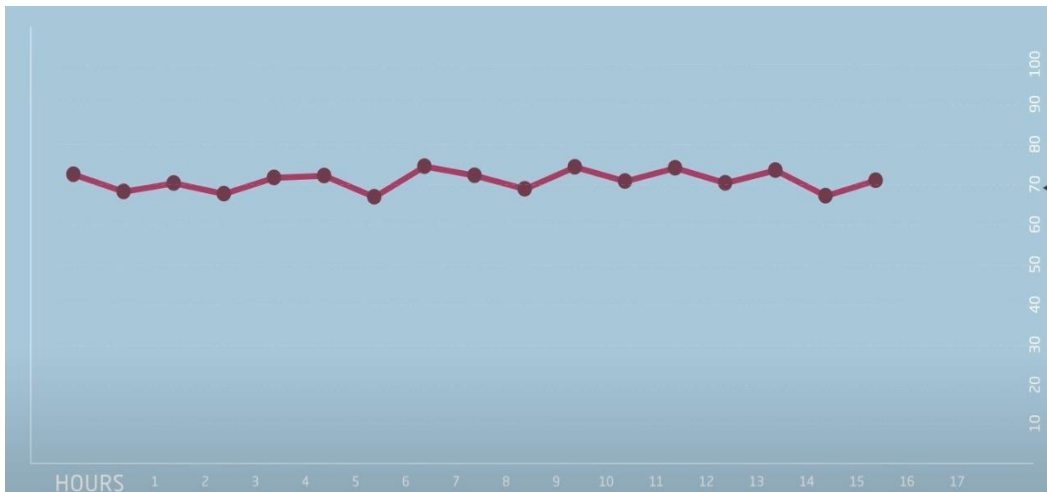
LOW VOLATILITY:

Low volatility refers no to minimum changes in the prices of the stock market. That means their position is stable. There are no minimum risks here and many investors choose this time to invest because it is the safest option. Although the profits generated would be much smaller than that of high volatility.

The below picture represents low volatility in the stock market.

The market can be considered low volatile or high volatile based on the price variations, for instance, if the stock price is Rs.100, the deviation in their prices would occur close to 97,102,105, etc. then it is called low volatility. Similarly, when price deviation is more i.e., 90,145,150, etc. in such case it is seen as high volatility.

Volatility can also be influenced by several factors in the stock market which include economic conditions, market sentiment, and investor behaviour. For instance, investors are most likely to sell their stock during uncertain economic conditions, leading to an increase in volatility.

TYPES OF VOLATILITY:

In an options trade, bets are placed on the underlying security's volatility by both parties involved in the transaction. Although there are numerous techniques to gauge volatility, most options traders use two metrics: historical volatility and implied volatility.

A. HISTORIC VOLATILITY: -

Historical volatility, also known as statistical volatility, measures price changes over predefined time periods to estimate the fluctuations of underlying securities. Compared to implied volatility, it is the less common metric because it isn't forward-looking.

This measures the price fluctuations of the security in the past. It is used to forecast future price movements based on previous trends. It does not, however, provide information about the future trend or direction of the security's price.

When historical volatility rises, the price of a security moves more than usual. There is an expectation that something will or has changed at this time. If historical volatility falls, it means that any uncertainty has been eliminated, and things have returned to normal.
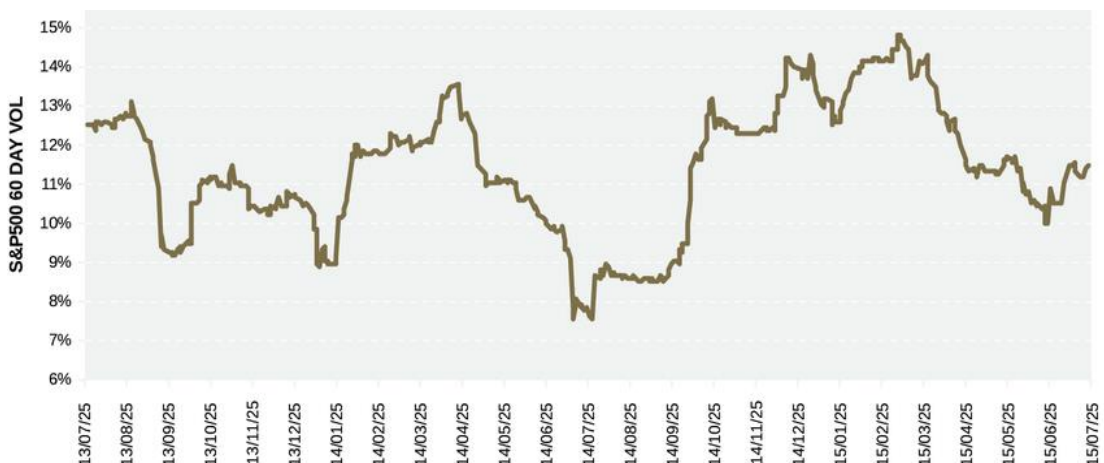

B. IMPLIED VOLATILITY:

One of the most important metrics for options traders is implied volatility (IV), also known as projected volatility. As the names suggest, it enables them to forecast how volatile the market will be in the future. This concept also allows traders to compute the probability (estimation of future prices)

It is important to remember that implied volatility doesn't help predict the direction of prices. A high IV simply means that the stock is more likely to have a large price swing, this could mean that it may go very high or very low or both.

Many traders use implied volatility as a tool in their investment-making decisions. It is important to note that there is no guarantee that the options price will follow the predicted pattern modelled by implied volatility. At the same time, IV helps us to understand market opinion, which in turn shapes options pricing which IV represents very well.

When the market is doing well, and prices are moving up IV is usually lower. However, when the markets decline and the market is bearish, IV increases. This is largely due to the standard belief by investors that bearish markets are riskier than bullish markets. Demand and time value are one of the important variables that affect the implied volatility.
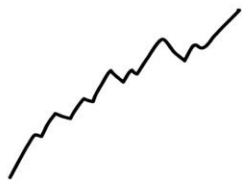
VOLATILITY INDICATORS:

Volatility technical indicators help to identify periods of high and low volatility. High volatility is observed in trending markets whereas low volatility is observed in a consolidated market. With the help of these indicators, investors can potentially sell or buy their stocks along with price confirmation.

Types of volatility indicators include.

- Bollinger Band
- Keltner Channel
- Donchain Channel
- Average True Range

A. BOLLINGER BAND:

Developed by John Bolinger in the 1980s. it is one of the technical analysis indicators which is used to measure

market volatility. It is calculated using standard deviation using moving average(mean). They consist of three bands- upper, lower, and middle bands.

This indicator forms a band-like structure where the moving average is used as the middle line along with the other lines referred to as the upper and lower bands. The upper and lower bands indicate whether the market is high or low i.e., if the price is near the upper band, it indicates that the market is overbought. Similarly, if the price is near the lower band, it means the market is oversold.
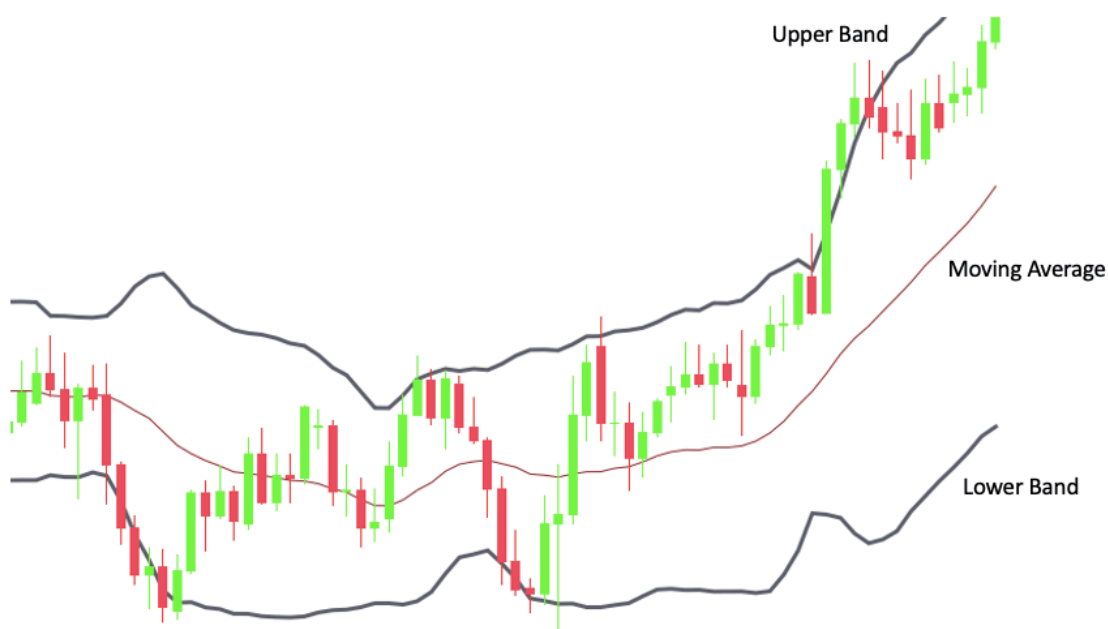

The band expands when volatility increases and contracts if decreases. Therefore, this indicator gives an image of an envelope where an investor can plan their entry and exit.

Bollinger bands are typically plotted 2 standard deviations above and 2 standard deviations below a moving average. this means 95% of the historical price movement is contained within these bands. since most of the price movement is within the band it is unusual but possible for the price to move outside the band.
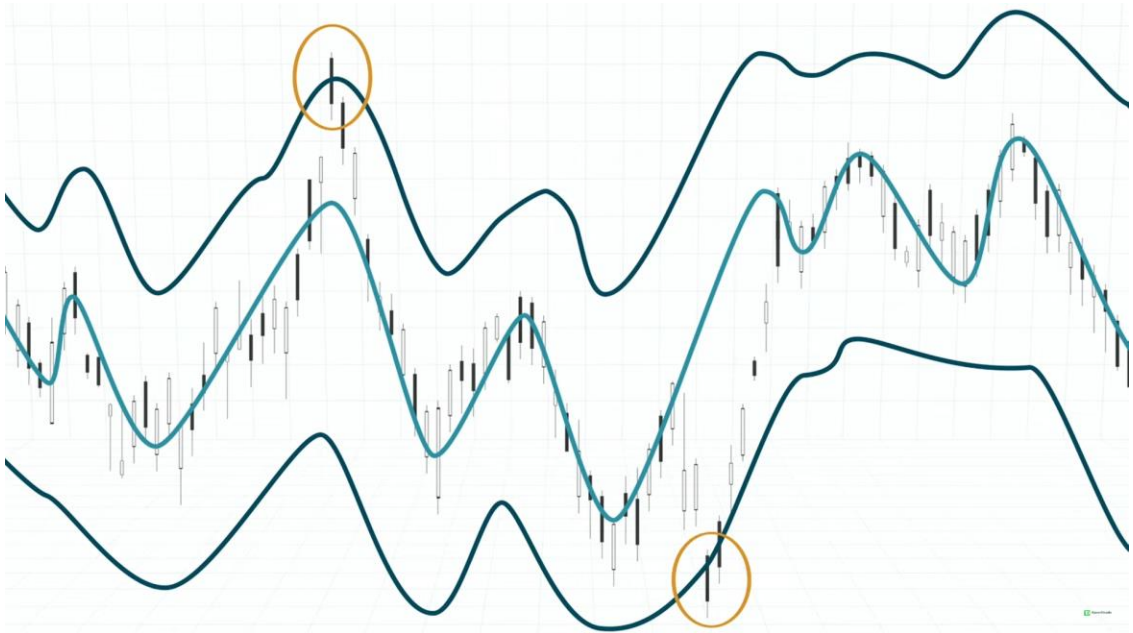
But when it does move outside the band the probability theory assumes that the security prices are likely to revert to a moving average or mean which is between the upper and lower bands. This is called mean reversion and some investors might use it to make trading decisions.
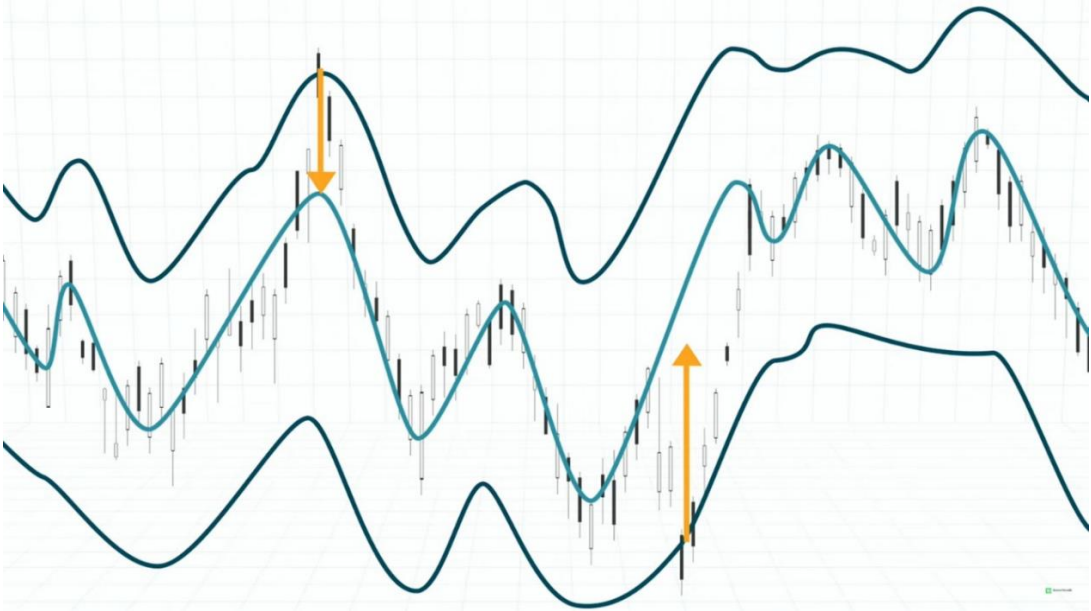
B. KELTNER CHANNEL:

Keltner Channel is a technical analysis tool used to identify price trends and levels of support and resistance. It is based on the Average True Range (ATR), which is one of the indicators to measure volatility.

It consists of three lines: exponential moving average (EMA) as the middle line and upper and lower bands which are calculated based on ATR.

ATR is basically the average true range of the previous 10 days I.e., considering the high/low, so there is a range for that stock, and if we consider the range of 10 periods then we get the average range that is used in Keltner Channel Traders. They use this indicator to identify potential entry and exit points. It can also be used to identify overbought and oversold conditions in the market.

Keltner's model says that if the price is below the band that is the lower band, the prices will go down for sure. And if it comes above the upper band, the prices will go above for sure.

Price reaching the upper band denotes a bullish market, while price reaching the lower band is bearish.

C.DONCHAIN CHANNEL

The Donchain channel was developed by Richard Donchain. It is one of the most used volatility indicators. It

consists of 3 bands- the upper, lower, and middle bands. The upper band refers to the highest price over a period of time (usually 20 days) and the lower band is the lowest price over a period of time(usually 20 days).

The middle band is the average of the upper band and lower band and hence it is used in mean reversion trades. It determines the support and resistance levels of the stock market.

In simple terms, it defines the high/low prices of the previous weeks and expects the market to be in that range.

Purpose: establish a "range" (channel) around the market

In the donchain channel, there are two basic signals the traders use – those are channel widths and channel breaches. The channel width is relevant in understanding the market's volatility. In the below picture it is shown that the narrow channel width provides low volatility, and the wide channel width provides high volatility.

When it comes to channel breaches, they are traditionally used as entry signals or trend identifiers. Price action breaking a previous high could indicate a bullish trend. Whereas the price action of breaking a previous low may signal a bearish trend. As with many trend trading indicators, the donchain channel is subject to many false signals from dramatic market swings. Many traders will use additional complimentary indicators such as a moving average or RSI to confirm trends.

D.AVERAGE TRUE RANGE:

ATR is one of the best indicators for trading. It tells us about our stop losses along with the target stocks.

We can compute ATR by taking the average difference between the current high and the current low and also the average of the current high and the previously close price over a particular period of time.

The ATR is a moving average of the real ranges, often using 14 days. It has a defined meaning which enable traders to measure the degree of price volatility and also to identify when the stock is trending.

In the below picture, you can see that irrespective of the price fluctuations, ATR tends to change when there are major price movements. Let it be high or low, and they

even check the price gaps. The ATR is commonly used by traders to find potential breakouts and to define stop-loss orders to avoid premature termination of their positions.
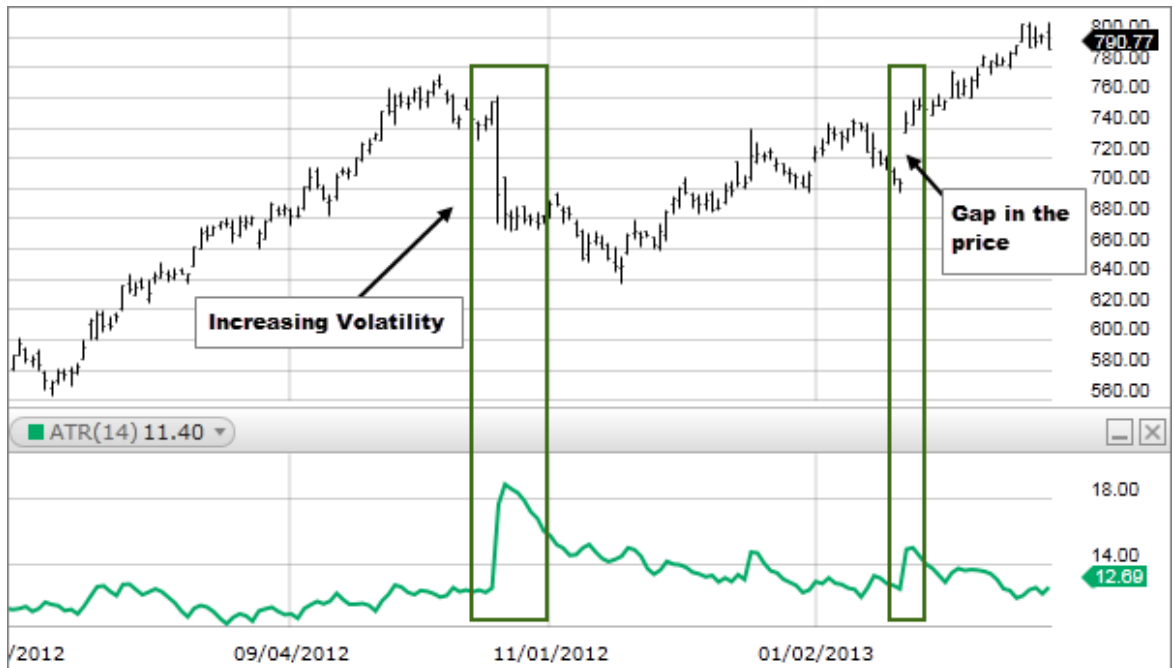
5. INTERPRETATIONS:

1. TRENDLINES

Support and resistance:

In the chart below of Laurus Labs we can see the price action in which the stock price is ranging between the support and resistance line. This phenomenon explains that price action history repeats itself.

Here we can see that the bears tried to get the price down below 590 on 28th March 2022 but they couldn't because the bulls gave support to the price, the same happened again on 1st April 2022 (589) it got support again on 19th April 2022(588).

Similarly, we can see that when the bulls tried to get the price up above 612 on 5th April 2022, they couldn't because the bears resisted to it , the same happened again after 4 hours and the bears resisted, again on 21st April 2022 (611) but got resisted.

Uptrend in Laurus labs:

In the chart below of Laurus Labs we can see that the price levels have increased significantly i.e the price of the stock went from 306 to 309 in just 30 mins on March 3rd, 2023.

Here it is an uptrend because it is characterised by higher highs and higher lows where each consecutive high is higher than the previous high and simultaneously each consecutive low is higher than the previous low.

Here we can observe the uptrend as the candlesticks have crossed the resistance line.

In the chart given below we can see the morning star which is highlighted by a yellow circle where the first candle being the candle with long bearish body and the second candle being the candle with long bullish body and

the last and third candle being a doji with small bearish body.

Downtrend in Laurus labs:

In the chart below of Laurus Labs we can see that the price levels have decreased significantly i.e the price of the stock went from 600 to 580 in just a week i.e from 11th March 2022 to 17th March 2022.

Here it is a downtrend because it is characterised by lower lows and higher ups where each consecutive lower is lower than the previous low and simultaneously each consecutive high is low than the previous high.

Here we can observe the downtrend as the candlesticks have crossed the support line at the price of 550.

In the chart given below we can see the evening star which is highlighted by a black circle where the first candle being the candle with long bullish body and the second

candle being a doji candle with small bearish body which is then followed by a candle with long bearish body signifying the start of down trend where the price later fell down to 412 before rising again.

Sideways trend analysis:

Here we can see a sideways trend pattern or rangebound pattern in the image below where the stock price is within a certain price limit. This pattern generally occurs when the buyers and sellers in the market are indecisive , i.e neither the bulls nor bears are able to over power the market and thus leading to fluctuations in the prices within a narrow range.

Here the price fluctuation can be seen within the limit of of 362 and 344 i.e they are within the support line and resistance line.

Here the prices did not increase or decrease significantly between the period of 12th January 2023 to 25th January 2023 because not man people were interested to buy or sell this stock.

2.MACD

Golden crossover

In the below chart of Laurus Labs, we can see a golden crossover forming i.e the MACD line crossing the Signal line from below and moving upward. This indicates start of an uptrend and the same can be seen in the chart below. This is a time when it is wise for traders to invest and buy stocks to earn profits.

Death Crossover

In the below chart of Laurus Labs, we can see a death crossover forming i.e the MACD line crossing the Signal line from above and moving downward. This indicates start of a downtrend and the same can be seen in the chart below. This is a time when it is wise for traders to sell their stocks to avoid losses.

LAURUS LABS LTD · 4h · NSE O516.25 H521.40 L510.75 C511.60 −4.40 (−0.85%)

death crossover

3. RSI

A. Overbought and Oversold:

- **Overbought**

In the chart below of Lauras Labs, we can see that RSI has moved above the range of 70 (the line indicating RSI=70). This situation indicates the reversal of uptrend into downtrend as the stock has been overbought implying that the bears might take over the market by selling the stocks, resisting the upward trend. And this anticipation can be seen to have come true in the Candlestick Chart.

- **Oversold**

In the chart below of Lauras Labs, we can see that RSI has moved below the range of 30 (the line indicating RSI=3o). This situation indicates reversal of downtrend into an uptrend as the stock has been oversold implying that the bulls might take over the market by buying the stock, giving a support to it. And this anticipation can be seen to have come true in the candlestick chart.

B. RSI Divergence

- ### Bullish Divergence

In the chart below of Lauras Labs, we can see that the arrows pointing towards the two candlesticks are depicting lower low (downtrend), however, the RSI of the respective candlesticks is depicting higher low (uptrend). Since, the stock price and RSI are moving in opposite direction, it shows divergence and the lower low formed by stock, and

the higher low formed by RSI shows the bullish divergence indicating that the downtrend of stock price might reverse into uptrend which can be seen below. The traders can anticipate early rise in the trend through this bullish divergence and invest in the stocks to earn profits.

- **Bearish Divergence**

In the chart below of Lauras Labs, we can see that the arrows pointing towards the two candlesticks are depicting higher high (uptrend), however, the RSI of the respective candlesticks is depicting lower high (downtrend). Since the stock price and RSI are moving in an opposite direction, it shows divergence. Here, the higher high formed by stock and the lower high formed by RSI shows a bearish divergence indicating that the uptrend of stock price might reverse into downtrend which can be seen below. The traders can anticipate early fall in the trend through this bearish divergence and sell their stocks to avoid losses.

4. VOLATILITY

A. BOLLINGER BANDS:

UNDERSTANDING THE VOLATILITY:

In the above chart of the Laurus Labs,

As you can see that there is an extreme price movement in the lower band. The price had a sudden drop from Rs540 to Rs 442 in a span of 2 days. This represents high volatility in the lower band.

Therefore, the prices have reverted to their mean reversion, and the bands have contracted which indicates less volatility and therefore gives the traders a signal for an upcoming price breakout.

After the contraction, there is a sudden surge in the price movement showing an upward trend in the market resulting in the expansion of the band-indicating high volatility.

ENTRY AND EXIT POINTS.

The potential entry point can be set up when the price of a security falls below the lower band. Here an investor might wait for the price to close back above the band before entering the trade.in the below chart, the circle area highlights the entry point.

 As the security price keeps rising above the upper band, this results in an overbought situation leading to the exiting of the traders where they start selling.

B. KELTNER CHANNEL

In the above Laurus Lab of Keltner chart, we can see that the price movement is going downward, crossing the lower band which predicts that the market will be going down for a period, indicating a downward trend that highlights the bearish market. Hence, the traders will be engaging in the market through selling.

C.DONCHAIN CHANNEL

In the below donchain channel chart, we can see that the market is bearish as the price movement is going downwards and thus also showing high volatility. The prices are moving within the channels.

 In the below chart, you can see the price movement, resulting in low volatility, showing a narrow channel representing that there are fewer price variations. Where the price movement is close from Rs.581 to Rs. 560 in a span of 30 days.

In the below chart, you can see the price movement, resulting in high volatility, showing a broader channel representing that there are high price fluctuations. Where

the price movement varies from Rs.528 to Rs. 440 in a span of 8 days.

D.AVERAGE TRUE RANGE: -

In the below chart, ATR represents the price movements of the stock. As you can see from the period of June 2022- July 2022, we can notice a breakout point, using ATR, we can predict stop losses which is Rs.465[472-7=465]. So, this amount is our stop loss at the given period.

With the help of ATR, we also predicted our target value, that is 472+7[ATR OF 10 days] =479.

If the price goes beyond the stop loss, this indicates that the seller should sell their stocks.

6.SUMMARY

6.1CONCLUSION

One must understand that by using these indicators we can anticipate only the probability of change in price the of stock, but we cannot confirm the accuracy of our anticipations.

Through our interpretations, we understood that the stock price of Laurus Labs is showing a future downtrend which makes it risky to invest. This indicates the time when there is a dominance of bears over bulls.

We can see that there is a major uptrend in the stock value of Laurus labs at the beginning of March 2022 and by the end of the month, the price of the stock fell drastically leading to a downtrend that continues to go down.

According to MACD, we can see that a golden crossover is forming in the last week of June 2022 leading to the end of a downtrend and start of an uptrend. And a death crossover is forming in the first week of Jan 2022 leading to the end of the uptrend and start of a downtrend.

According to RSI during the first week of august, we can see an overbought situation indicating the start of a downtrend and the same can be seen at the end of August (start of a downtrend). The downtrend is going on till date.

According to Bollinger bands, there is an extreme price movement in the lower band, resulting in contraction of the band, giving us signal of price breakout and also highlighting entry and exit points.

As per kelter channel, we can see that the price movement is going downward trend, indicating a bearish market.

Whereas Donchain Channel, we identified price variations while looking through contraction and expansion of the channel.

Lastly ATR, we predicted stop loss as well as the target level while identifying the price breakout point.

Since the current stock of Laurus labs is going in downtrend it is wise to not invest at this point unless you anticipate reversal of this using the technical indicators.

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