

A STUDY ON STOCK SELECTION BASED ON TECHNICAL ANALYSIS

Submitted in partial fulfillment of the requirements for the award of

Master of Business Administration

By

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SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE

Jeppiaar Nagar, RAJIV GANDHI SALAI, CHENNAI - 600 119

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **Mr.SHREENATH (39410199)** who have done the Project work entitled “**A Study on Stock Selection based on Technical Analysis**” under my supervision from December 2020 to February 2021.

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DECLARATION

I **SHREENATH, (39410199)** hereby declare that the Project Report entitled “ **A Study on Stock Selection based on Technical Analysis**” done by me under the guidance of Dr.D.VELUMONI, MBA.,M.Phil.,Ph.D., is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

DATE:

PLACE:

SHREENATH

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ABSTRACT

The Indian stock exchange market has experienced explosive growth in recent years. The Indian Stock market is one of the fastest growing stock market in the world. When the stock market is booming the people are interested in investing in the stocks, but the main concern is lack of knowledge about the stocks in the common man and also about the company in which to invest. So here a question arise, how investors should assess risk in the stocks they buy or sell.

The topic behavior of share prices in India with special reference to 'banking Sector' has a very wider and in depth scope of analysis for the purpose of dissertation. As we all know India is one of the fastest moving economies and has become a global threat to the developed country like U.S.A., U.K., Japan, etc. The Banking sector is grooming in India at a rapid rate. Share market is the mirror that reflects the growth of economy.

Understanding why stock prices move up and down is a central issue for financial economists. Stock prices change because of new information on expected cash flows, or because of time varying risk aversion and investor sentiment. When a novice trader first enters the marketplace, he or she is bombarded with decisions regarding where to begin and what approach to take when it comes to trading and/or investing. There are as many styles of successful trading as there are traders, and which direction a trader takes is a very personal decision.

The purpose of this project is to study how should investors Asses risk in the stock they buy and sell. As we can imagine, the concept of risk is hard to pin down and factor into stock analysis and valuation. Is there a rating--some sort of number, letter, or phrase--that will do the trick? One of the most popular indicators of risk is a statistical measure called beta. Stock analysts use this measure all the time to get a sense of stocks' risk profiles. Here we shed some light on what the measure means for investors. While beta does say something about price risk, it does have its limits for investors looking for fundamental risk and return factors.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

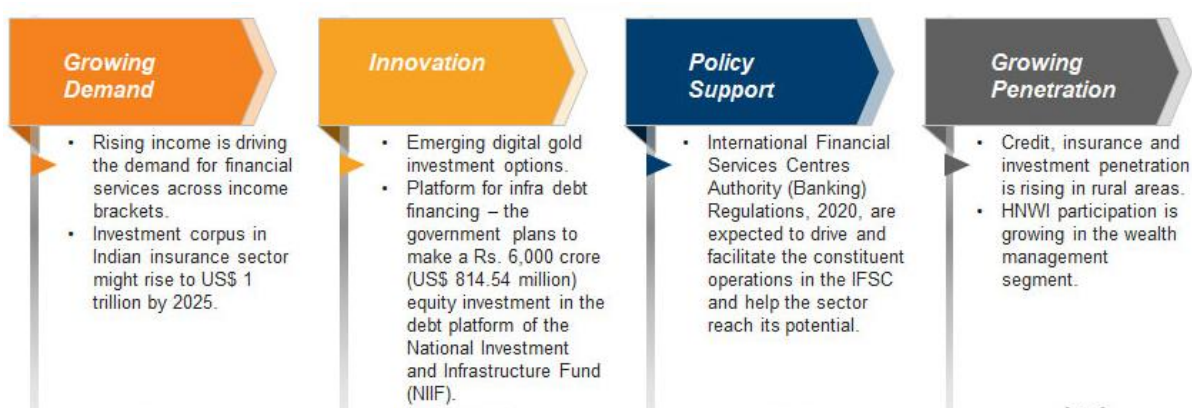
An investor means people who invest their savings. Investment is an activity, which is different from savings. Savings are generated when a person abstains from present consumption for a future use. Savings kept as a cash are barren and do not earn anything. Hence, the saver has to find a temporary repository for his saving until they are required for his future. This results in investment. This is an era in which the investors or public are thinking of changing their investments from bank deposit to share market. They got better return from the investment in capital market than in case of bank deposit. Today, investment” has become a household word and is very popular with people from all lifestyles. It is because of increase in working population, higher family incomes and consequent savings, availability of large and attractive investment alternatives, increase in investment related publicity and so on.

Investment is a word of many interpretations. A person has advanced some money to other; he may consider his loan as an investment. He expects to get back the principle along with interest at a future date. Another person may have purchased a land for the purpose of price appreciation and may consider it is an investment. In the above cases, it can be seen that Investment involves the employment of money with an aim of achieving additional income or growth in values. Thus, Investment may be defined as, “a commitment of funds made in the expectations of some positive rate of return”. The capital market is a sub system of the financial system .The capital market is a market is a market for long-term funds- shares, debentures and bonds. Today the Indian capital market offers a variety of financial products with varied features and benefits, for investors to choose from them. . Investing in stock is most popular method of investment. However, the knowledge about a particular investment alternative is an essential for the investor.

1.2 INDUSTRY PROFILE

Introduction

India has a diversified financial sector undergoing rapid expansion, both in terms of strong growth of existing financial services firms and new entities entering the market. The sector comprises commercial banks, insurance companies, non-banking financial companies, co-operatives, pension funds, mutual funds and other smaller financial entities. The banking regulator has allowed new entities such as payment banks to be created recently, thereby adding to the type of entities operating in the sector. However, financial sector in India is predominantly a banking sector with commercial banks accounting for more than 64% of the total assets held by the financial system.



STOCK MARKET INDUSTRY OVERVIEW AND MARKET DEVELOPMENT ANALYSIS

The Government of India has introduced several reforms to liberalise, regulate and enhance this industry. The Government and Reserve Bank of India (RBI) have taken various measures to facilitate easy access to finance for Micro, Small and Medium Enterprises (MSMEs). These measures include launching Credit Guarantee Fund Scheme for MSMEs, issuing guideline to banks regarding collateral requirements and setting up a Micro Units Development and Refinance Agency (MUDRA). With a combined push by Government and private sector, India is undoubtedly one of the world's most vibrant capital markets.

1.2.1. Market Size

As of November 2020, Assets Under Management (AUM) managed by the mutual fund industry stood at Rs. 30 lakh crore (US\$ 407.39 billion). Inflow in India's

mutual fund schemes via the Systematic Investment Plan (SIP) route reached Rs. 82,453 crore (US\$ 11.70 billion) in 2019. Equity mutual funds registered a net inflow of Rs. 8.04 trillion (US\$ 114.06 billion) by end of December 2019.

Another crucial component of India's financial industry is the insurance industry. Insurance industry has been expanding at a fast pace. The total first year premium of life insurance companies reached Rs. 2.59 lakh crore (US\$ 36.73 billion) in FY20.

Furthermore, India's leading bourse, Bombay Stock Exchange (BSE), will set up a joint venture with Ebix Inc to build a robust insurance distribution network in the country through a new distribution exchange platform.

1.2.2. Investments/Developments

- ✓ In November 2020, LIC took initiatives to facilitate quicker proposal completion by launching a digital application – ANANDA.
- ✓ In November 2020, Paytm reported 2x growth in digital gold transactions in the last six months. New customers have increased 50% since the beginning of this financial year and the average order value has increased by 60%.
- ✓ In November 2020, the Reserve Bank of India (RBI) announced establishment of its Innovation Hub. In order to encourage access to financial services and goods and foster financial inclusion, this initiative would create an ecosystem. The Innovation Hub of the Reserve Bank (RBIH) is intended to promote innovation across the financial sector by leveraging technology and creating a conducive environment for innovation.
- ✓ VC investments grew to US\$ 3.6 billion in July-September 2020 from US\$ 1.5 billion in the previous quarter, powered by the mega deals, which included the US\$ 1.3 billion raised by the online retailer—Flipkart.
- ✓ On November 6, 2020, WhatsApp started its UPI payment services in India on receiving the National Payments Corporation of India (NPCI) approval to 'Go Live' on UPI in a graded manner.
- ✓ In October 2020, Unified Payments Interface (UPI) recorded 2.07 billion transactions worth Rs. 3.86 lakh crore (US\$ 52.10 billion).

1.2.3 Government Initiatives

- ✓ In November 2020, the Union Cabinet approved the government's equity infusion plan for Rs. 6,000 crores (US\$ 814.54 million) in the NIIF Debt Platform funded by the National Investment and Infrastructure Fund (NIIF) consisting of Aseem Infrastructure Finance Limited (AIFL) and NIIF Infrastructure Finance Limited (NIIF) (NIIF-IFL).
- ✓ In November 2020, two MoUs were signed—one between India International Exchange (India INX) and Luxembourg Stock Exchange and another between State Bank of India and Luxembourg Stock Exchange for cooperation in financial services, ESG (environmental, social and governance) and green finance in the local market.
- ✓ On November 11, 2020, The Cabinet Committee on Economic Affairs approved continuation and revamping of the scheme for financial support to public-private partnerships (PPPs) in 'Infrastructure Viability Gap Funding (VGF) Scheme' until 2024-25 with a total outlay of Rs. 8,100 crore (US\$ 1.08 billion).

1.2.4.Road Ahead

- ✓ India is expected to be the fourth largest private wealth market globally by 2028.
- ✓ India is today one of the most vibrant global economies on the back of robust banking and insurance sectors. The relaxation of foreign investment rules has received a positive response from the insurance sector, with many companies announcing plans to increase their stakes in joint ventures with Indian companies. Over the coming quarters, there could be a series of joint venture deals between global insurance giants and local players.
- ✓ The Association of Mutual Funds in India (AMFI) is targeting nearly five-fold growth in AUM to Rs. 95 lakh crore (US\$ 1.47 trillion) and more than three times growth in investor accounts to 130 million by 2025.
- ✓ India's mobile wallet industry is estimated to grow at a Compound Annual Growth Rate (CAGR) of 150% to reach US\$ 4.4 billion by 2022, while mobile wallet transactions will touch Rs. 32 trillion (USD\$ 492.6 billion) during the same period.



SHOWING INVESTORS NETWORTH BREAKUP AND TOTAL COMPANY LISTED ON NSE AND BSE

1.3 STATEMENT OF THE PROBLEM

Investment decision is the most important factor in the investment process, which may results in whether achieving higher return or losses. Technical Analysis strategies are considered as the main tool for individual investors to take investment decision. Besides, this study conducted in India on technical analysis during periods of high volatility in the environment due to inflation, Covid Pandemic outburst, economic and political conditions. Apart from macroeconomic problems that are common to other countries within the emerging markets, it is important to realise how technical analysis practices affects stock returns in such markets.

1.4 NEED FOR THE STUDY

The overview of present market scenario of has shown us the Boom in Market. In today's scenario, investment is one of the most fruitful, ever changing and exciting dimensions of our lives. Investment is "an activity by which we employ our savings in a profitable venture to earn a higher and regular return." The stock market is booming at a very high rate and the number of investors investing in it is also increasing. This study shows why and on what basis an investor can invest, which has always exceeded the expectations of all ranging from small time investors to foreign companies.

1.5 OBJECTIVES OF THE STUDY

1.5.1 Primary objective:

Stock selection on Technical Analysis of top 5 companies traded in NSE India

1.5.2 Secondary objectives:

- To study and obtain information about the secondary market
- To analyse the volatility of Equity shares during a particular period
- To compare the securities of selected companies through Technical Analysis
- To understand the equity share price movements
- To find out the market value of shares of selected companies
- To offer suggestions to the investors in taking investment decisions

1.6 SCOPE OF THE STUDY

The investors should have a fair knowledge of the sector and the companies to make value investment. The Scope of the Study is limited to the top 5 nifty holdings. An overall analysis of the companies has been undertaken in terms of the risk level and returns yielded by the companies. The research process will bring visibility for the company and facilitate investors to make informed investment decision. Thus, the Study has much greater scope and applicability with respect to the suggestions given from the analysis and interpretation if these properly implemented. Researchers in common refer to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation.' Rodman and Moray' define research as a "Systematized effort to gain new knowledge" .Here we using the fundamental analysis as research methodology.

1.7 LIMITATIONS OF THE STUDY

- The secondary nature of data has been a constraint for the study.
- The suggestions and recommendations will hold true only if there are no significant changes in the market which influence the price of shares under study.
- The time period of the study was not sufficient for a comprehensive study, which is the major factor for all these limitation of the study.
- There was ambiguity in data collected from various sources.

CHAPTER 2

REVIEW OF LITERATURE

2.1 LITERATURE REVIEW

AdrinTaran-Morosan (2015) in his research paper entitled "The researcher of the revised relative strength index" examines that the relative strength index (RSI) is one of the indicators of excellent technical analysis and widely used. The research studies aim to empirically investigate the role of the RSI in its standard formation.

Analysis of shares is more of an art than science. There are various scientific tools and number of investment strategy that are different from each other, yet almost all use the fundamentals. Under fundamental analysis we look at various macro (economic specific and sector specific) as well as micro forces which can have an impact over the performance of the company. This approach is based on an in depth examination of the underlying forces of the economy and companies, which helps to gather data that can be used to forecast future prices and market developments.

Andrew W. Lo, Harry Mamaysky and Jiang Wang (2011) in their research work had done "Foundation of technical analysis Computational Algorithms, Statistical assumption, and experiential accomplishment", the researcher examines this logical and mechanical approach for the detection of technical patterns using non-parametric kernel useful regression in US stocks from 1962 to 1996 to guess the success of technical analysis.

Another set of studies looks at episodes of fiscal consolidation (efforts to reduce deficits) and fiscal stimuli and in the process estimate how tax policy affects economic growth. Alesina and Ardagna cover a large number of such episodes occurring in OECD countries between 1970 and 2006. They find that fiscal stimuli based upon tax cuts are more likely to increase growth than those based upon spending increases. Also, fiscal consolidations based upon spending cuts and no tax increases are more likely to succeed at reducing deficits and debt and less likely to create recessions as compared to fiscal consolidations based upon tax increases. Similarly, the IMF analyzes 170 cases of fiscal consolidation in fifteen advanced countries over the last thirty years and finds that spending cuts are

much less damaging to short term growth than are tax increases. They find a 1 percent spending cut has no significant effect on growth, whereas a 1 percent tax increase reduces GDP by 1.3 percent after two years. Fiscal consolidation studies by Goldman Sachs and others come to similar conclusions.

Bhanu Pant and Dr.T.R.Bishnoy (2001) analyzed the behaviour of the daily and weekly returns of five Indian stock market indices for random walk during April 1996 to June 2001.They found that Indian Stock Market Indices did not follow random walk.

C. L. Osler (2001) provides a microstructural explanation for the success of two familiar predictions from Technical Analysis: (1) trends tend to be reversed at predictable support and resistance levels, and (2) trends gain momentum once predictable support and resistance levels are crossed. The explanation is based on a close examination of stop-loss and take-profit orders at a large foreign exchange dealing bank. Take-profit orders tend to reflect price trends and stop-loss Technical Analysis on Selected Stocks of Energy Sector orders tend to intensify trends. The requested execution rates of these orders are strongly clustered at round numbers, which are often used as support and resistance levels. Significantly, there are marked differences between the clustering patterns of stop-loss and take-profit orders, and between the patterns of stop-loss buy and stop-loss sell orders. These differences explain the success of the two predictions.

Chitra (2008) in this study of the connection of the stock market to factors that change the contribute and order of shares and also usefull to be aware of the inherent value of the shares and to be recognizable with suppose the shares are undervalue. or overvalued The stock market charts would help the investor to differentiate the main turning points of the market.

CL Osler (2013) in his study provides a micro structural clarification for the achievement of two well-known predictions of technical analysis: live tend to revert to predictable levels of 34 maintain and confrontation, and trends acquire impetus only support and prediction once confrontation levels cross The illustration is based on a detailed examination of the stop loss and take-profit orders in a large currency bank. Profit orders can reproduce price of trends and stop the technical analysis of losses on preferred NSE shares.

Cootner (2009) discovered that stock rates be in motion accidentally when considered in a one-week gap. The data for its study was the end week prices of forty-five shares of the New York Stock Exchange. He proved the uncertainty of participation through the successive square dissimilarity test. He got that there was no sudden walk model. He feels that trends in stock cost could be predicted when premeditated at 14-week intervals. But in entire the stock prices keeping random actions at weekly intervals.

Cootner (1962) found that the stock prices move at random when studied at one week interval. The data for his study was week-end prices of forty five stocks from New York stock exchange. He tested randomness of share by means of a mean square successive difference test. He concluded that there was not one random walk model. He concluded that the share price trends could be predicted when studied at fourteen-week interval. But in total the stock prices followed a random walk at weekly intervals.

Cory Janssen, Chad Langager and Casey Murphy (2014) in their technical analysis of the research article are a system of evaluating standards by analyzes information moving up by market action, such as prices and past volume. Technical analysts do not to effort to calculate security and intrinsic value, but use graph and additional tools to recognize patterns that suggest future actions.

Dietze, Oliver and Macro (2010) in their research work to assess the risk-adjusted return of mutual funds in corporate ,s classified in Europe. The funds were evaluated on the basis of a single index and several models of multiple indices and asset classes. The results specify that the corporate , funds, on average, have a low performance in the reference portfolios and that there was not a particular fund that revealed a transcendental activist performance. The results also indicate that the risk-adjusted return of larger and larger funds, and a poorer charge for funds was higher 33

Edwards, Magee and Bassetti" (2016) in their technical analysis of research refers to the study of market achievement as something divergent from the study of the goods in which the market deals. Technical Analysis is the science of recording, usually explicitly, the definitive history of changes in the negotiation price, the

volume of dealings, etc., in a given action or in the averages and then deduce from that the past the potential future trend.

Eugene F.Fama (1965) has answered the questions to what extend can the past history of a common stock price can be used to make meaningful predictions concerning the future prices of the stock? The theory of random walk on stock prices is studied with two hypotheses. They are i) Successive price changes are independent and ii) The price changes conform to some probability distribution. The data for this study consists of daily prices for each of the thirty stocks of the Dow –Jones industrial average. This study concludes that there is strong and voluminous evidence in favor of random walk theory.

Fernando Fernandez –Rodriguez, Simon Sosvilla –Rivero, Julian Andrada –Felix (1999) assessed whether some simple forms of Technical Analysis can predict stock price movement in the Madrid stock exchange, covering thirty-one-year period from Jan 1966 –Oct 1997.the results provide strong support for profitability of those technical trading rules. By making use of bootstrap techniques the author shows the returns obtained from these trading rules are not consistent with several null models frequently used in finance.

Fischer E, Donald, Jordon J, Ronald, (2006) Security analysis and portfolio management, Pearson education inc., New Delhi, pp.522- 549.

For instance, the Congressional Research Service (CRS) has found support for the theory that taxes have no effect on economic growth by looking at the U.S. experience since World War II and the dramatic variation in the statutory top marginal rate on individual income.(ErgeteFerede& Bev Dahlby, 2012)

Gupta, (2003) examined the perceptions about the main sources of his worries concerning the stock market. A sample comprise of middle-class household's spread over 21 sates/union territories. The study reveals that the foremost cause of worry for household investors is fraudulent company management and in the second place is too much volatility and in the third place is too much price manipulation.

Hemal Pandya (2008) Indian IT sector, researcher shows dissimilar technical analysis tackle for the analysis of Indian companies in the IT division that are programmed in NSE and BSE . The main tools and techniques worn in this study

are the Line Graph, the Column Graph, the Candlestick Graph, the exponential Moving Average, the Convergence Divergence of Moving Averages, the Relative Strength Index and the Exchange Rate.

J. G. Agrawal, Dr. V. S. Chourasia and Dr. A.K. Mitra (2010) It has been offered in his research paper "The state of the art in stock forecasting techniques" of stock calculation techniques. There is a gap between the technologies and the user's need for a safe and accurate stock forecasting system. There are several political and economic factors that control the stock market that are also taken into account apart from the technical indicators.

J. L. Sharma, Robert E. Kennedy (1977). "A comparative analysis of stock price behavior on the Bombay, London and New York stock exchange". Journal of Financial and Quantitative Analysis, Vol. 12 , No.3, p 391 – 394

James Riedel (2007) made a comparative Analysis of Indian stock market with International markets. His study covers New York Stock Exchange (NYSE), Hong Kong Stock exchange (HSE), Tokyo Stock exchange (TSE), Russian Stock exchange (RSE), Korean Stock exchange (KSE) from various socio- politico-economic backgrounds. Both the Bombay Stock exchange (BSE) and the National Stock Exchange of Indian Limited (NSE) have been used in the study as a part of Indian Stock Market. The main objective of this study is to capture the trends, similarities and patterns in the activities and movements of the Indian Stock Market in comparison to its international counterparts. The time period has been divided into various eras to test the correlation between the various exchanges to prove that the Indian markets have become more integrated with its global counterparts and its reaction are in tandem with that are seen globally. The various stock exchanges have been compared on the basis of Market Capitalization, number of listed securities, listing agreements, circuit filters, and settlement. It can safely be said that the markets do react to global cues and any happening in the global scenario be it macroeconomic or country specific (foreign trade channel) affect the various markets.

Jayakumar& K. Sumathi (2016) in their research work describes the use of technical analysis for the purchase and sale of shares listed in NSE. The investor can also recognize the return of the shares and the risk of the shares while investing money in the shares. The researcher had calculated the weekly average

and standard deviation of EPS to make a decision regarding the purchase and sale of shares that appear in the list of NSE.

Juhi Ahuja (2012) presents a review of Indian Capital Market & its structure. In last decade or so, it has been observed that there has been a paradigm shift in Indian capital market. The application of many reforms & developments in Indian capital market has made the Indian capital market comparable with the international capital markets. Now, the market features a developed regulatory mechanism and a modern market infrastructure with growing market capitalization, market liquidity, and mobilization of resources. The emergence of Private Corporate Debt market is also a good innovation replacing the banking mode of corporate finance. However, the market has witnessed its worst time with the recent global financial crisis that originated from the US sub-prime mortgage market and spread over to the entire world as a contagion. The capital market of India delivered a sluggish performance.

L. Rotando and E. Thorp. The kelly criterion and the stock market. *American Mathematical Monthly*, 99(10):922–931, 1992.

Lawrence Blume, David Easley and Maureen O'hara (2011) in their research paper entitled "Market information and technical analysis: The role of quantity", the researcher discovered that role of volume and its application for technical analysis. The researcher also shows that the volume, information and price are linked together and shows how the volume and price are enriching and also shows that the merchant using the information included in the market statistics does better than the merchants.

LeBaron, B. (1999). "Technical trading rule profitability and foreign exchange intervention" .*Journal of International Economics*, Vol. 49, p 125-143.

Levich, R., Thomas, L. (1993). "The significance of technical trading rule profits in the foreign exchange market: A bootstrap approach". *Journal of International Money and Finance*, Vol.12, p 451-474.

Lo, Andrew, Harry Mamaysky, Jiang Wang (2000). "Foundations of Technical Analysis," *Journal of Finance* 54, p 1705-65.

LUI, Y.H., D. MOLE (1998). "The use of fundamental and technical analyses by foreign exchange dealers: Hong Kong evidence". *Journal of International Money and Finance*. [Cited by 46]

MassoudMetghalachi, Xavier Garza-Gomez, Yong Glasure and Yung-Ho Chang (2015) in their research paper entitled "Are the average trading policy profitable? confirmation from the Mexican stock exchange" the researcher studies three rules of average mobile technical trading for the Mexican Stock Exchange and the result specifies that the mobile average rules certainly have analytical power and can generate reliable profits.

Most of the recent studies distinguish by type of tax, rather than using some broad measure of taxes. The most prominent exception is by David and Christina Romer, (Robert Barro& C.J. Redlick, 2011) who look at the overall U.S. federal tax burden as a share of GDP since World War II. They analyze the narrative record of federal tax changes, including presidential speeches, congressional reports, etc., to identify legislated "tax shocks," such as efforts to reduce an inherited budget deficit or promote long-run growth. This technique allows them to minimize the statistical problem of reverse causality by removing from analysis legislated tax changes that are the result of economic changes, such as countercyclical actions and those tied to government spending. They find much larger negative effects of taxes as compared to earlier studies that lump all tax changes together. Particularly, they find that a tax increase of 1 percent of GDP lowers real GDP by about 3 percent after about two years. The largest effect is from tax changes meant to promote economic growth, and the main channel is investment. These results are robust to various specifications, including controlling for the state of the economy, monetary policy, and the behavior of government spending.

Murphy (2007) in his research work, technical analysis is the study of market achievements, mainly from the first to the last, the use of graphics, with the intention to forecast upcoming price trends. The word market success involves the three sources of data reachable for technical price, volume and open interest.

Nath and Verma (2003) examine the interdependence of the three major stock markets in south Asia stock market indices namely India (NSE-Nifty) Taiwan (Taiaex) and Singapore (STI) by employing bivariate and multivariate co integration

analysis to model the linkages among the stock markets, No co -integration was found for the entire period (daily data from January 1994 to November 2002).They concluded that there is no long run equilibrium.

Nearly every empirical study of taxes and economic growth published in a peer reviewed academic journal finds that tax increases harm economic growth. In my review, I examine twenty-six such studies going back to 1983. All but three of those studies, and every study in the last fifteen years, find a negative effect of taxes on growth. The table shows summaries of each study's findings, but the most recent and influential studies will be discussed here in more detail.

Neely, C. J., Weller, P. (1998). "Technical trading rules in the EMS". *Journal of International Money and Finance* 18, p 429-458. [15] Neftçi, S. N. (1991). "Naive trading rules in financial markets and Wiener-Kolmogorov prediction theory: A study of 'technical analysis'". *Journal of Business* 64, p 549-571.

Osler, C.L. (2000). "Support for Resistance: Technical Analysis and Intraday Exchange Rates," *Federal Reserve Bank of New York Economic Policy Review* 6 , p 53-65. A

Park, Cheol-Ho, Irwin, Scott H (2004). "The Profitability of Technical Analysis: A Review". *AgMAS Project Research Report No. 2004-04*.

Patil RH, Gupta V, Singh AK (2005) National stock exchange: leveraging IT for creating an investor oriented exchange, *Int. J. of Services Technology and Management*,6(3/4/5):266-293.

R. Krishnan and Vinod Mishra (2014) in this document entitled "Intraday Liquidity Pattern in Indian Market" study the liquidity pattern and identify any common distinctive in liquidity measures, using annual intra annual data from the National Stock Exchange. India (NSE). The researcher discovered that most of the volume and liquidity measures connected show a U-shaped intraday pattern.

Ramados, G. & Muthuvel, G. (2013), „Application- of Moving Average as Technical Indicator to Predict Stock

Ramaswami.K (1996) assessed the relationship among book values, earnings, dividend and market price of share, impact of bonus issues, impact of security scam on equity return .to that end, the author used daily share price of 30

companies included in the construction of BSE sensitive index, daily data of BSEI and NYSE composite index, annual data on BV per share market price per share, EPS and DPS and data on bonus issue made ,during the period of study,the researcher used correlation ,regression and frequency distribution for interpreting data.

Ravindra and Wang (2006) examine the relationship of trading volume to stock indices in Asian markets. Stock market indices from six developing markets in Asia are analyzed over the 34 month period ending in October 2005. In the South Korean market, the causality extends from the stock indices to trading volume while the causality is the opposite in the Taiwanese market.

Ravindra, K., Y. Wang, (2006). "The causality between stock index returns and volumes in the asian equity markets". Journal of International Business. Res., 5, p 63-74.

Ray R. Sturm (2013) in his research work entitled "Market efficiency and technical analysis Can coexist?", The researcher shows that market competence is in generally accepted in the educational society, even philosophy can not describe yourself completely as truth. Primordial and leader due to sound, prices are simply a sign of beliefs about the true unidentified intrinsic value of a company that makes behavioral finances very imperative.

Sahara (2011), in his research on the seasonality of the stock market, The Study of Indian Stock Market, tried to study the seasonality of the stock market in our county. She is a good observer of the resourceful as the delegate of the stock market in India and practices whether seasonality is current in the Nifty and Nifty Junior income using each day and monthly data sets.

Sanjay K Hansda, Partha Ray, (2002) BSE and Nasdaq, 37(05):02

Sharma and Robert E. Kennedy (1977) tested the applicability of random walk hypothesis to the stock market in developing country namely India and compare this to that of stock markets in developed countries namely USA, and England. For this purpose the price behavior of Bombay stock exchange is statistically examined both for randomness and independence .The test the random walk hypothesis. The test covers 132 monthly observations for each stock market index of common stock listed in Bombay exchange for eleven years from 1968-1973.The

study indicates that price dependence while statistically significant, is comparably small in the developing countries. Based on the test, it is evident that the Bombay stock exchange stock obeys a random walk and is equivalent to developed countries stock exchange.

So what does the academic literature say about the empirical relationship between taxes and economic growth? While there are a variety of methods and data sources, the results consistently point to significant negative effects of taxes on economic growth even after controlling for various other factors such as government spending, business cycle conditions, and monetary policy. In this review of the literature, I find twenty-six such studies going back to 1983, and all but three of those studies, and every study in the last fifteen years, find a negative effect of taxes on growth. Of those studies that distinguish between types of taxes, corporate income taxes are found to be most harmful, followed by personal income taxes, consumption taxes and property taxes.

Some of these items are long-term mechanisms, particularly human and physical capital formation. Most of these empirical studies focus on the long-term effects, over a period of five years or more, but many investigate short-term dynamics as well. The evidence for short-term, demand-side effects of tax policy is less robust and less compelling, perhaps owing to the difficulty of disentangling short-term factors and matching events. However, there is some evidence that longer-term, supply-side effects occur sooner than previously thought, such as within the first few years of a policy change.

Sosvilla-Rivero, S., Andrada-Félix, J., Fernández-Rodríguez, F. (1999). "Further evidence on technical analysis and profitability of foreign exchange intervention". FEDEA Working Paper No. 99-01.

Sudheer (2010) in his research began the technical analysis is the study of the prediction of prices of securities for the future, the most important objective of technical analysis is to produce returns leaving the being to decide when go into market and when to leave in safety . The conclusion is to buy in dangerous and sell at first sight to obtain a considerable amount of performance or benefit.

The idea that taxes affect economic growth has become politically contentious and the subject of much debate in the press and among advocacy groups that is in part because there are competing theories about what drives economic growth. Some subscribe to Keynesian, demand-side factors, others Neo-classical, supply-side factors, while yet others subscribe to some mixture of the two or something entirely unique. The facts, historical and geographical variation in key parameters for example, should shed light on the debate. However, the economy is sufficiently complex that virtually any theory can find some support in the data.

These results support the Neo-classical view that income and wealth must first be produced and then consumed, meaning that taxes on the factors of production, i.e., capital and labor, are particularly disruptive of wealth creation. Corporate and shareholder taxes reduce the incentive to invest and to build capital. Less investment means fewer productive workers and correspondingly lower wages. Taxes on income and wages reduce the incentive to work. Progressive income taxes, where higher income is taxed at higher rates, reduce the returns to education, since high incomes are associated with high levels of education, and so reduce the incentive to build human capital. Progressive taxation also reduces investment, risk taking, and entrepreneurial activity since a disproportionately large share of these activities is done by high income earners. (Jens Arnold, Bert Brys, Christopher Heady, Åsa Johansson, CyrilleSchwellnus, & Laura Vartia, 2011).

They find the fastest economic growth occurred in the 1950s when the top rate was more than ninety percent.(KarelMertens& Morten Ravn, 2012). However, their study ignores the most basic problems with this sort of statistical analysis, including: the variation in the tax base to which the individual income tax applies; the variation in other taxes, particularly the corporate tax; the short-term versus long-term effects of tax policy; and reverse causality, whereby economic growth affects tax rates. These problems are all well known in the academic literature and have been dealt with in various ways, making the CRS study unpublishable in any peer-reviewed academic journal. (Norman Gemmell, Richard Kneller, & Ismael Sanz, 2011).

Thomas Asha E, Dileep Kumar MC (210)0 Momentum as an Investment Strategy in the Indian Stock Market-an Evaluative Study, IJER, 11(2):219-24

Venkatesh and Tyagi (2009) in their research document found with the objective of the results of a study surveyed in Sep to Nov 2010 by the use of technical method analysis by 32 agents or fund managers in the Indian stock market to estimate their forward think of the price of the stock changing"s. The effect of the study reveals that more than 85% of respondents rely on original and technical analysis to foresee future price changing"s in strange time horizons.

Yingzi Zhu and Guofu Zhou (2012) in their research using an exploratory paper study, studied the use of technical analysis in an efficient portion of resources in individual risky assets. When yields are expected, technical analysis adds value to the asset portion and wealth maximization. The document provides a hypothetical explanation of the use of the moving average to allocate money in different actions and how to add value to the investment through the use of technical analysis.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

A Research Design is the arrangement conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The Research Design used for the study is analytical in nature.

3.2 SAMPLING DESIGN

3.2.1. Sampling Method

The researcher has used his own judgment and discretion in selecting the companies from each industry, which represents the population, this type of sampling is known as Judgment Sampling.

3.2.2. Sample size: Top 5 companies traded in NSE India are taken as samples for this study

Top 5 companies Taken for study (Nifty 50):

1. Hdfc Bank (HDFCBANK)
2. Reliance Industries (RELIANCE)
3. Oil and Natural Gas Corporation (ONGC)
4. Infosys (INFY)
5. Tata Motors (TATA MOTORS)

Source: List of Top 10 Nifty Stocks / Companies based on closing prices on February 18, 2021. (<https://www.tradinghat.com/top-nifty50-stocks-companies-weightage/>)

3.2.3 Study Period - stocks required for the analysis in the research work are taken from february 2016-december 2020

3.3 SOURCE OF DATA

All the data are collected from internet sources articles, books and journals. All the data were collected from already available websites, so the data is Secondary in nature.

3.3.1 DATA COLLECTION METHOD

The research will be done by collecting secondary data's from respective company's website and from the annual reports published by the companies, analyst reports, and broking firm estimates. In addition, primary data would be gathered from share brokers, company executive, industry expert, financial analyst and investors.

3.4 TOOLS USED FOR ANALYSIS

3.4.1 MACD (Moving Average Convergence Divergence)

Developed by Gerald Appel in the late seventies, the Moving Average Convergence/Divergence oscillator (MACD) is one of the simplest and most effective momentum indicators available. The MACD turns two trend-following indicators, moving averages, into a momentum oscillator by subtracting the longer moving average from the shorter moving average.

MACD Line: (12-day EMA - 26-day EMA)

Signal Line: 9-day EMA of MACD Line

MACD Histogram: MACD Line - Signal Line

1. Calculate a 12-period EMA of price for the chosen time period.
2. Calculate a 26-period EMA of price for the chosen time period.
3. Subtract the 26-period EMA from the 12-period EMA.
4. Calculate a nine-period EMA of the result obtained from step 3.

This nine-period EMA line is overlaid on a histogram that is created by subtracting the nine-period EMA from the result in step 3, which is called the MACD line, but it is not always visibly plotted on the MACD representation on a chart.

3.4.2 ROC

The rate of change (ROC) is the speed at which a variable changes over a specific period of time. ROC is often used when speaking about momentum, and it can generally be expressed as a ratio between a change in one variable relative to a corresponding change in another; graphically, the rate of change is represented by the slope of a line. The ROC is often illustrated by the Greek letter delta. The ROC is most often used to measure the change in a security's price over time. This is also known as the price rate of change. The price rate of change can be derived by taking the price of a security at time B minus the price of the same security at time A and dividing that result by the price at time A.

$$\text{Price rate of change} = (\text{price at time B} - \text{price at time A}) / \text{price at time A}$$

This is important because many traders pay close attention to the speed at which one price changes relative to another. For example, option traders study the relationship between the rate of change in the price of an option relative to a small

3.4.3 STOCHASTIC OSCILLATORS

In the late 1950s, George Lane developed stochastic, an indicator that measures the relationship between an issues closing price and its price range over a predetermined period of time.

Stochastics is measured with the K line and the D line. But it is the D line that we follow closely, for it will indicate any major signals in the chart. Mathematically, the K line looks like

$$\%K = 100 \times \frac{CP - L14}{H14 - L14}$$

where:

CP=Most recent closing price

L14=Lowest price of the 14 previous trading sessions

H14=Highest price of the same 14 previous trading sessions

3.4.4 Exponential Moving Average

Exponential moving averages (EMAs) reduce the lag by applying more weight to recent prices. The weighting applied to the most recent price depends on the number of periods in the moving average. EMAs differ from simple moving averages in that a given day's EMA calculation depends on the EMA calculations for all the days prior to that day. You need far more than 10 days of data to calculate a reasonably accurate 10-day EMA.

There are three steps to calculating an exponential moving average (EMA). First, calculate the simple moving average for the initial EMA value.

- An exponential moving average (EMA) has to start somewhere, so a simple moving average is used as the previous period's EMA in the first calculation.
- Second, calculate the weighting multiplier.
- Third, calculate the exponential moving average for each day between the initial EMA value and today, using the price, the multiplier, and the previous period's EMA value.

3.5 Technical Indicators

3.5.1 ACCUMULATION/DISTRIBUTION

Overview

The Accumulation/Distribution is a momentum indicator that associates changes in price and volume. The indicator is based on the premise that the more volume that accompanies a price move, the more significant the price move.

Interpretation

The Accumulation/Distribution is really a variation of the more popular On Balance Volume indicator. Both of these indicators attempt to confirm changes in prices by comparing the volume associated with prices. When the Accumulation/Distribution moves up, it shows that the security is being accumulated, as most of the volume is associated with upward price movement. When the indicator moves down, it shows that the security is being distributed, as most of the volume is associated with downward price movement. Divergences between the

Accumulation/Distribution and the security's price imply a change is imminent. When a divergence does occur, prices usually change to confirm the Accumulation/Distribution. For example, if the indicator is moving up and the security's price is going down, prices will probably reverse.

3.5.2 BOLLINGER BANDS

Overview

Bollinger Bands are similar to moving average envelopes. The difference between Bollinger Bands and envelopes is envelopes are plotted at a fixed percentage above and below a moving average, whereas Bollinger Bands are plotted at standard deviation levels above and below a moving average. Since standard deviation is a measure of volatility, the bands are self-adjusting: widening during volatile markets and contracting during calmer periods. Bollinger Bands were created by John Bollinger.

Interpretation

Bollinger Bands are usually displayed on top of security prices, but they can be displayed on an indicator. These comments refer to bands displayed on prices. As with moving average envelopes, the basic interpretation of Bollinger Bands is that prices tend to stay within the upper- and lower-band. The distinctive characteristic of Bollinger Bands is that the spacing between the bands varies based on the volatility of the prices. During periods of extreme price changes (i.e., high volatility), the bands widen to become more forgiving. During periods of stagnant pricing (i.e., low volatility), the bands narrow to contain prices following are characteristics of Bollinger Bands.

- Sharp price changes tend to occur after the bands tighten, as volatility lessens.
- When prices move outside the bands, a continuation of the current trend is implied.
- Bottoms and tops made outside the bands followed by bottoms and tops made inside the bands call for reversals in the trend.
- A move that originates at one band tends to go all the way to the other band. This observation is useful when projecting price targets.

3.5.3 COMMODITY CHANNEL INDEX:-

Overview

The Commodity Channel Index ("CCI") measures the variation of a security's price from its statistical mean. High values show that prices are unusually high compared to average prices whereas low values indicate that prices are unusually low. Contrary to its name, the CCI can be used effectively on any type of security, not just commodities.

Interpretation

There are two basic methods of interpreting the CCI: looking for divergences and as an overbought/oversold indicator.

- A divergence occurs when the security's prices are making new highs while the CCI is failing to surpass its previous highs. This classic divergence is usually followed by a correction in the security's price.
- The CCI typically oscillates between 100. To use the CCI as an overbought/oversold indicator, readings above +100 imply an overbought condition (and a pending price correction) while readings below -100 imply an oversold condition (and a pending rally).

3.5.4 ENVELOPES (TRADING BANDS)

Overview

An envelope is comprised of two moving averages. One moving average is shifted upward and the second moving average is shifted downward.

Interpretation

Envelopes define the upper and lower boundaries of a security's normal trading range. A sell signal is generated when the security reaches the upper band whereas a buy signal is generated at the lower band. The optimum percentage shift depends on the volatility of the security--the more volatile, the larger the percentage. The logic behind envelopes is that overzealous buyers and sellers push the price to the extremes (i.e., the upper and lower bands), at which point the

prices often stabilize by moving to more realistic levels. This is similar to the interpretation of Bollinger Bands.

3.5.5 Crossovers

The basic MACD trading rule is to sell when the MACD falls below its signal line. Similarly, a buy signal occurs when the MACD rises above its signal line. It is also popular to buy/sell when the MACD goes above/below zero.

Overbought/Oversold Conditions

The MACD is also useful as an overbought/oversold indicator. When the shorter moving average pulls away dramatically from the longer moving average (i.e., the MACD rises), it is likely that the security price is overextending and will soon return to more realistic levels. MACD overbought and oversold conditions exist vary from security to security.

Divergences

A indication that an end to the current trend may be near occurs when the MACD diverges from the security. A bearish divergence occurs when the MACD is making new lows while prices fail to reach new lows. A bullish divergence occurs when the MACD is making new highs while prices fail to reach new highs. Both of these divergences are most significant when they occur at relatively overbought/oversold levels.

3.5.6 MOMENTUM

Overview

The Momentum indicator measures the amount that a security's price has changed over a given time span.

Interpretation

The interpretation of the Momentum indicator is identical to the interpretation of the Price ROC. Both indicators display the rate-of-change of a security's price. However, the Price ROC indicator displays the rate-of-change as a percentage whereas the Momentum indicator displays the rate-of-change as a ratio.

3.5.7 ON BALANCE VOLUME

Overview

On Balance Volume ("OBV") is a momentum indicator that relates volume to price change. On Balance Volume was developed by Joe Granville

Interpretation

On Balance Volume is a running total of volume. It shows if volume is flowing into or out of a security. When the security closes higher than the previous close, all of the day's volume is considered up-volume. When the security closes lower than the previous close, all of the day's volume is considered down-volume.

3.5.9 PRICE OSCILLATOR

Overview

The Price Oscillator displays the difference between two moving averages of a security's price. The difference between the moving averages can be expressed in either points or percentages. The Price Oscillator is almost identical to the MACD, except that the Price Oscillator can use any two user-specified moving averages. (The MACD always uses 12- and 26-day moving averages, and always expresses the difference in points.)

Interpretation

Moving average analysis typically generates buy signals when a short-term moving average (or the security's price) rises above a longer-term moving average. Conversely, sell signals are generated when a shorter-term moving average or the security's price falls below a longer-term moving average. The Price Oscillator illustrates the cyclical and often profitable signals generated by these one- or two-moving-average systems.

3.5.10 VOLUME

Overview

Volume is simply the number of shares (or contracts) traded during a specified time frame (e.g., hour, day, week, month, etc). The analysis of volume is a basic yet very important element of Technical Analysis. Volume provides clues as to the intensity of a given price move.

Interpretation

High volume levels are characteristic of market tops when there is a strong consensus that prices will move higher. High volume levels are also very common at the beginning of new trends (i.e., when prices break out of a trading range). Just before market bottoms, volume will often increase due to panic-driven selling. Volume can help determine the health of an existing trend. A healthy up-trend should have higher volume on the upward legs of the trend, and lower volume on the downward (corrective) legs. A healthy downtrend usually has higher volume on the downward legs of the trend and lower volume on the upward (corrective) legs.

3.5.11 VOLUME OSCILLATOR

Overview

The Volume Oscillator displays the difference between two moving averages of a security's volume. The difference between the moving averages can be expressed in either points or percentages.

Interpretation

We can use the difference between two moving averages of volume to determine if the overall volume trend is increasing or decreasing. When the Volume Oscillator rises above zero, it signifies that the shorter-term volume moving average has risen above the longer-term volume moving average, and thus, that the short-term volume trend is higher (i.e., more volume) than the longer-term volume trend. There are many ways to interpret changes in volume trends. One common belief is that rising prices coupled with increased volume, and falling prices coupled with decreased volume, is bullish. Conversely, if volume increases when prices fall,

and volume decreases when prices rise, the market is showing signs of underlying weakness. The theory behind this is straight forward. Rising prices coupled with increased volume signifies increased upside participation (more buyers) that should lead to a continued move. Conversely, falling prices coupled with increased volume (more sellers) signifies decreased upside participation.

3.6 Charting Techniques



CHART 3.1 SHOWING CLOSING PRICE OF OSLO BENCHMARK INDEX

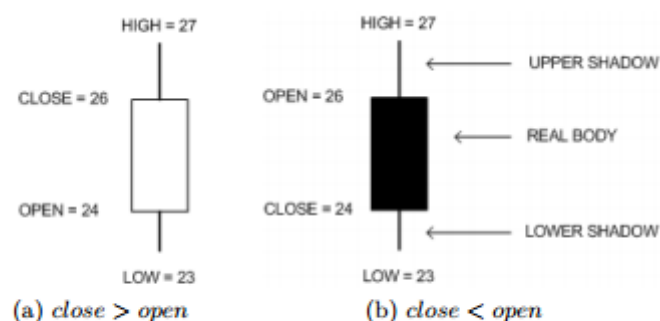
A price chart shows how a stock's price has evolved over a given period of time, typically presented as in the above figure which plots the closing price of the Oslo Benchmark Index (OSEBX) over the beginning of 2009. Closing price plots provide a good perspective on the trending direction of the price, but hide some potentially useful information. Within any time frame, stock prices reach four different levels, namely open, close, high and low. The opening price is the price at which the stock was traded for at the start of the period, and similarly the closing price is the price at the end of the period. The high and low price refers to the highest and lowest price obtained for the stock during the period.

The price levels thus reveal more about how the stock has been traded during the period, and consequently provides a greater basis for analyzing where the stock will go in the next period. Candlestick charts are designed to give the trader a quicker and more complete picture of price movements in a given time frame. The candlestick entity (named so for its resemblance to a candle with a wick in both

ends), is drawn with a rectangular "real body" that represents the range between the opening and closing price,

and lower and upper "shadows" that represent the lowest and highest price obtained for the stock in the period. The real body is colored white or green if the closing price is above the opening price, and black or red if the closing price is below the opening price. Thus, green candlesticks represent positive price movements and red candlesticks represent negative price movements. In this way, the candlestick charts provides a more visual and immediate impression of price movements. Candlestick charts can be used on

Candlestick charts are designed to give the trader a quicker and more complete picture of price movements in a given time frame. The candlestick entity (named so for its resemblance to a candle with a wick in both ends), is drawn with a rectangular "real body" that represents the range between the opening and closing price, and lower and upper "shadows" that represent the lowest and highest price obtained for the stock in the period. The real body is colored white or green if the closing price is above the opening price, and black or red if the closing price is below the opening price. Thus, green candlesticks represent positive price movements and red candlesticks represent negative price movements. In this way, the candlestick charts provides a more visual and immediate impression of price movements. Candlestick charts can be used on any time scale, from intraday 15-minute charts to daily or yearly charts.



Candlestick entity, figure adapted from Turner (2007)

CHART 3.2 SHOWING CANDELSTICK OPEN AND CLOSE PRICE

According to preference and scope of analysis, traders use different time scales when analyzing a stock. Below figure shows a daily candlestick chart over the same period

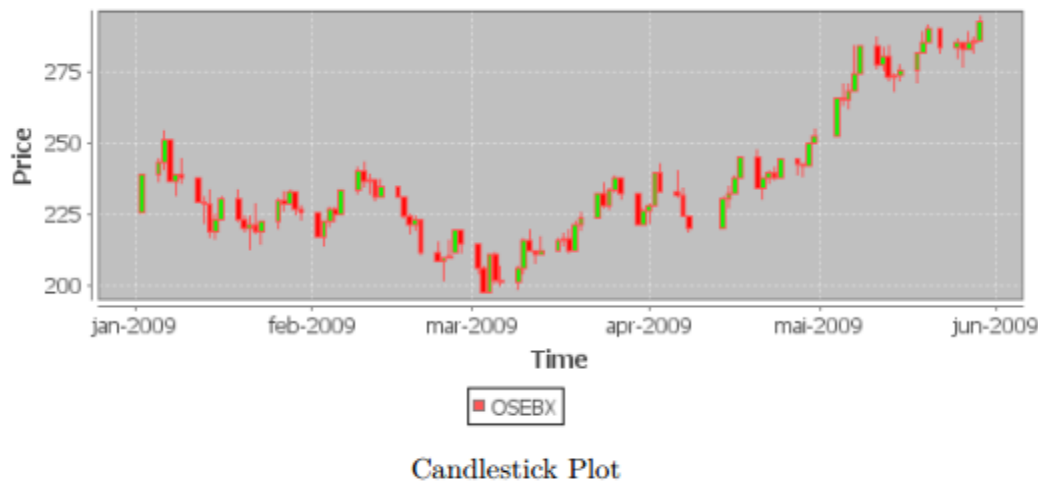


CHART 3.3 SHOWING PRICE MOMENT OF OSLO BENCHMARK INDEX

The Three Premises on which Technical Analysis is based Murphy (1999) describes three premises on which Technical Analysis is based:

1. Market action discounts everything.
2. Prices move in trends.
3. History repeats itself.

3.6.1. Market action discounts everything

Market action is defined by Murphy (1999) as the sources of information available to the trader (i.e., price and volume data). By assuming that market action discount everything we are essentially assuming that everything that could influence the price (that is, fundamentals, politics, psychology, etc.) is integrated and reflected in the price and volume data. Price thus indirectly provides a perspective of the fundamentals and a study of price action is therefore all that is required to predict shifts in supply and demand. For example, if prices are rising, the technician assumes that, for whatever specific reason, demand must exceed supply and the fundamentals must be positive. Practitioners of Technical Analysis thus believe

that there is an inherent correlation between market action and company that can be used to forecast the direction of future prices.

3.6.2. Prices move in trends

A price trend is the prevailing direction of a stock's price over some period of time. The concept of trend is perhaps the quintessential idea in Technical Analysis and as we'll see in Chapter 3 most technical indicators are designed to identify and follow existing trends (Turner, 2007). What we are basically looking for when doing Technical Analysis is patterns in the price data that signal continuations or reversals in trend. We want to recognize situations that signal a continuation in trend so that we can "ride" the trend as long as possible. We also want to look for situations that signal a reversal in trend so we can a) sell the stock before the trend turns, or b) buy the stock at the moment it reverses. For example, if we hold a particular stock in an uptrend, we look for continuations in the uptrend to confirm our position, and reversals so that we can exit the position before the stock goes into a downtrend, thereby maximizing potential profits. When analyzing and picking stocks we thus look for stocks that are trending, try to analyze the strength of the trend, and either buy or sell depending on our current position. Thus, for the methods in Technical Analysis to have any value, we have to assume that a price does form in trends.

3.6.3 History repeat itself

In the technical analysis context, the price tends to repeat itself. This happens because the market participants consistently react to price movements in a remarkably similar way, each and every time the price moves in a certain direction. For example in up trending markets, market participants get greedy and want to buy irrespective of the high price. Likewise in a down trend, market participants want to sell irrespective of the low and unattractive prices. This human reaction ensures that the price history repeats itself.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

Among Top 10 Blue chip companies in India, this report focuses on five from different sectors are listed below,

1. HDFC Bank – Banking and Financial Sector
2. Reliance Industries Fast Moving Consumer Durable Goods Sector
3. Oil and Natural Gas Corporation – Energy Sector
4. Infosys – Information Technology Services
5. Tata Motors – Automobile sector

4.1 Tools Used for Technical Analysis

- Moving Average Convergence Divergence – MACD
- Rate of Change (ROC)
- Stochastic Oscillator (SO)
- Exponential Moving Average (EMA)

For all the stocks selected, macd, roc, stochastic oscillators, ema analysis is done and the results are given in the following table.

❖ HDFC BANK

**TABLE 4.1 SHOWING MOVING AVERAGE CONVERGENCE DIVERGENCE OF
HDFC BANK DURING FEBRUARY 2016-DECEMBER 2020**

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	12-day EMA	26-Day EMA	MACD
1	Feb-16	484.85					
2	Mar-16	534.39					
3	Apr-16	564.92					
4	May-16	589.64					
5	Jun-16	586.92					
6	Jul-16	621.72					
7	Aug-16	644.17					
8	Sep-16	635.01					
9	Oct-16	625.26					
10	Nov-16	598.47	588.54				
11	Dec-16	601.76	600.23	0.1818			
12	Jan-17	641.9	610.98	0.1818	610.98		
13	Feb-17	693.51	623.84	0.1818	625.98		
14	Mar-17	719.67	636.84	0.1818	643.02		
15	Apr-17	771.53	655.30	0.1818	666.38		

16	May-17	816.28	674.76	0.1818	693.64		
17	Jun-17	824.19	692.76	0.1818	717.37		
18	Jul-17	890.22	718.28	0.1818	748.80		
19	Aug-17	886.25	744.38	0.1818	773.79		
20	Sep-17	900.84	774.62	0.1818	796.89		
21	Oct-17	902.24	804.66	0.1818	816.05		
22	Nov-17	924.79	832.95	0.1818	835.82		
23	Dec-17	934.12	857.01	0.1818	853.69		
24	Jan-18	1,000.62	885.11	0.1818	880.40		
25	Feb-18	940.01	901.96	0.1818	891.24		
26	Mar-18	940.96	914.42	0.1818	900.28	914.42	-14.14
27	Apr-18	969.99	929.00	0.1818	912.96	900.28	12.67
28	May-18	1,067.35	946.72	0.1818	941.03	912.96	28.07
29	Jun-18	1,051.88	963.28	0.1818	961.18	941.03	20.15
30	Jul-18	1,087.33	981.93	0.1818	984.12	961.18	22.94
31	Aug-18	1,028.31	994.54	0.1818	992.15	984.12	8.03
32	Sep-18	1,000.80	1002.14	0.1818	993.73	992.15	1.57
33	Oct-18	953.75	1004.10	0.1818	986.46	993.73	-7.27
34	Nov-18	1,061.86	1010.22	0.1818	1000.17	986.46	13.71
35	Dec-18	1,058.49	1022.07	0.1818	1010.77	1000.17	10.60
36	Jan-19	1,037.67	1031.74	0.1818	1015.66	1010.77	4.89
37	Feb-19	1,036.47	1038.39	0.1818	1019.45	1015.66	3.78
38	Mar-19	1,156.88	1047.34	0.1818	1044.43	1019.45	24.99
39	Apr-19	1,156.15	1057.77	0.1818	1064.75	1044.43	20.31
40	May-19	1,209.98	1070.04	0.1818	1091.15	1064.75	26.41
41	Jun-19	1,219.16	1089.12	0.1818	1114.43	1091.15	23.27
42	Jul-19	1,123.32	1101.37	0.1818	1116.04	1114.43	1.62
43	Aug-19	1,113.97	1117.40	0.1818	1115.67	1116.04	-0.38
44	Sep-19	1,227.45	1133.95	0.1818	1135.99	1115.67	20.32
45	Oct-19	1,230.35	1151.14	0.1818	1153.15	1135.99	17.16
46	Nov-19	1,274.95	1174.87	0.1818	1175.29	1153.15	22.15
47	Dec-19	1,272.10	1198.43	0.1818	1192.89	1175.29	17.60
48	Jan-20	1,226.30	1205.37	0.1818	1198.97	1192.89	6.07
49	Feb-20	1,177.65	1207.52	0.1818	1195.09	1198.97	-3.88
50	Mar-20	861.9	1172.72	0.1818	1134.51	1195.09	-60.58
51	Apr-20	1,001.80	1150.98	0.1818	1110.38	1134.51	-24.13
52	May-20	951.65	1133.81	0.1818	1081.52	1110.38	-28.86
53	Jun-20	1,065.85	1129.00	0.1818	1078.67	1081.52	-2.85
54	Jul-20	1,032.80	1109.54	0.1818	1070.33	1078.67	-8.34
55	Aug-20	1,115.85	1098.09	0.1818	1078.61	1070.33	8.28
56	Sep-20	1,078.60	1078.45	0.1818	1078.61	1078.61	0.00
57	Oct-20	1,183.55	1069.60	0.1818	1097.69	1078.61	19.08
58	Nov-20	1,440.85	1091.05	0.1818	1160.08	1097.69	62.39
59	Dec-20	1,436.30	1116.92	0.1818	1210.30	1160.08	50.22

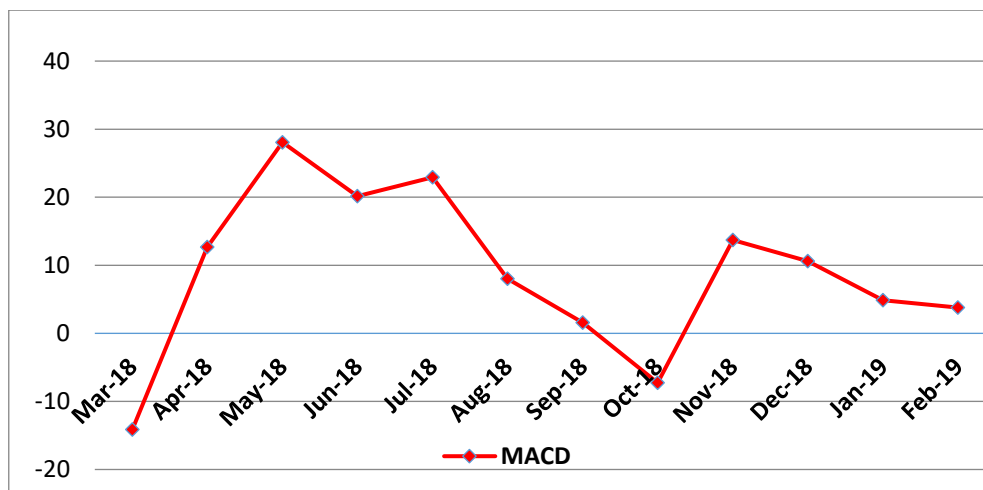


CHART 4.1 SHOWING THE MACD OF HDFC BANK DURING FEBRUARY 2016-DECEMBER 2020

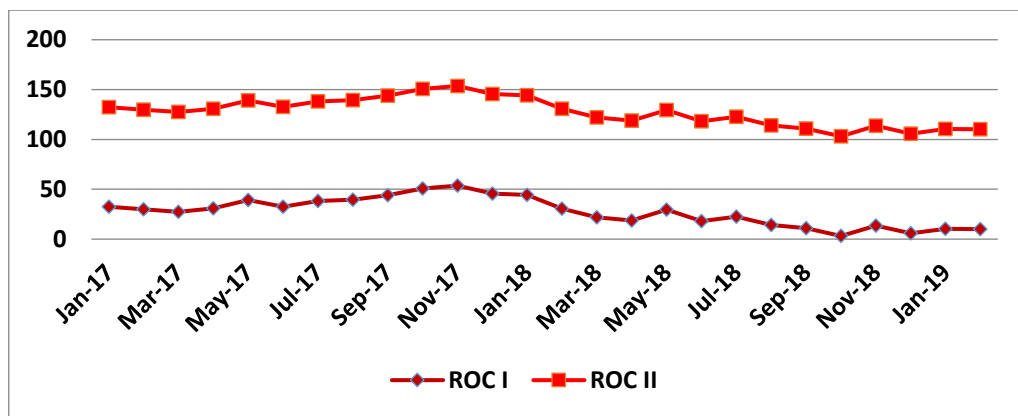
INFERENCE

During the study period from February 2016 to December 2020, MACD of HDFC Bank shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after April 2018 indicating bullish trends. It meets a fall on June 2018 and a sudden fall after July 2018 and become bearish. The recent trend of HDFC Banks is bullish after October 2018. There are probable chances of it to be bullish again. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

TABLE 4.2 SHOWING RATE OF CHANGE OF HDFC BANK DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	CP	ROC I	ROC II
1	Feb-16	484.85		
2	Mar-16	534.39		
3	Apr-16	564.92		
4	May-16	589.64		
5	Jun-16	586.92		
6	Jul-16	621.72		
7	Aug-16	644.17		
8	Sep-16	635.01		
9	Oct-16	625.26		
10	Nov-16	598.47		
11	Dec-16	601.76		
12	Jan-17	641.9	32.39146	132.39146

13	Feb-17	693.51	29.77601	129.77601
14	Mar-17	719.67	27.39326	127.39326
15	Apr-17	771.53	30.84764	130.84764
16	May-17	816.28	39.07858	139.07858
17	Jun-17	824.19	32.56611	132.56611
18	Jul-17	890.22	38.19644	138.19644
19	Aug-17	886.25	39.56473	139.56473
20	Sep-17	900.84	44.07447	144.07447
21	Oct-17	902.24	50.75777	150.75777
22	Nov-17	924.79	53.68087	153.68087
23	Dec-17	934.12	45.52422	145.52422
24	Jan-18	1,000.62	44.28343	144.28343
25	Feb-18	940.01	30.61681	130.61681
26	Mar-18	940.96	21.96026	121.96026
27	Apr-18	969.99	18.83055	118.83055
28	May-18	1,067.35	29.50291	129.50291
29	Jun-18	1,051.88	18.15956	118.15956
30	Jul-18	1,087.33	22.68886	122.68886
31	Aug-18	1,028.31	14.15013	114.15013
32	Sep-18	1,000.80	10.92392	110.92392
33	Oct-18	953.75	3.13152	103.13152
34	Nov-18	1,061.86	13.67490	113.67490
35	Dec-18	1,058.49	5.78341	105.78341
36	Jan-19	1,037.67	10.38925	110.38925
37	Feb-19	1,036.47	10.15027	110.15027
38	Mar-19	1,156.88	19.26721	119.26721
39	Apr-19	1,156.15	8.31967	108.31967
40	May-19	1,209.98	15.03023	115.03023
41	Jun-19	1,219.16	12.12419	112.12419
42	Jul-19	1,123.32	9.23943	109.23943
43	Aug-19	1,113.97	11.30795	111.30795
44	Sep-19	1,227.45	28.69725	128.69725
45	Oct-19	1,230.35	15.86744	115.86744
46	Nov-19	1,274.95	20.44989	120.44989
47	Dec-19	1,272.10	22.59196	122.59196
48	Jan-20	1,226.30	18.31505	118.31505
49	Feb-20	1,177.65	1.79535	101.79535
50	Mar-20	861.9	-25.45085	74.54915
51	Apr-20	1,001.80	-17.20524	82.79476
52	May-20	951.65	-21.94216	78.05784
53	Jun-20	1,065.85	-5.11608	94.88392
54	Jul-20	1,032.80	-7.28655	92.71345
55	Aug-20	1,115.85	-9.09202	90.90798
56	Sep-20	1,078.60	-12.33389	87.66611
57	Oct-20	1,183.55	-7.16891	92.83109
58	Nov-20	1,440.85	13.26547	113.26547
59	Dec-20	1,436.30	17.12468	117.12468



**CHART 4.2 SHOWING THE RATE OF CHANGE OF HDFC BANK DURING
FEBRUARY 2016-DECEMBER 2020**

INFERENCE

The chart above shows the 12-day Rate-of-Change calculations of HDFC Bank for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of HDFC Bank expands into positive territory as an advance accelerates.

**TABLE 4.3 SHOWING STOCHASTIC OSCILLATOR OF HDFC BANK DURING
FEBRUARY 2016-DECEMBER 2020**

S.No	Date	High	Low	Highest High (14)	Lowest Low (14)	Current Close	14-day Stochastic Oscillator
1	Feb-16	532.32	462.97			484.85	
2	Mar-16	538.25	484.85			534.39	
3	Apr-16	567.09	520.27			564.92	
4	May-16	596.17	555.34			589.64	
5	Jun-16	594.6	570.85			586.92	
6	Jul-16	624.23	579.16			621.72	
7	Aug-16	646.06	605.55			644.17	
8	Sep-16	657.76	631.29			635.01	
9	Oct-16	648.58	610.72			625.26	
10	Nov-16	643.07	577.71			598.47	

11	Dec-16	604.65	580.51			601.76	
12	Jan-17	648.56	590.24			641.9	
13	Feb-17	725.39	638.83			693.51	
14	Mar-17	738.33	682.98	738.33	462.97	719.67	93.22
15	Apr-17	785.23	710.94	785.23	484.85	771.53	95.44
16	May-17	822.17	759.61	822.17	520.27	816.28	98.05
17	Jun-17	856.09	808.47	856.09	555.34	824.19	89.39
18	Jul-17	897.4	820.67	897.40	570.85	890.22	97.80
19	Aug-17	902.57	863.65	902.57	577.71	886.25	94.98
20	Sep-17	931.93	867.07	931.93	577.71	900.84	91.22
21	Oct-17	937.71	876.97	937.71	577.71	902.24	90.15
22	Nov-17	935.67	892.01	937.71	577.71	924.79	96.41
23	Dec-17	949.44	897.5	949.44	577.71	934.12	95.88
24	Jan-18	1,004.51	923.2	1004.51	580.51	1,000.62	99.08
25	Feb-18	1,005.26	916.11	1005.26	590.24	940.01	84.28
26	Mar-18	947.89	912.22	1005.26	638.83	940.96	82.45
27	Apr-18	987.3	928.08	1005.26	682.98	969.99	89.06
28	May-18	1,077.60	970.84	1077.60	710.94	1,067.35	97.20
29	Jun-18	1,076.10	1,002.32	1077.60	759.61	1,051.88	91.91
30	Jul-18	1,107.54	1,029.33	1107.54	808.47	1,087.33	93.24
31	Aug-18	1,085.08	1,026.84	1107.54	820.67	1,028.31	72.38
32	Sep-18	1,037.17	952.98	1107.54	863.65	1,000.80	56.23
33	Oct-18	1,023.82	940.41	1107.54	867.07	953.75	36.05
34	Nov-18	1,066.40	945.89	1107.54	876.97	1,061.86	80.19
35	Dec-18	1,077.30	1,013.74	1107.54	892.01	1,058.49	77.24
36	Jan-19	1,080.84	1,008.76	1107.54	897.50	1,037.67	66.73
37	Feb-19	1,075.11	1,034.30	1107.54	912.22	1,036.47	63.61
38	Mar-19	1,161.44	1,032.70	1161.44	912.22	1,156.88	98.17
39	Apr-19	1,163.41	1,113.02	1163.41	912.22	1,156.15	97.11
40	May-19	1,229.76	1,133.28	1229.76	928.08	1,209.98	93.44
41	Jun-19	1,244.48	1,198.83	1244.48	940.41	1,219.16	91.67
42	Jul-19	1,248.87	1,109.06	1248.87	940.41	1,123.32	59.30
43	Aug-19	1,144.50	1,069.80	1248.87	940.41	1,113.97	56.27
44	Sep-19	1,282.70	1,084.00	1282.70	940.41	1,227.45	83.86
45	Oct-19	1,263.90	1,181.15	1282.70	940.41	1,230.35	84.71
46	Nov-19	1,287.00	1,227.60	1287.00	940.41	1,274.95	96.52
47	Dec-19	1,305.50	1,234.20	1305.50	945.89	1,272.10	90.71
48	Jan-20	1,304.85	1,211.75	1305.50	1008.76	1,226.30	73.31
49	Feb-20	1,259.90	1,170.10	1305.50	1008.76	1,177.65	56.92
50	Mar-20	1,201.15	738.75	1305.50	738.75	861.9	21.73
51	Apr-20	1,019.00	810	1305.50	738.75	1,001.80	46.41
52	May-20	960	826.1	1305.50	738.75	951.65	37.57
53	Jun-20	1,082.60	928	1305.50	738.75	1,065.85	57.72
54	Jul-20	1,157.95	1,020.05	1305.50	738.75	1,032.80	51.88
55	Aug-20	1,148.80	993	1305.50	738.75	1,115.85	66.54
56	Sep-20	1,145.95	1,025.00	1305.50	738.75	1,078.60	59.96
57	Oct-20	1,251.00	1,090.10	1305.50	738.75	1,183.55	78.48
58	Nov-20	1,464.40	1,177.50	1464.40	738.75	1,440.85	96.75
59	Dec-20	1,449.00	1,345.00	1464.40	738.75	1,436.30	96.13

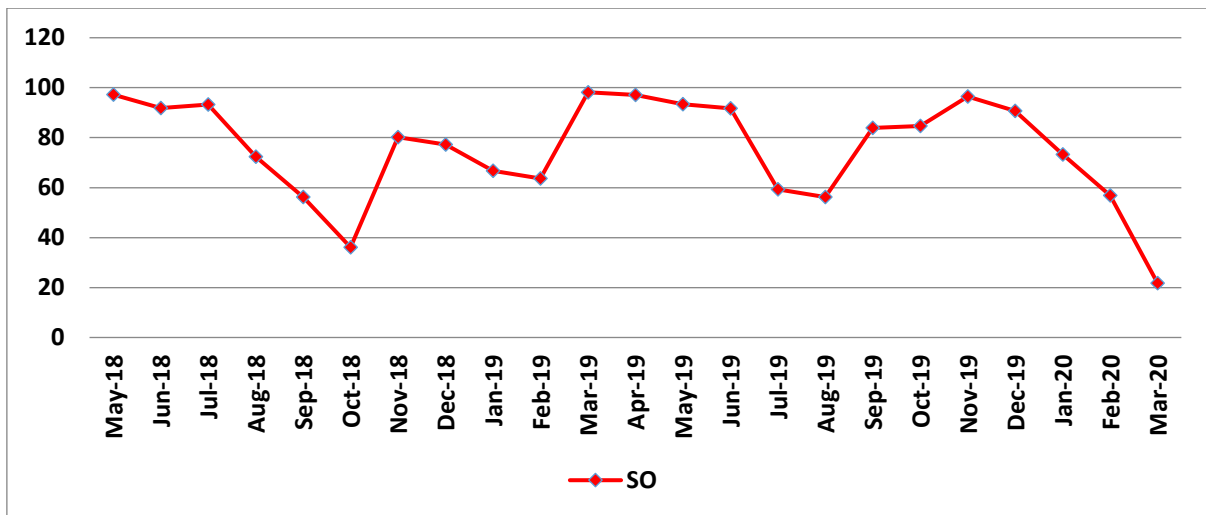


TABLE 4.3 SHOWING STOCHASTIC OSCILLATOR OF HDFC BANK FROM FEBRUARY 2016-DECEMBER 2020

INFERENCE

From the 14 days SO of HDFC Bank, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in January 2018 as 99.08 and the lowest being 21.73 in March 2020. The lower low is considered as oversold levels, but the SO is found to be between 20 and 30. The present position of HDFC bank is found as overruled momentum

TABLE 4.4 SHOWING MOVING AVERAGE OF HDFC BANK FROM FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	10-day EMA
1	Feb-16	484.85			
2	Mar-16	534.39			
3	Apr-16	564.92			
4	May-16	589.64			
5	Jun-16	586.92			
6	Jul-16	621.72			
7	Aug-16	644.17			
8	Sep-16	635.01			
9	Oct-16	625.26			
10	Nov-16	598.47	588.54		588.54
11	Dec-16	601.76	600.23	0.1818	590.94

12	Jan-17	641.9	610.98	0.1818	600.21
13	Feb-17	693.51	623.84	0.1818	617.17
14	Mar-17	719.67	636.84	0.1818	635.81
15	Apr-17	771.53	655.30	0.1818	660.48
16	May-17	816.28	674.76	0.1818	688.81
17	Jun-17	824.19	692.76	0.1818	713.42
18	Jul-17	890.22	718.28	0.1818	745.57
19	Aug-17	886.25	744.38	0.1818	771.15
20	Sep-17	900.84	774.62	0.1818	794.73
21	Oct-17	902.24	804.66	0.1818	814.28
22	Nov-17	924.79	832.95	0.1818	834.37
23	Dec-17	934.12	857.01	0.1818	852.51
24	Jan-18	1,000.62	885.11	0.1818	879.44
25	Feb-18	940.01	901.96	0.1818	890.45
26	Mar-18	940.96	914.42	0.1818	899.63
27	Apr-18	969.99	929.00	0.1818	912.43
28	May-18	1,067.35	946.72	0.1818	940.59
29	Jun-18	1,051.88	963.28	0.1818	960.83
30	Jul-18	1,087.33	981.93	0.1818	983.83
31	Aug-18	1,028.31	994.54	0.1818	991.92
32	Sep-18	1,000.80	1002.14	0.1818	993.53
33	Oct-18	953.75	1004.10	0.1818	986.30
34	Nov-18	1,061.86	1010.22	0.1818	1000.04
35	Dec-18	1,058.49	1022.07	0.1818	1010.66
36	Jan-19	1,037.67	1031.74	0.1818	1015.57
37	Feb-19	1,036.47	1038.39	0.1818	1019.37
38	Mar-19	1,156.88	1047.34	0.1818	1044.37
39	Apr-19	1,156.15	1057.77	0.1818	1064.70
40	May-19	1,209.98	1070.04	0.1818	1091.11
41	Jun-19	1,219.16	1089.12	0.1818	1114.39
42	Jul-19	1,123.32	1101.37	0.1818	1116.02
43	Aug-19	1,113.97	1117.40	0.1818	1115.64
44	Sep-19	1,227.45	1133.95	0.1818	1135.97
45	Oct-19	1,230.35	1151.14	0.1818	1153.13
46	Nov-19	1,274.95	1174.87	0.1818	1175.28
47	Dec-19	1,272.10	1198.43	0.1818	1192.88
48	Jan-20	1,226.30	1205.37	0.1818	1198.96
49	Feb-20	1,177.65	1207.52	0.1818	1195.09
50	Mar-20	861.9	1172.72	0.1818	1134.51
51	Apr-20	1,001.80	1150.98	0.1818	1110.38
52	May-20	951.65	1133.81	0.1818	1081.52
53	Jun-20	1,065.85	1129.00	0.1818	1078.67
54	Jul-20	1,032.80	1109.54	0.1818	1070.33
55	Aug-20	1,115.85	1098.09	0.1818	1078.61
56	Sep-20	1,078.60	1078.45	0.1818	1078.60
57	Oct-20	1,183.55	1069.60	0.1818	1097.69
58	Nov-20	1,440.85	1091.05	0.1818	1160.08
59	Dec-20	1,436.30	1116.92	0.1818	1210.30

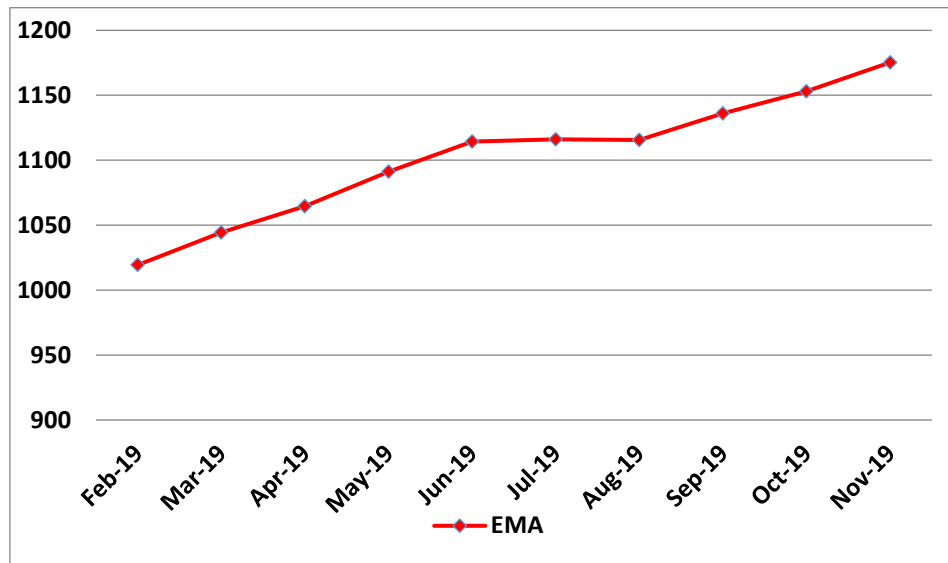


CHART 4.4 SHOWING MOVING AVERAGE OF HDFC BANK FROM FEBURARY 2016-DCEMBER 2020

INFERENCE

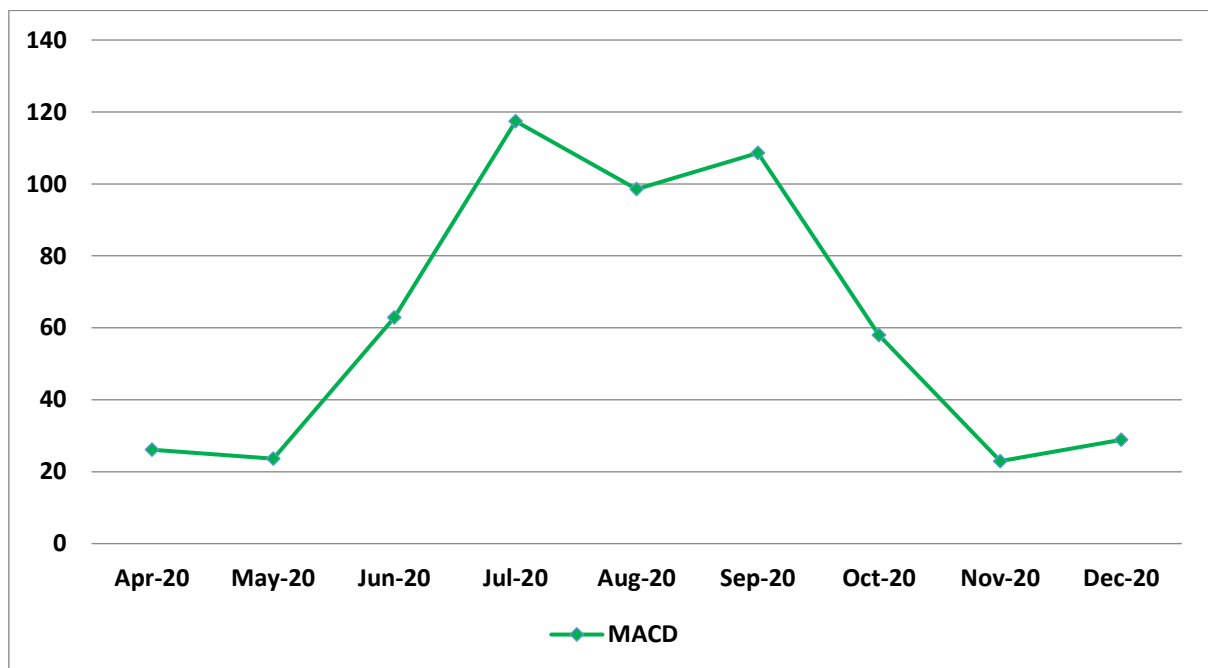
The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of HDFC banks shows a mild trend during the past months. HDFC EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

❖ RELIANCE INDUSTRIES

**TABLE 4.5 SHOWING MOVING AVERAGE CONVERGENCE DIVERGENCE
OF RELIANCE DURING FEBRUARY 2016-DECEMBER 2020**

S.No	Date	Price	10-day SMA	Smoothing Constant 2/(10 + 1)	12-day EMA	26-Day EMA	MACD
1	Feb-16	478.79					
2	Mar-16	517.69					
3	Apr-16	486.74					
4	May-16	474.43					
5	Jun-16	480.02					
6	Jul-16	502.69					
7	Aug-16	525.02					
8	Sep-16	536.76					
9	Oct-16	520.66					
10	Nov-16	490.38	501.32				
11	Dec-16	536.12	507.05	0.1818			
12	Jan-17	517.69	507.05	0.1818	507.05		
13	Feb-17	613.21	519.70	0.1818	526.35		
14	Mar-17	654.25	537.68	0.1818	549.61		
15	Apr-17	691.05	558.78	0.1818	575.32		
16	May-17	664.06	574.92	0.1818	591.46		
17	Jun-17	683.52	590.77	0.1818	608.20		
18	Jul-17	800.02	617.10	0.1818	643.07		
19	Aug-17	789.76	644.01	0.1818	669.74		
20	Sep-17	773.57	672.33	0.1818	688.62		
21	Oct-17	932.02	711.92	0.1818	732.88		
22	Nov-17	912.9	751.44	0.1818	765.61		
23	Dec-17	912.4	781.36	0.1818	792.30		
24	Jan-18	952.27	811.16	0.1818	821.38		
25	Feb-18	945.59	836.61	0.1818	843.97		
26	Mar-18	874.41	857.65	0.1818	849.50	857.65	-8.14
27	Apr-18	954.25	884.72	0.1818	868.55	849.50	19.05
28	May-18	912.7	895.99	0.1818	876.57	868.55	8.03
29	Jun-18	963.32	913.34	0.1818	892.35	876.57	15.77
30	Jul-18	1,174.86	953.47	0.1818	943.71	892.35	51.37
31	Aug-18	1,229.99	983.27	0.1818	995.76	943.71	52.05
32	Sep-18	1,246.14	1016.59	0.1818	1041.29	995.76	45.52
33	Oct-18	1,051.28	1030.48	0.1818	1043.10	1041.29	1.82
34	Nov-18	1,156.59	1050.91	0.1818	1063.74	1043.10	20.63
35	Dec-18	1,110.72	1067.43	0.1818	1072.28	1063.74	8.54
36	Jan-19	1,215.63	1101.55	0.1818	1098.34	1072.28	26.06
37	Feb-19	1,219.49	1128.07	0.1818	1120.37	1098.34	22.03
38	Mar-19	1,350.45	1171.85	0.1818	1162.20	1120.37	41.83
39	Apr-19	1,379.72	1213.49	0.1818	1201.75	1162.20	39.55
40	May-19	1,317.66	1227.77	0.1818	1222.83	1201.75	21.07

41	Jun-19	1,241.33	1228.90	0.1818	1226.19	1222.83	3.36
42	Jul-19	1,155.30	1219.82	0.1818	1213.30	1226.19	-12.89
43	Aug-19	1,236.83	1238.37	0.1818	1217.58	1213.30	4.28
44	Sep-19	1,319.74	1254.69	0.1818	1236.15	1217.58	18.57
45	Oct-19	1,450.60	1288.68	0.1818	1275.14	1236.15	38.99
46	Nov-19	1,536.58	1320.77	0.1818	1322.68	1275.14	47.53
47	Dec-19	1,499.83	1348.80	0.1818	1354.89	1322.68	32.21
48	Jan-20	1,398.39	1353.60	0.1818	1362.80	1354.89	7.91
49	Feb-20	1,316.17	1347.24	0.1818	1354.32	1362.80	-8.48
50	Mar-20	1,103.29	1325.81	0.1818	1308.68	1354.32	-45.64
51	Apr-20	1,452.23	1346.90	0.1818	1334.78	1308.68	26.10
52	May-20	1,464.40	1377.81	0.1818	1358.35	1334.78	23.57
53	Jun-20	1,704.10	1424.53	0.1818	1421.21	1358.35	62.86
54	Jul-20	2,067.10	1499.27	0.1818	1538.64	1421.21	117.43
55	Aug-20	2,080.70	1562.28	0.1818	1637.20	1538.64	98.56
56	Sep-20	2,234.35	1632.06	0.1818	1745.77	1637.20	108.57
57	Oct-20	2,064.35	1688.51	0.1818	1803.70	1745.77	57.92
58	Nov-20	1,929.80	1741.65	0.1818	1826.62	1803.70	22.93
59	Dec-20	1,985.30	1808.56	0.1818	1855.47	1826.62	28.85



**CHART 4.5 SHOWING MACD OF RELIANCE DURING FEBRUARY 2016-
DECEMBER 2020**

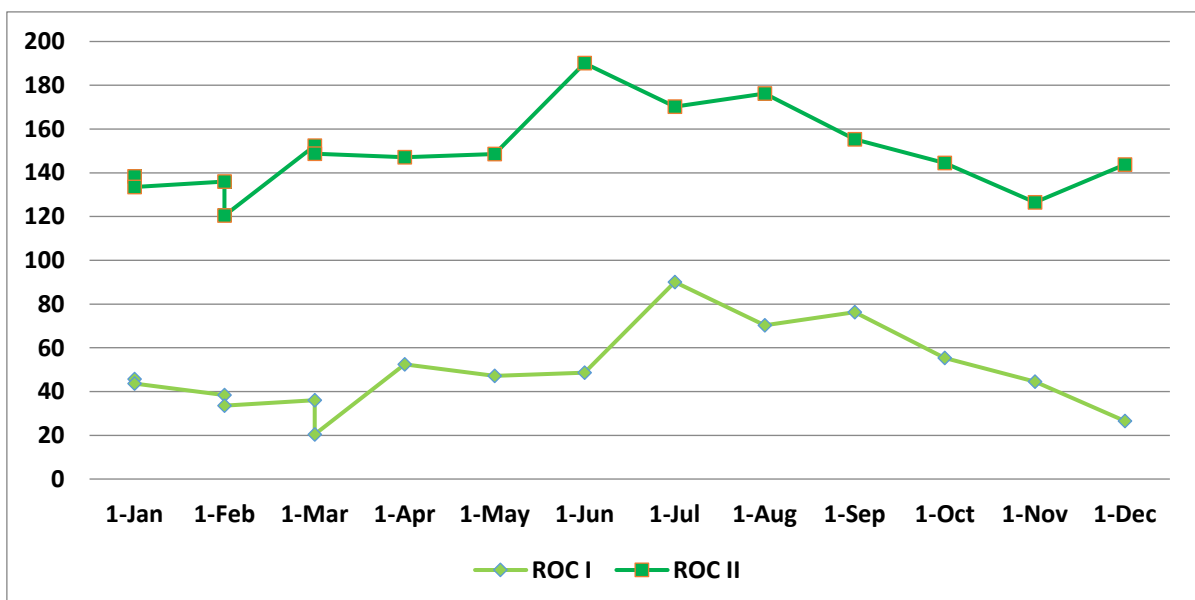
INFERENCE:

During the study period from February 2016 to December 2020, MACD of Reliance Industries shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after May 2018 indicating bullish trends. It meets a fall on September 2020 and become bearish. The recent trend of Reliance Industries is bullish after November 2020. There are probable chances of it to be bullish again. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

**TABLE 4.6 SHOWING RATE OF CHANGE OF RELIANCE DURING
FEBRUARY 2016-DECEMBER 2020**

S.No	Date	CP	ROC I	ROC II
1	Feb-16	478.79		
2	Mar-16	517.69		
3	Apr-16	486.74		
4	May-16	474.43		
5	Jun-16	480.02		
6	Jul-16	502.69		
7	Aug-16	525.02		
8	Sep-16	536.76		
9	Oct-16	520.66		
10	Nov-16	490.38		
11	Dec-16	536.12		
12	Jan-17	517.69	8.12465	108.12465
13	Feb-17	613.21	18.45120	118.45120
14	Mar-17	654.25	34.41468	134.41468
15	Apr-17	691.05	45.65900	145.65900
16	May-17	664.06	38.34007	138.34007
17	Jun-17	683.52	35.97247	135.97247
18	Jul-17	800.02	52.37896	152.37896
19	Aug-17	789.76	47.13466	147.13466
20	Sep-17	773.57	48.57489	148.57489
21	Oct-17	932.02	90.06077	190.06077
22	Nov-17	912.9	70.27904	170.27904
23	Dec-17	912.4	76.24447	176.24447
24	Jan-18	952.27	55.29264	155.29264
25	Feb-18	945.59	44.53038	144.53038
26	Mar-18	874.41	26.53354	126.53354
27	Apr-18	954.25	43.69936	143.69936
28	May-18	912.7	33.52938	133.52938
29	Jun-18	963.32	20.41199	120.41199
30	Jul-18	1,174.86	48.76165	148.76165
31	Aug-18	1,229.99	59.00177	159.00177

32	Sep-18	1,246.14	33.70314	133.70314
33	Oct-18	1,051.28	15.15829	115.15829
34	Nov-18	1,156.59	26.76348	126.76348
35	Dec-18	1,110.72	16.63919	116.63919
36	Jan-19	1,215.63	28.55783	128.55783
37	Feb-19	1,219.49	39.46432	139.46432
38	Mar-19	1,350.45	41.51952	141.51952
39	Apr-19	1,379.72	51.16906	151.16906
40	May-19	1,317.66	36.78321	136.78321
41	Jun-19	1,241.33	5.65770	105.65770
42	Jul-19	1,155.30	-6.07241	93.92759
43	Aug-19	1,236.83	-0.74711	99.25289
44	Sep-19	1,319.74	25.53649	125.53649
45	Oct-19	1,450.60	25.42042	125.42042
46	Nov-19	1,536.58	38.34090	138.34090
47	Dec-19	1,499.83	23.37882	123.37882
48	Jan-20	1,398.39	14.67007	114.67007
49	Feb-20	1,316.17	-2.53841	97.46159
50	Mar-20	1,103.29	-20.03522	79.96478
51	Apr-20	1,452.23	10.21280	110.21280
52	May-20	1,464.40	17.97024	117.97024
53	Jun-20	1,704.10	47.50281	147.50281
54	Jul-20	2,067.10	67.12887	167.12887
55	Aug-20	2,080.70	57.65984	157.65984
56	Sep-20	2,234.35	54.02937	154.02937
57	Oct-20	2,064.35	34.34706	134.34706
58	Nov-20	1,929.80	28.66792	128.66792
59	Dec-20	1,985.30	41.97041	141.97041



**CHART 4.6 SHOWING ROC OF RELIANCE DURING FEBRUARY 2016-
DECEMBER 2020**

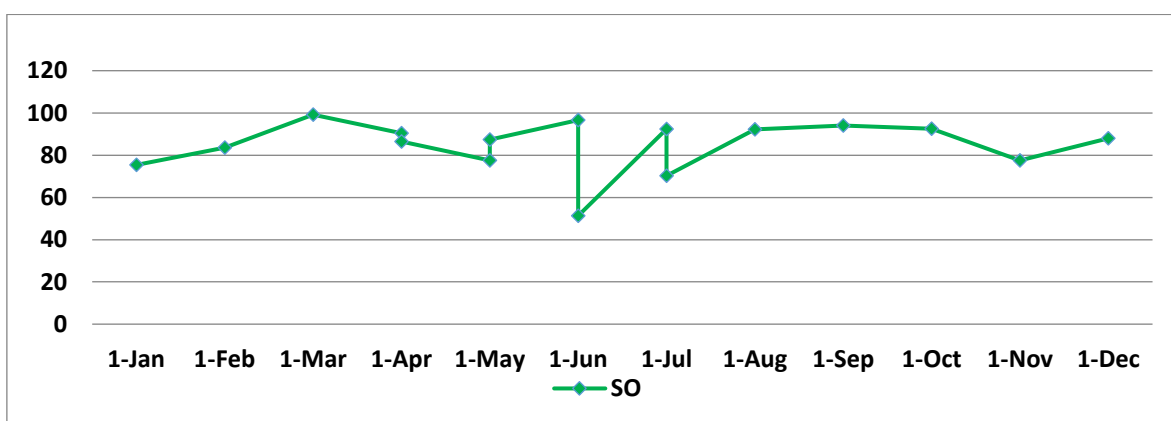
INFERENCE

The chart above shows the 12-day Rate-of-Change calculations of Reliance Industries for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of Reliance Industries expands into positive territory as an advance accelerates.

**TABLE 4.7 SHOWING STOCHASTIC OSCILLATOR OF RELIANCE FROM
FEBRUARY 2016-DECEMBER 2020**

S.No	Date	High	Low	Highest High (14)	Lowest Low (14)	Current Close	14-day Stochastic Oscillator
1	Feb-16	516.01	439.88			478.79	
2	Mar-16	523.04	477.8			517.69	
3	Apr-16	529.93	484.83			486.74	
4	May-16	492.8	458.48			474.43	
5	Jun-16	492.41	462.32			480.02	
6	Jul-16	514.5	480.45			502.69	
7	Aug-16	531.96	487.08			525.02	
8	Sep-16	559.47	496.44			536.76	
9	Oct-16	557.84	516.8			520.66	
10	Nov-16	523.02	460.63			490.38	
11	Dec-16	537.41	488.62			536.12	
12	Jan-17	543.6	501.64			517.69	
13	Feb-17	622.5	506.2			613.21	
14	Mar-17	662.54	607.76	662.54	439.88	654.25	96.28
15	Apr-17	726.98	662.25	726.98	458.48	691.05	86.62
16	May-17	694.42	641.47	726.98	458.48	664.06	76.57
17	Jun-17	715.91	648.35	726.98	458.48	683.52	83.81
18	Jul-17	808.09	679.06	808.09	460.63	800.02	97.68
19	Aug-17	824.63	757.82	824.63	460.63	789.76	90.42
20	Sep-17	864.31	771.78	864.31	460.63	773.57	77.52
21	Oct-17	948.81	777.98	948.81	460.63	932.02	96.56
22	Nov-17	950.49	864.8	950.49	460.63	912.9	92.33
23	Dec-17	930.08	854.55	950.49	460.63	912.4	92.22
24	Jan-18	981.64	897.89	981.64	488.62	952.27	94.04
25	Feb-18	963.47	862.82	981.64	501.64	945.59	92.49
26	Mar-18	950.89	871.74	981.64	506.20	874.41	77.45
27	Apr-18	1,001.51	876.94	1001.51	607.76	954.25	88.00

28	May-18	990.61	898.09	1001.51	641.47	912.7	75.33
29	Jun-18	1,026.27	909.83	1026.27	641.47	963.32	83.64
30	Jul-18	1,179.22	948.01	1179.22	648.35	1,174.86	99.18
31	Aug-18	1,316.52	1,155.00	1316.52	679.06	1,229.99	86.43
32	Sep-18	1,269.32	1,172.39	1316.52	757.82	1,246.14	87.40
33	Oct-18	1,245.89	1,006.86	1316.52	771.78	1,051.28	51.31
34	Nov-18	1,174.86	1,040.14	1316.52	777.98	1,156.59	70.30
35	Dec-18	1,163.87	1,045.09	1316.52	854.55	1,110.72	55.45
36	Jan-19	1,252.82	1,070.95	1316.52	854.55	1,215.63	78.16
37	Feb-19	1,308.79	1,194.68	1316.52	862.82	1,219.49	78.61
38	Mar-19	1,374.97	1,207.16	1374.97	862.82	1,350.45	95.21
39	Apr-19	1,399.14	1,308.60	1399.14	871.74	1,379.72	96.32
40	May-19	1,404.19	1,215.97	1404.19	876.94	1,317.66	83.59
41	Jun-19	1,361.35	1,236.93	1404.19	898.09	1,241.33	67.82
42	Jul-19	1,287.79	1,151.49	1404.19	909.83	1,155.30	49.65
43	Aug-19	1,292.20	1,085.02	1404.19	948.01	1,236.83	63.31
44	Sep-19	1,323.21	1,161.64	1404.19	1006.86	1,319.74	78.75
45	Oct-19	1,475.66	1,269.27	1475.66	1006.86	1,450.60	94.65
46	Nov-19	1,569.27	1,409.19	1569.27	1006.86	1,536.58	94.19
47	Dec-19	1,602.36	1,493.89	1602.36	1040.14	1,499.83	81.76
48	Jan-20	1,593.89	1,393.99	1602.36	1045.09	1,398.39	63.40
49	Feb-20	1,493.84	1,312.56	1602.36	1070.95	1,316.17	46.15
50	Mar-20	1,356.15	867.43	1602.36	867.43	1,103.29	32.09
51	Apr-20	1,480.91	1,035.39	1602.36	867.43	1,452.23	79.57
52	May-20	1,599.84	1,393.00	1602.36	867.43	1,464.40	81.23
53	Jun-20	1,804.20	1,475.95	1804.20	867.43	1,704.10	89.31
54	Jul-20	2,198.80	1,708.05	2198.80	867.43	2,067.10	90.11
55	Aug-20	2,196.00	2,000.25	2198.80	867.43	2,080.70	91.13
56	Sep-20	2,369.35	2,044.25	2369.35	867.43	2,234.35	91.01
57	Oct-20	2,309.00	1,992.25	2369.35	867.43	2,064.35	79.69
58	Nov-20	2,095.00	1,835.10	2369.35	867.43	1,929.80	70.73
59	Dec-20	2,038.00	1,855.25	2369.35	867.43	1,985.30	74.43



**CHART 4.7 SHOWING STOCHASTIC OSCILLATOR OF RELIANCE FROM
FEBRUARY 2016-DECEMBER 2020**

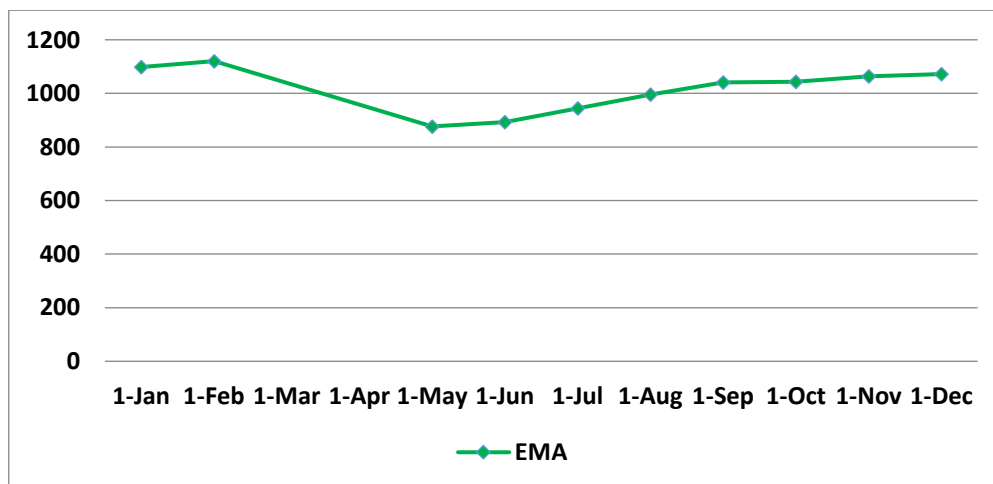
INFERENCE

From the 14 days SO of Reliance Industries, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in July 2018 as 99.18 and the lowest being 32.09 in March 2020. The lower low is considered as oversold levels, but the SO is found to be between 30 and 40. The present position of Reliance Industries is found as overruled momentum.

TABLE 4.8 SHOWING MOVING AVERAGE OF RELIANCE FROM FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	10-day EMA
1	Feb-16	478.79			
2	Mar-16	517.69			
3	Apr-16	486.74			
4	May-16	474.43			
5	Jun-16	480.02			
6	Jul-16	502.69			
7	Aug-16	525.02			
8	Sep-16	536.76			
9	Oct-16	520.66			
10	Nov-16	490.38	501.32		501.32
11	Dec-16	536.12	507.05	0.1818	507.65
12	Jan-17	517.69	507.05	0.1818	509.47
13	Feb-17	613.21	519.70	0.1818	528.33
14	Mar-17	654.25	537.68	0.1818	551.23
15	Apr-17	691.05	558.78	0.1818	576.65
16	May-17	664.06	574.92	0.1818	592.54
17	Jun-17	683.52	590.77	0.1818	609.08
18	Jul-17	800.02	617.10	0.1818	643.80
19	Aug-17	789.76	644.01	0.1818	670.34
20	Sep-17	773.57	672.33	0.1818	689.11
21	Oct-17	932.02	711.92	0.1818	733.27
22	Nov-17	912.9	751.44	0.1818	765.93
23	Dec-17	912.4	781.36	0.1818	792.56
24	Jan-18	952.27	811.16	0.1818	821.60
25	Feb-18	945.59	836.61	0.1818	844.14
26	Mar-18	874.41	857.65	0.1818	849.65
27	Apr-18	954.25	884.72	0.1818	868.67
28	May-18	912.7	895.99	0.1818	876.67
29	Jun-18	963.32	913.34	0.1818	892.43
30	Jul-18	1,174.86	953.47	0.1818	943.78
31	Aug-18	1,229.99	983.27	0.1818	995.82
32	Sep-18	1,246.14	1016.59	0.1818	1041.33
33	Oct-18	1,051.28	1030.48	0.1818	1043.14
34	Nov-18	1,156.59	1050.91	0.1818	1063.77

35	Dec-18	1,110.72	1067.43	0.1818	1072.30
36	Jan-19	1,215.63	1101.55	0.1818	1098.36
37	Feb-19	1,219.49	1128.07	0.1818	1120.39
38	Mar-19	1,350.45	1171.85	0.1818	1162.22
39	Apr-19	1,379.72	1213.49	0.1818	1201.76
40	May-19	1,317.66	1227.77	0.1818	1222.83
41	Jun-19	1,241.33	1228.90	0.1818	1226.20
42	Jul-19	1,155.30	1219.82	0.1818	1213.31
43	Aug-19	1,236.83	1238.37	0.1818	1217.58
44	Sep-19	1,319.74	1254.69	0.1818	1236.16
45	Oct-19	1,450.60	1288.68	0.1818	1275.15
46	Nov-19	1,536.58	1320.77	0.1818	1322.68
47	Dec-19	1,499.83	1348.80	0.1818	1354.89
48	Jan-20	1,398.39	1353.60	0.1818	1362.80
49	Feb-20	1,316.17	1347.24	0.1818	1354.32
50	Mar-20	1,103.29	1325.81	0.1818	1308.68
51	Apr-20	1,452.23	1346.90	0.1818	1334.78
52	May-20	1,464.40	1377.81	0.1818	1358.35
53	Jun-20	1,704.10	1424.53	0.1818	1421.21
54	Jul-20	2,067.10	1499.27	0.1818	1538.65
55	Aug-20	2,080.70	1562.28	0.1818	1637.20
56	Sep-20	2,234.35	1632.06	0.1818	1745.77
57	Oct-20	2,064.35	1688.51	0.1818	1803.70
58	Nov-20	1,929.80	1741.65	0.1818	1826.62
59	Dec-20	1,985.30	1808.56	0.1818	1855.47



**CHART 4.8 SHOWING MOVING AVERAGE OF RELIANCE FROM
FEBRUARY2016-DECEMBER 2020**

INFERENCE

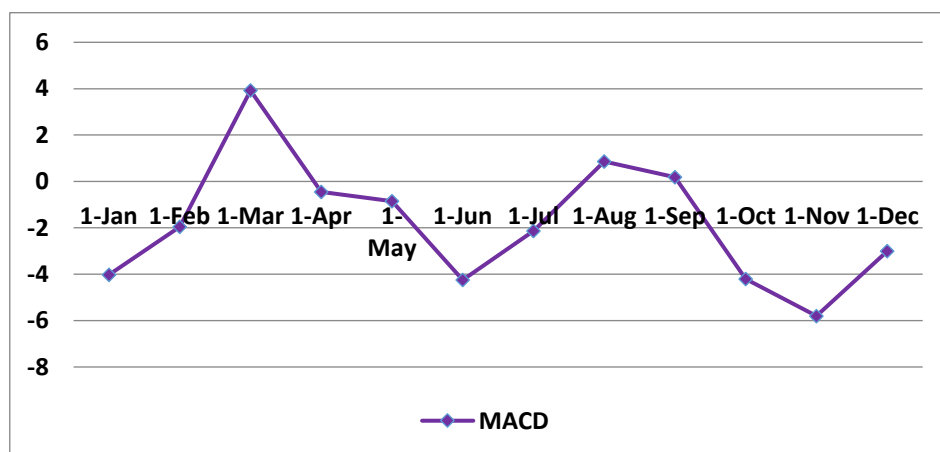
The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of Reliance Industries shows a mild trend during the past months. HDFC EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

❖ ONGC

TABLE 4.9 SHOWING MOVING AVERAGE CONVERGENCE DIVERGENCE OF ONGC DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	12-day EMA	26-Day EMA	MACD
1	Feb-16	129.4					
2	Mar-16	142.73					
3	Apr-16	144.83					
4	May-16	140.5					
5	Jun-16	144.2					
6	Jul-16	146.73					
7	Aug-16	157.53					
8	Sep-16	171.1					
9	Oct-16	192.8					
10	Nov-16	192.6	156.24				
11	Dec-16	191.35	162.44	0.1818			
12	Jan-17	202.55	168.42	0.1818	168.42		
13	Feb-17	193.55	173.29	0.1818	172.99		
14	Mar-17	185	177.74	0.1818	175.17		
15	Apr-17	186.55	181.98	0.1818	177.24		
16	May-17	177	185.00	0.1818	177.20		
17	Jun-17	157.3	184.98	0.1818	173.58		
18	Jul-17	169.4	184.81	0.1818	172.82		
19	Aug-17	156.95	181.23	0.1818	169.93		
20	Sep-17	170.95	179.06	0.1818	170.12		
21	Oct-17	191.1	179.04	0.1818	173.93		
22	Nov-17	180.65	176.85	0.1818	175.15		
23	Dec-17	195.2	177.01	0.1818	178.80		
24	Jan-18	203.45	178.86	0.1818	183.28		
25	Feb-18	188.3	179.03	0.1818	184.19		
26	Mar-18	177.8	179.11	0.1818	183.03	179.11	3.92
27	Apr-18	180.55	181.44	0.1818	182.58	183.03	-0.45

28	May-18	177.9	182.29	0.1818	181.73	182.58	-0.85
29	Jun-18	158.4	182.43	0.1818	177.49	181.73	-4.24
30	Jul-18	165.7	181.91	0.1818	175.34	177.49	-2.14
31	Aug-18	180.05	180.80	0.1818	176.20	175.34	0.86
32	Sep-18	177.2	180.46	0.1818	176.38	176.20	0.18
33	Oct-18	153.25	176.26	0.1818	172.18	176.38	-4.21
34	Nov-18	140.3	169.95	0.1818	166.38	172.18	-5.80
35	Dec-18	149.9	166.11	0.1818	163.38	166.38	-3.00
36	Jan-19	141.25	162.45	0.1818	159.36	163.38	-4.02
37	Feb-19	148.65	159.26	0.1818	157.41	159.36	-1.95
38	Mar-19	159.75	157.45	0.1818	157.84	157.41	0.43
39	Apr-19	169.2	158.53	0.1818	159.90	157.84	2.07
40	May-19	171.95	159.15	0.1818	162.09	159.90	2.19
41	Jun-19	167.75	157.92	0.1818	163.12	162.09	1.03
42	Jul-19	138.85	154.09	0.1818	158.71	163.12	-4.41
43	Aug-19	121.2	150.88	0.1818	151.89	158.71	-6.82
44	Sep-19	131.8	150.03	0.1818	148.24	151.89	-3.65
45	Oct-19	141.7	149.21	0.1818	147.05	148.24	-1.19
46	Nov-19	131.75	148.26	0.1818	144.27	147.05	-2.78
47	Dec-19	128.8	146.28	0.1818	141.45	144.27	-2.81
48	Jan-20	108.95	141.20	0.1818	135.54	141.45	-5.91
49	Feb-20	91.95	133.47	0.1818	127.62	135.54	-7.93
50	Mar-20	68.3	123.11	0.1818	116.83	127.62	-10.79
51	Apr-20	79.9	114.32	0.1818	110.12	116.83	-6.72
52	May-20	83.2	108.76	0.1818	105.22	110.12	-4.89
53	Jun-20	81.35	104.77	0.1818	100.88	105.22	-4.34
54	Jul-20	78.3	99.42	0.1818	96.78	100.88	-4.11
55	Aug-20	81.95	93.45	0.1818	94.08	96.78	-2.70
56	Sep-20	69.25	87.20	0.1818	89.57	94.08	-4.51
57	Oct-20	64.9	80.81	0.1818	85.08	89.57	-4.48
58	Nov-20	78.5	77.76	0.1818	83.89	85.08	-1.20
59	Dec-20	93.05	77.87	0.1818	85.55	83.89	1.67



**CHART 4.9 SHOWING MACD OF ONGC DURING FEBRUARY 2016-
DECEMBER 2020**

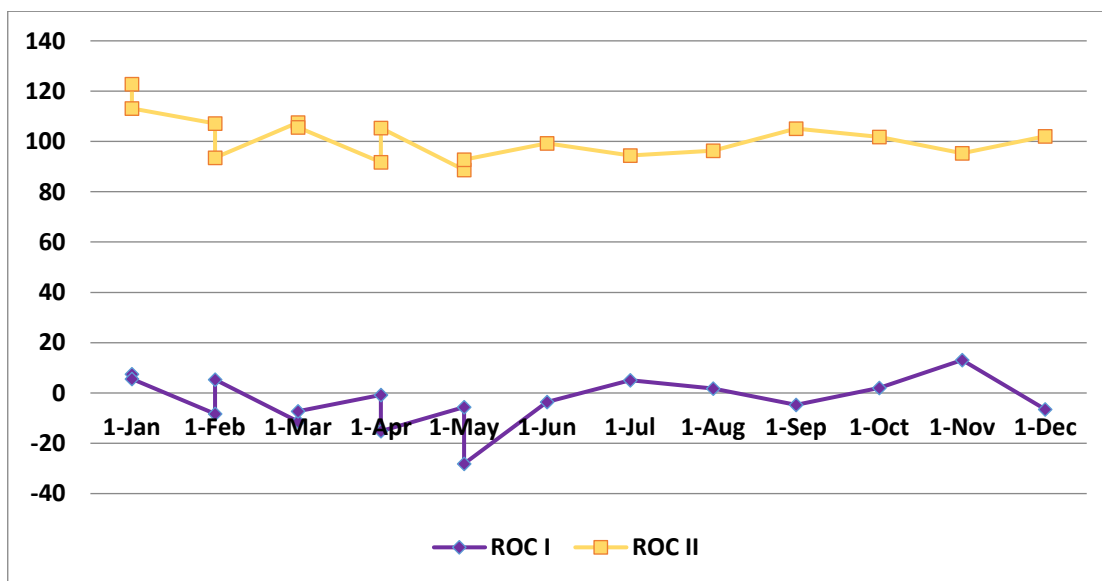
INFERENCE

During the study period from February 2016 to December 2020, MACD of ONGC shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after March 2019 indicating bullish trends. It meets a fall on June 2019 and become bearish. The recent trend of ONGC is bearish after September 2019. There are probable chances of it to be bullish again as per the recent MACD on December 2020. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

TABLE 4.10 SHOWING RATE OF CHANGE OF ONGC DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	CP	ROC I	ROC II
1	Feb-16	129.4		
2	Mar-16	142.73		
3	Apr-16	144.83		
4	May-16	140.5		
5	Jun-16	144.2		
6	Jul-16	146.73		
7	Aug-16	157.53		
8	Sep-16	171.1		
9	Oct-16	192.8		
10	Nov-16	192.6		
11	Dec-16	191.35		
12	Jan-17	202.55	56.53014	156.53014
13	Feb-17	193.55	35.60569	135.60569
14	Mar-17	185	27.73597	127.73597
15	Apr-17	186.55	32.77580	132.77580
16	May-17	177	22.74619	122.74619
17	Jun-17	157.3	7.20371	107.20371
18	Jul-17	169.4	7.53507	107.53507
19	Aug-17	156.95	-8.27002	91.72998
20	Sep-17	170.95	-11.33299	88.66701
21	Oct-17	191.1	-0.77882	99.22118
22	Nov-17	180.65	-5.59185	94.40815
23	Dec-17	195.2	-3.62873	96.37127
24	Jan-18	203.45	5.11496	105.11496
25	Feb-18	188.3	1.78378	101.78378
26	Mar-18	177.8	-4.69043	95.30957
27	Apr-18	180.55	2.00565	102.00565
28	May-18	177.9	13.09599	113.09599
29	Jun-18	158.4	-6.49351	93.50649
30	Jul-18	165.7	5.57502	105.57502

31	Aug-18	180.05	5.32319	105.32319
32	Sep-18	177.2	-7.27368	92.72632
33	Oct-18	153.25	-15.16745	84.83255
34	Nov-18	140.3	-28.12500	71.87500
35	Dec-18	149.9	-26.32096	73.67904
36	Jan-19	141.25	-24.98672	75.01328
37	Feb-19	148.65	-16.39483	83.60517
38	Mar-19	159.75	-11.52035	88.47965
39	Apr-19	169.2	-4.89039	95.10961
40	May-19	171.95	8.55429	108.55429
41	Jun-19	167.75	1.23718	101.23718
42	Jul-19	138.85	-22.88253	77.11747
43	Aug-19	121.2	-31.60271	68.39729
44	Sep-19	131.8	-13.99674	86.00326
45	Oct-19	141.7	0.99786	100.99786
46	Nov-19	131.75	-12.10807	87.89193
47	Dec-19	128.8	-8.81416	91.18584
48	Jan-20	108.95	-26.70703	73.29297
49	Feb-20	91.95	-42.44131	57.55869
50	Mar-20	68.3	-59.63357	40.36643
51	Apr-20	79.9	-53.53300	46.46700
52	May-20	83.2	-50.40238	49.59762
53	Jun-20	81.35	-41.41160	58.58840
54	Jul-20	78.3	-35.39604	64.60396
55	Aug-20	81.95	-37.82246	62.17754
56	Sep-20	69.25	-51.12915	48.87085
57	Oct-20	64.9	-50.74004	49.25996
58	Nov-20	78.5	-39.05280	60.94720
59	Dec-20	93.05	-14.59385	85.40615



**CHART 4.10 SHOWING ROC OF ONGC DURING FEBRUARY 2016-
DECEMBER 2020**

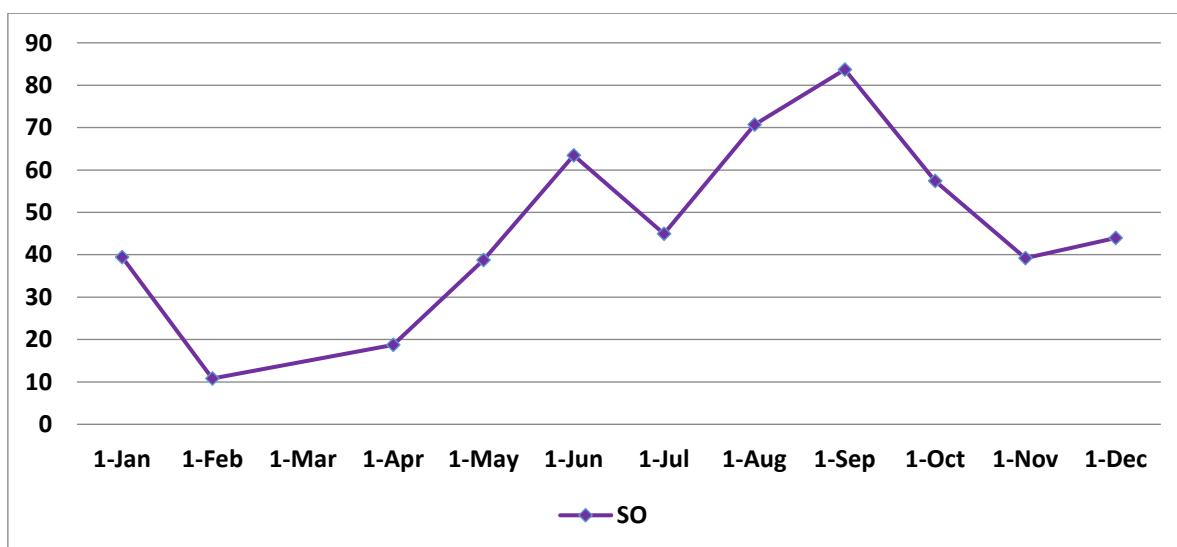
INFERENCE

The chart above shows the 12-day Rate-of-Change calculations of ONGC for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of ONGC expands into positive territory as an advance accelerates.

**TABLE 4.11 SHOWING STOCHASTIC OSCILLATOR OF ONGC FROM
FEBURARY 2016–DECEMBER 2020**

S.No	Date	High	Low	Highest High (14)	Lowest Low (14)	Current Close	14-day Stochastic Oscillator
1	Feb-16	151.87	125.17			129.4	
2	Mar-16	146.1	125.7			142.73	
3	Apr-16	150.27	136			144.83	
4	May-16	147.43	133.33			140.5	
5	Jun-16	148.47	138			144.2	
6	Jul-16	161.03	144.3			146.73	
7	Aug-16	162.6	145.07			157.53	
8	Sep-16	175.57	156.73			171.1	
9	Oct-16	198.27	168.27			192.8	
10	Nov-16	194.13	166.67			192.6	
11	Dec-16	209.73	187.7			191.35	
12	Jan-17	211.8	191.15			202.55	
13	Feb-17	205	190.8			193.55	
14	Mar-17	197.2	183	211.80	125.17	185	69.06
15	Apr-17	188.7	178.3	211.80	125.70	186.55	70.67
16	May-17	194.75	171.2	211.80	133.33	177	55.65
17	Jun-17	178.5	155.2	211.80	133.33	157.3	30.55
18	Jul-17	170	155.9	211.80	138.00	169.4	42.55
19	Aug-17	170.3	156.05	211.80	144.30	156.95	18.74
20	Sep-17	174.35	157.3	211.80	145.07	170.95	38.78
21	Oct-17	192	167.75	211.80	155.20	191.1	63.43
22	Nov-17	205.5	175.8	211.80	155.20	180.65	44.96
23	Dec-17	197.15	175.35	211.80	155.20	195.2	70.67
24	Jan-18	212.85	192	212.85	155.20	203.45	83.69
25	Feb-18	207.05	180.1	212.85	155.20	188.3	57.42
26	Mar-18	190.2	173.6	212.85	155.20	177.8	39.20
27	Apr-18	186.25	174.7	212.85	155.20	180.55	43.97

28	May-18	192	155.15	212.85	155.15	177.9	39.43
29	Jun-18	176	151.8	212.85	151.80	158.4	10.81
30	Jul-18	166.75	152.45	212.85	151.80	165.7	22.77
31	Aug-18	181.9	162.5	212.85	151.80	180.05	46.27
32	Sep-18	185.4	166.2	212.85	151.80	177.2	41.61
33	Oct-18	183.5	144.7	212.85	144.70	153.25	12.55
34	Nov-18	165	137.65	212.85	137.65	140.3	3.52
35	Dec-18	151.5	134.75	212.85	134.75	149.9	19.40
36	Jan-19	150.1	138.5	212.85	134.75	141.25	8.32
37	Feb-19	150.75	127.6	212.85	127.60	148.65	24.69
38	Mar-19	163.2	145.7	207.05	127.60	159.75	40.47
39	Apr-19	171.15	153.3	192.00	127.60	169.2	64.60
40	May-19	178.9	160.85	192.00	127.60	171.95	68.87
41	Jun-19	173.5	162.95	192.00	127.60	167.75	62.34
42	Jul-19	170.4	136.25	185.40	127.60	138.85	19.46
43	Aug-19	139.75	115.75	185.40	115.75	121.2	7.82
44	Sep-19	140.85	115.55	185.40	115.55	131.8	23.26
45	Oct-19	146.15	123.95	185.40	115.55	141.7	37.44
46	Nov-19	149.65	129.25	183.50	115.55	131.75	23.84
47	Dec-19	131.45	124.05	178.90	115.55	128.8	20.92
48	Jan-20	133.4	106.75	178.90	106.75	108.95	3.05
49	Feb-20	109.75	89.5	178.90	89.50	91.95	2.74
50	Mar-20	95	50	178.90	50.00	68.3	14.20
51	Apr-20	81.05	60.8	178.90	50.00	79.9	23.20
52	May-20	83.75	72.4	178.90	50.00	83.2	25.76
53	Jun-20	93.1	80	178.90	50.00	81.35	24.32
54	Jul-20	84.9	75	173.50	50.00	78.3	22.91
55	Aug-20	85.5	75.55	170.40	50.00	81.95	26.54
56	Sep-20	82.8	65.5	149.65	50.00	69.25	19.32
57	Oct-20	73.35	64.1	149.65	50.00	64.9	14.95
58	Nov-20	81.8	64.2	149.65	50.00	78.5	28.60
59	Dec-20	105.6	77.05	149.65	50.00	93.05	43.20



**CHART 4.11 SHOWING STOCHASTIC OSCILLATOR OF ONGC FROM
FEBRUARY 2016-DECEMBER 2020**

INFERENCE

From the 14 days SO of ONGC, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in January 2018 as 83.69 and the lowest being 2.74 in February 2020. The lower low is considered as oversold levels, but the SO is found to be between 10 and 30. The present position of ONGC is found as countermand momentum

**TABLE 4.12 MOVING AVERAGES OF ONGC FROM FEBRUARY 2016-
DECEMBER 2020**

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	10-day EMA
1	Feb-16	129.4			
2	Mar-16	142.73			
3	Apr-16	144.83			
4	May-16	140.5			
5	Jun-16	144.2			
6	Jul-16	146.73			
7	Aug-16	157.53			
8	Sep-16	171.1			
9	Oct-16	192.8			
10	Nov-16	192.6	156.24		156.24
11	Dec-16	191.35	162.44	0.1818	162.63
12	Jan-17	202.55	168.42	0.1818	169.88
13	Feb-17	193.55	173.29	0.1818	174.19
14	Mar-17	185	177.74	0.1818	176.15
15	Apr-17	186.55	181.98	0.1818	178.04
16	May-17	177	185.00	0.1818	177.85
17	Jun-17	157.3	184.98	0.1818	174.12
18	Jul-17	169.4	184.81	0.1818	173.26
19	Aug-17	156.95	181.23	0.1818	170.29
20	Sep-17	170.95	179.06	0.1818	170.41
21	Oct-17	191.1	179.04	0.1818	174.17
22	Nov-17	180.65	176.85	0.1818	175.35
23	Dec-17	195.2	177.01	0.1818	178.96
24	Jan-18	203.45	178.86	0.1818	183.41
25	Feb-18	188.3	179.03	0.1818	184.30
26	Mar-18	177.8	179.11	0.1818	183.12
27	Apr-18	180.55	181.44	0.1818	182.65
28	May-18	177.9	182.29	0.1818	181.79
29	Jun-18	158.4	182.43	0.1818	177.54
30	Jul-18	165.7	181.91	0.1818	175.38
31	Aug-18	180.05	180.80	0.1818	176.23
32	Sep-18	177.2	180.46	0.1818	176.41
33	Oct-18	153.25	176.26	0.1818	172.20
34	Nov-18	140.3	169.95	0.1818	166.40
35	Dec-18	149.9	166.11	0.1818	163.40
36	Jan-19	141.25	162.45	0.1818	159.37
37	Feb-19	148.65	159.26	0.1818	157.42
38	Mar-19	159.75	157.45	0.1818	157.85
39	Apr-19	169.2	158.53	0.1818	159.91
40	May-19	171.95	159.15	0.1818	162.10
41	Jun-19	167.75	157.92	0.1818	163.13
42	Jul-19	138.85	154.09	0.1818	158.71
43	Aug-19	121.2	150.88	0.1818	151.89
44	Sep-19	131.8	150.03	0.1818	148.24
45	Oct-19	141.7	149.21	0.1818	147.05
46	Nov-19	131.75	148.26	0.1818	144.27

47	Dec-19	128.8	146.28	0.1818	141.46
48	Jan-20	108.95	141.20	0.1818	135.55
49	Feb-20	91.95	133.47	0.1818	127.62
50	Mar-20	68.3	123.11	0.1818	116.83
51	Apr-20	79.9	114.32	0.1818	110.12
52	May-20	83.2	108.76	0.1818	105.22
53	Jun-20	81.35	104.77	0.1818	100.88
54	Jul-20	78.3	99.42	0.1818	96.78
55	Aug-20	81.95	93.45	0.1818	94.08
56	Sep-20	69.25	87.20	0.1818	89.57
57	Oct-20	64.9	80.81	0.1818	85.08
58	Nov-20	78.5	77.76	0.1818	83.89
59	Dec-20	93.05	77.87	0.1818	85.55

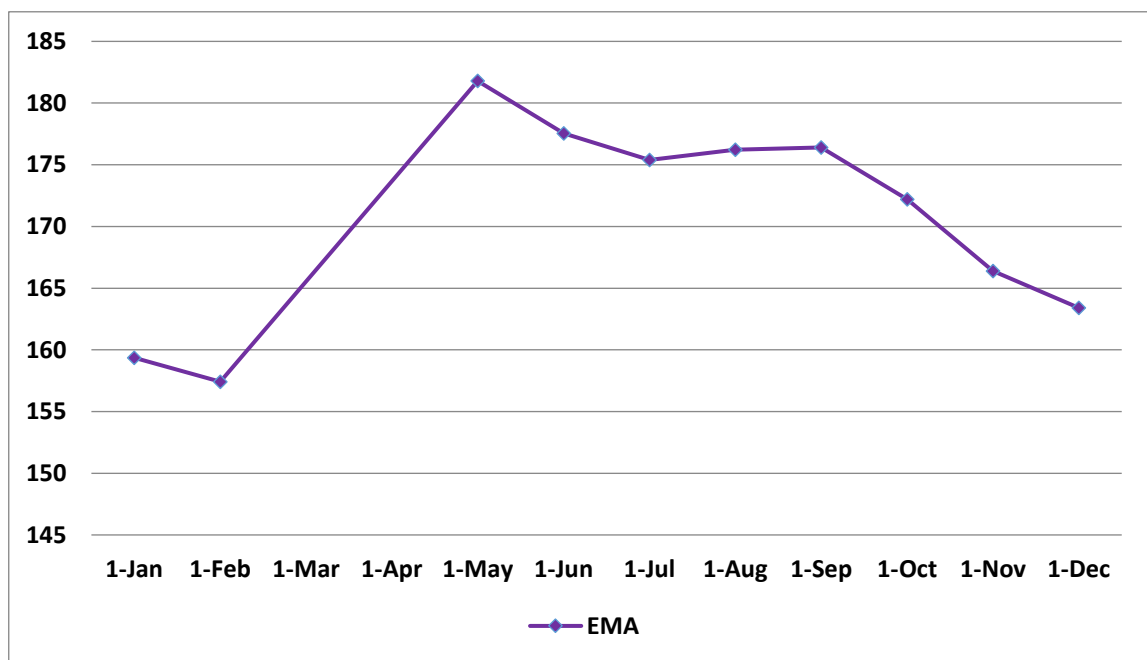


CHART 4.12 SHOWING MOVING AVERAGES OF ONGC FROM FEBRUARY 2016-DECEMBER 2020

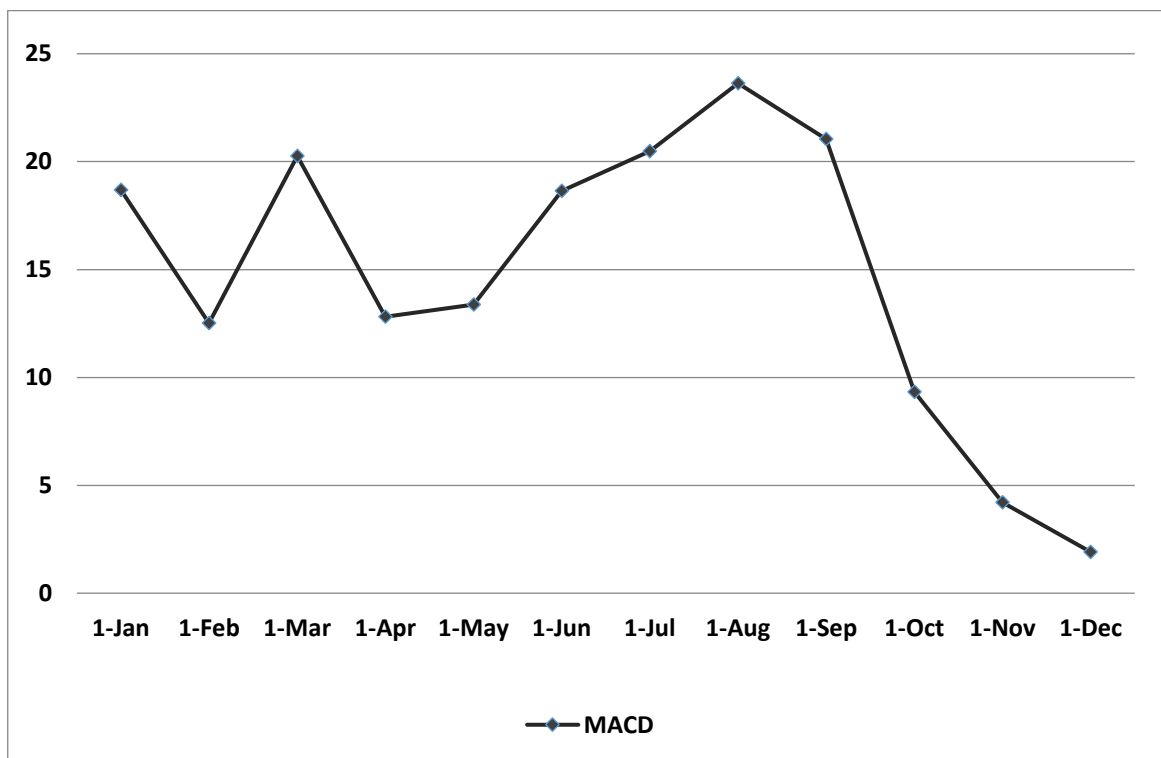
INFERENCE

The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of ONGC shows a mild trend during the past months. ONGC EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the decreasing trend showing a bearish trend of the stock

**TABLE 4.13 MOVING AVERAGE CONVERGENCE DIVERGENCE OF INFOSYS
DURING FEBRUARY 2016-DECEMBER 2020**

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	12-day EMA	26-Day EMA	MACD
1	Feb-16	534.83					
2	Mar-16	601.07					
3	Apr-16	596.03					
4	May-16	616.04					
5	Jun-16	577.63					
6	Jul-16	529.8					
7	Aug-16	511.05					
8	Sep-16	511.15					
9	Oct-16	494.4					
10	Nov-16	481.3	545.33				
11	Dec-16	498.6	541.71	0.1818			
12	Jan-17	458.14	527.41	0.1818	527.41		
13	Feb-17	499.48	517.76	0.1818	522.34		
14	Mar-17	504.34	506.59	0.1818	519.06		
15	Apr-17	453.38	494.16	0.1818	507.12		
16	May-17	482.04	489.39	0.1818	502.56		
17	Jun-17	461.57	484.44	0.1818	495.11		
18	Jul-17	498.89	483.21	0.1818	495.80		
19	Aug-17	451.4	478.91	0.1818	487.72		
20	Sep-17	443.98	475.18	0.1818	479.77		
21	Oct-17	454.81	470.80	0.1818	475.23		
22	Nov-17	481.57	473.15	0.1818	476.38		
23	Dec-17	514.11	474.61	0.1818	483.24		
24	Jan-18	567.49	480.92	0.1818	498.56		
25	Feb-18	578.52	493.44	0.1818	513.10		
26	Mar-18	558.39	501.07	0.1818	521.33	501.07	20.26
27	Apr-18	591.79	514.10	0.1818	534.14	521.33	12.81
28	May-18	607.73	524.98	0.1818	547.52	534.14	13.38
29	Jun-18	650.03	544.84	0.1818	566.16	547.52	18.64
30	Jul-18	678.82	568.33	0.1818	586.64	566.16	20.48
31	Aug-18	716.61	594.51	0.1818	610.27	586.64	23.63
32	Sep-18	726.06	618.96	0.1818	631.33	610.27	21.05
33	Oct-18	682.65	635.81	0.1818	640.66	631.33	9.33
34	Nov-18	663.8	645.44	0.1818	644.87	640.66	4.21
35	Dec-18	655.35	653.12	0.1818	646.77	644.87	1.91
36	Jan-19	749.55	672.24	0.1818	665.46	646.77	18.69
37	Feb-19	734.3	686.49	0.1818	677.98	665.46	12.52
38	Mar-19	743.85	700.10	0.1818	689.95	677.98	11.98
39	Apr-19	751.35	710.23	0.1818	701.12	689.95	11.16
40	May-19	737.75	716.13	0.1818	707.78	701.12	6.66
41	Jun-19	732	717.67	0.1818	712.18	707.78	4.40

42	Jul-19	793.65	724.43	0.1818	726.99	712.18	14.81
43	Aug-19	814.9	737.65	0.1818	742.98	726.99	15.98
44	Sep-19	805.65	751.84	0.1818	754.37	742.98	11.40
45	Oct-19	685.6	754.86	0.1818	741.87	754.37	-12.50
46	Nov-19	696.35	749.54	0.1818	733.59	741.87	-8.28
47	Dec-19	731.15	749.23	0.1818	733.15	733.59	-0.44
48	Jan-20	775.95	752.44	0.1818	740.93	733.15	7.78
49	Feb-20	731.7	750.47	0.1818	739.25	740.93	-1.68
50	Mar-20	641.5	740.85	0.1818	721.48	739.25	-17.77
51	Apr-20	715.5	739.20	0.1818	720.39	721.48	-1.09
52	May-20	691	728.93	0.1818	715.05	720.39	-5.34
53	Jun-20	735.95	721.04	0.1818	718.85	715.05	3.80
54	Jul-20	966	737.07	0.1818	763.78	718.85	44.94
55	Aug-20	928.6	761.37	0.1818	793.75	763.78	29.97
56	Sep-20	1,008.25	792.56	0.1818	832.75	793.75	39.00
57	Oct-20	1,060.60	825.51	0.1818	874.18	832.75	41.43
58	Nov-20	1,100.00	857.91	0.1818	915.24	874.18	41.06
59	Dec-20	1,255.80	910.32	0.1818	977.16	915.24	61.92



**CHART 4.13 SHOWING MACD OF INFOSYS DURING FEBRUARY 2016-
DECEMBER 2020**

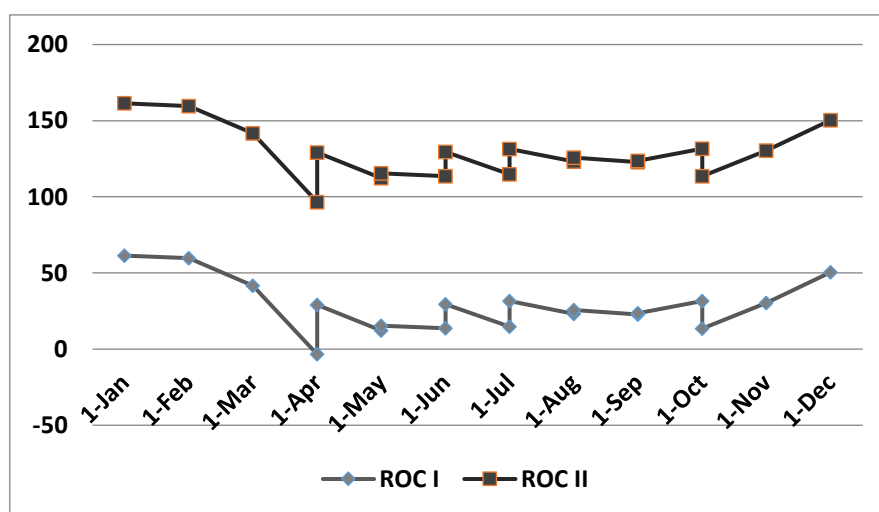
INFERENCE

During the study period from February 2016 to December 2020, MACD of Infosys shows few zero cross over effect. It was negative, showing bearish trend during February 2020 to May 2020 may be an impact of Covid 19 pandemic outburst hitting the IT market of US and Europe, but started increasing from June 2020 and indicating bullish trends. The recent trend of Infosys is bullish after July 2020. There are probable chances of it to remain bullish. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

**TABLE 4.14 RATE OF CHANGE OF INFOSYS DURING FEBRUARY 2016-
DECEMBER 2020**

S.No	Date	CP	ROC I	ROC II
1	Feb-16	534.83		
2	Mar-16	601.07		
3	Apr-16	596.03		
4	May-16	616.04		
5	Jun-16	577.63		
6	Jul-16	529.8		
7	Aug-16	511.05		
8	Sep-16	511.15		
9	Oct-16	494.4		
10	Nov-16	481.3		
11	Dec-16	498.6		
12	Jan-17	458.14	-14.33914	85.66086
13	Feb-17	499.48	-16.90153	83.09847
14	Mar-17	504.34	-15.38345	84.61655
15	Apr-17	453.38	-26.40413	73.59587
16	May-17	482.04	-16.54866	83.45134
17	Jun-17	461.57	-12.87844	87.12156
18	Jul-17	498.89	-2.37941	97.62059
19	Aug-17	451.4	-11.68933	88.31067
20	Sep-17	443.98	-10.19822	89.80178
21	Oct-17	454.81	-5.50384	94.49616
22	Nov-17	481.57	-3.41556	96.58444
23	Dec-17	514.11	12.21679	112.21679
24	Jan-18	567.49	13.61616	113.61616
25	Feb-18	578.52	14.70833	114.70833
26	Mar-18	558.39	23.16159	123.16159
27	Apr-18	591.79	22.76782	122.76782
28	May-18	607.73	31.66584	131.66584

29	Jun-18	650.03	30.29526	130.29526
30	Jul-18	678.82	50.38104	150.38104
31	Aug-18	716.61	61.40592	161.40592
32	Sep-18	726.06	59.64029	159.64029
33	Oct-18	682.65	41.75509	141.75509
34	Nov-18	663.8	29.11634	129.11634
35	Dec-18	655.35	15.48221	115.48221
36	Jan-19	749.55	29.56337	129.56337
37	Feb-19	734.3	31.50307	131.50307
38	Mar-19	743.85	25.69493	125.69493
39	Apr-19	751.35	23.63221	123.63221
40	May-19	737.75	13.49476	113.49476
41	Jun-19	732	7.83418	107.83418
42	Jul-19	793.65	10.75062	110.75062
43	Aug-19	814.9	12.23590	112.23590
44	Sep-19	805.65	18.01802	118.01802
45	Oct-19	685.6	3.28412	103.28412
46	Nov-19	696.35	6.25620	106.25620
47	Dec-19	731.15	-2.45481	97.54519
48	Jan-20	775.95	5.67207	105.67207
49	Feb-20	731.7	-1.63339	98.36661
50	Mar-20	641.5	-14.62035	85.37965
51	Apr-20	715.5	-3.01593	96.98407
52	May-20	691	-5.60109	94.39891
53	Jun-20	735.95	-7.27021	92.72979
54	Jul-20	966	18.54215	118.54215
55	Aug-20	928.6	15.26097	115.26097
56	Sep-20	1,008.25	47.06097	147.06097
57	Oct-20	1,060.60	52.30847	152.30847
58	Nov-20	1,100.00	50.44792	150.44792
59	Dec-20	1,255.80	61.84032	161.84032



**CHART 4.14 SHOWING ROC OF INFOSYS DURING FEBRUARY 2016-
DECEMBER 2020**

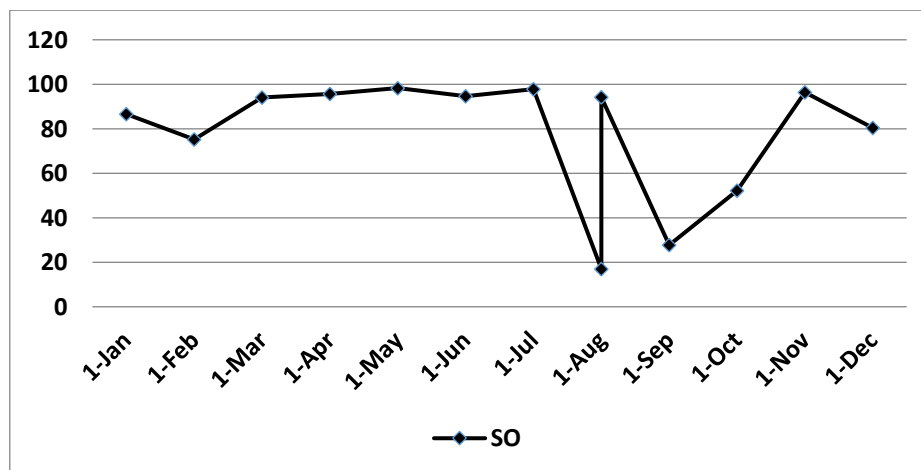
INFERENCE

The chart above shows the 12-day Rate-of-Change calculations of Infosys for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of Infosys expands into positive territory as an advance accelerates.

TABLE 4.15 STOCHASTIC OSCILLATOR OF INFOSYS FROM FEBRUARY 2016-DECEMBER 2020

S.No	Date	High	Low	Highest High (14)	Lowest Low (14)	Current Close	14-day Stochastic Oscillator
1	Feb-16	589.55	526.42			534.83	
2	Mar-16	610.29	540.14			601.07	
3	Apr-16	625.54	567.91			596.03	
4	May-16	627.56	577.56			616.04	
5	Jun-16	631.16	569.89			577.63	
6	Jul-16	590.09	519.02			529.8	
7	Aug-16	540.24	497.86			511.05	
8	Sep-16	527.36	505.21			511.15	
9	Oct-16	534.17	489.99			494.4	
10	Nov-16	496.72	444.52			481.3	
11	Dec-16	504.22	472.64			498.6	
12	Jan-17	513.1	444.6			458.14	
13	Feb-17	508.66	446.57			499.48	
14	Mar-17	515.07	492.87	631.16	444.52	504.34	32.05
15	Apr-17	509.38	449.06	631.16	444.52	453.38	4.75
16	May-17	493.37	451.48	631.16	444.52	482.04	20.10
17	Jun-17	487.89	454.39	631.16	444.52	461.57	9.14
18	Jul-17	507.62	460.33	631.16	444.52	498.89	29.13
19	Aug-17	507.8	424.3	590.09	424.30	451.4	16.35
20	Sep-17	456.81	431.03	540.24	424.30	443.98	16.97
21	Oct-17	472.5	442.62	534.17	424.30	454.81	27.77
22	Nov-17	502.89	452.39	534.17	424.30	481.57	52.13
23	Dec-17	517.44	472.18	517.44	424.30	514.11	96.42
24	Jan-18	602.42	496.33	602.42	424.30	567.49	80.39
25	Feb-18	586.86	537.87	602.42	424.30	578.52	86.58
26	Mar-18	590.56	555.65	602.42	424.30	558.39	75.28
27	Apr-18	599.14	543.69	602.42	424.30	591.79	94.03
28	May-18	616.04	569.84	616.04	424.30	607.73	95.67
29	Jun-18	653.91	597.96	653.91	424.30	650.03	98.31

30	Jul-18	693.09	630.58	693.09	424.30	678.82	94.69
31	Aug-18	723.17	670.07	723.17	424.30	716.61	97.81
32	Sep-18	744.41	688.22	744.41	424.30	726.06	94.27
33	Oct-18	750.77	626.46	750.77	431.03	682.65	78.70
34	Nov-18	685.93	596.57	750.77	442.62	663.8	71.78
35	Dec-18	709.8	633.87	750.77	452.39	655.35	68.02
36	Jan-19	751.3	647.44	751.30	472.18	749.55	99.37
37	Feb-19	772.25	721.3	772.25	496.33	734.3	86.25
38	Mar-19	747.95	705.35	772.25	537.87	743.85	87.88
39	Apr-19	773	712.6	773.00	543.69	751.35	90.56
40	May-19	748.4	697.45	773.00	543.69	737.75	84.63
41	Jun-19	759	728.15	773.00	569.84	732	79.82
42	Jul-19	804	706.5	804.00	596.57	793.65	95.01
43	Aug-19	817.35	760.15	817.35	596.57	814.9	98.89
44	Sep-19	847	741.9	847.00	596.57	805.65	83.49
45	Oct-19	823.8	615.1	847.00	596.57	685.6	35.55
46	Nov-19	732.5	678.15	847.00	596.57	696.35	39.84
47	Dec-19	737.95	688.55	847.00	596.57	731.15	53.74
48	Jan-20	792.8	708.3	847.00	615.10	775.95	69.36
49	Feb-20	811.6	722.05	847.00	615.10	731.7	50.28
50	Mar-20	773.55	509.25	847.00	509.25	641.5	39.16
51	Apr-20	720	582.15	847.00	509.25	715.5	61.07
52	May-20	710	646.7	847.00	509.25	691	53.81
53	Jun-20	751.6	675.5	847.00	509.25	735.95	67.12
54	Jul-20	986.45	729.75	986.45	509.25	966	95.71
55	Aug-20	974.4	914.6	986.45	509.25	928.6	87.88
56	Sep-20	1,037.00	912.1	1037.00	509.25	1,008.25	94.55
57	Oct-20	1,186.00	1,011.75	1186.00	509.25	1,060.60	81.47
58	Nov-20	1,154.90	1,051.10	1186.00	509.25	1,100.00	87.29
59	Dec-20	1,258.85	1,105.05	1258.85	509.25	1,255.80	99.59



**CHART4.15 SHOWING STOCHASTIC OSCILLATOR OF INFOSYS FROM
FEBRUARY 2016-DECEMBER 2020**

INFERENCE

From the 14 days SO of Infosys, it is noted that a steady trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in December 2020 as 99.59 and the lowest being 4.75 in April 2017. The lower low is considered as oversold levels, but the SO is found to be between 0 and 10. The present position of Infosys is found as overruled momentum

**TABLE 4.16 MOVING AVERAGES OF INFOSYS FROM FEBRUARY 2016-
DECEMBER 2020**

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	10-day EMA
1	Feb-16	534.83			
2	Mar-16	601.07			
3	Apr-16	596.03			
4	May-16	616.04			
5	Jun-16	577.63			
6	Jul-16	529.8			
7	Aug-16	511.05			
8	Sep-16	511.15			
9	Oct-16	494.4			
10	Nov-16	481.3	545.33		545.33
11	Dec-16	498.6	541.71	0.1818	536.83
12	Jan-17	458.14	527.41	0.1818	522.53
13	Feb-17	499.48	517.76	0.1818	518.34
14	Mar-17	504.34	506.59	0.1818	515.79
15	Apr-17	453.38	494.16	0.1818	504.44
16	May-17	482.04	489.39	0.1818	500.37
17	Jun-17	461.57	484.44	0.1818	493.32
18	Jul-17	498.89	483.21	0.1818	494.33
19	Aug-17	451.4	478.91	0.1818	486.52
20	Sep-17	443.98	475.18	0.1818	478.79
21	Oct-17	454.81	470.80	0.1818	474.43
22	Nov-17	481.57	473.15	0.1818	475.73
23	Dec-17	514.11	474.61	0.1818	482.71
24	Jan-18	567.49	480.92	0.1818	498.12
25	Feb-18	578.52	493.44	0.1818	512.74
26	Mar-18	558.39	501.07	0.1818	521.04
27	Apr-18	591.79	514.10	0.1818	533.90
28	May-18	607.73	524.98	0.1818	547.33
29	Jun-18	650.03	544.84	0.1818	566.00
30	Jul-18	678.82	568.33	0.1818	586.51
31	Aug-18	716.61	594.51	0.1818	610.17
32	Sep-18	726.06	618.96	0.1818	631.24
33	Oct-18	682.65	635.81	0.1818	640.59

34	Nov-18	663.8	645.44	0.1818	644.81
35	Dec-18	655.35	653.12	0.1818	646.72
36	Jan-19	749.55	672.24	0.1818	665.42
37	Feb-19	734.3	686.49	0.1818	677.94
38	Mar-19	743.85	700.10	0.1818	689.93
39	Apr-19	751.35	710.23	0.1818	701.09
40	May-19	737.75	716.13	0.1818	707.76
41	Jun-19	732	717.67	0.1818	712.17
42	Jul-19	793.65	724.43	0.1818	726.98
43	Aug-19	814.9	737.65	0.1818	742.97
44	Sep-19	805.65	751.84	0.1818	754.36
45	Oct-19	685.6	754.86	0.1818	741.86
46	Nov-19	696.35	749.54	0.1818	733.59
47	Dec-19	731.15	749.23	0.1818	733.14
48	Jan-20	775.95	752.44	0.1818	740.93
49	Feb-20	731.7	750.47	0.1818	739.25
50	Mar-20	641.5	740.85	0.1818	721.48
51	Apr-20	715.5	739.20	0.1818	720.39
52	May-20	691	728.93	0.1818	715.05
53	Jun-20	735.95	721.04	0.1818	718.85
54	Jul-20	966	737.07	0.1818	763.78
55	Aug-20	928.6	761.37	0.1818	793.75
56	Sep-20	1,008.25	792.56	0.1818	832.75
57	Oct-20	1,060.60	825.51	0.1818	874.18
58	Nov-20	1,100.00	857.91	0.1818	915.24
59	Dec-20	1,255.80	910.32	0.1818	977.16

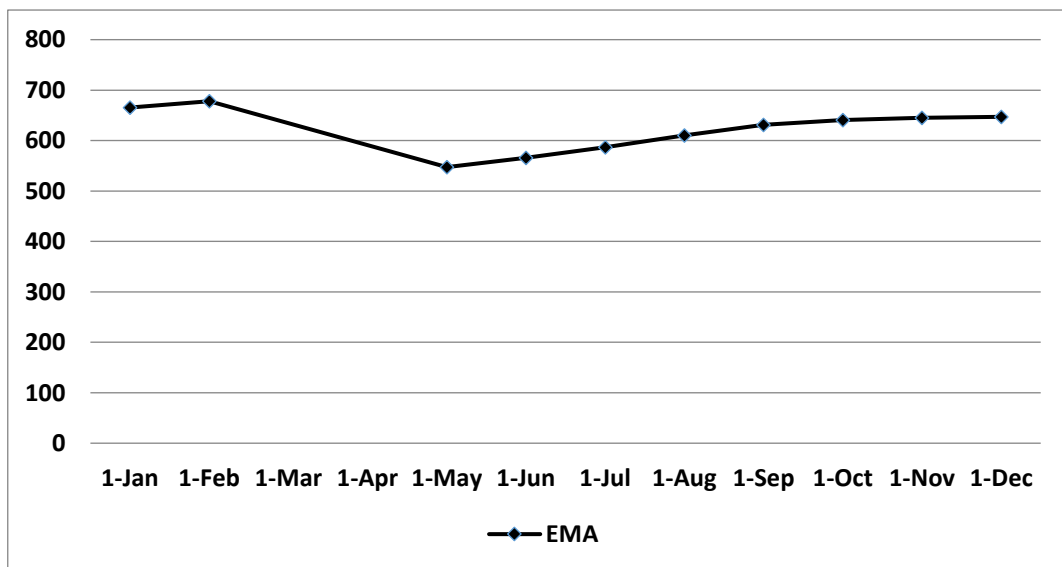


CHART 4.16 SHOWING MOVING AVERAGE OF INFOSYS FROM FEBRUARY 2016-DECEMBER 2020

INFERENCE

The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of Infosys shows a mild trend during the past months. Infosys EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

❖ TATA MOTORS

TABLE 4.17 MOVING AVERAGE CONVERGENCE DIVERGENCE OF TATA MOTORS DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	12-day EMA	26-Day EMA	MACD
1	Feb-16	299.7					
2	Mar-16	386.6					
3	Apr-16	408.35					
4	May-16	459.65					
5	Jun-16	459.25					
6	Jul-16	503.2					
7	Aug-16	537.7					
8	Sep-16	534.85					
9	Oct-16	531.95					
10	Nov-16	459.3	458.06				
11	Dec-16	472	475.29	0.1818			
12	Jan-17	523.55	488.98	0.1818	488.98		
13	Feb-17	456.75	493.82	0.1818	483.12		
14	Mar-17	465.85	494.44	0.1818	479.98		
15	Apr-17	458.9	494.41	0.1818	476.15		
16	May-17	476.15	491.70	0.1818	476.15		
17	Jun-17	432.55	481.19	0.1818	468.22		
18	Jul-17	444.6	472.16	0.1818	463.93		
19	Aug-17	376.55	456.62	0.1818	448.04		
20	Sep-17	401.5	450.84	0.1818	439.58		
21	Oct-17	428.4	446.48	0.1818	437.55		
22	Nov-17	404.15	434.54	0.1818	431.47		
23	Dec-17	431.85	432.05	0.1818	431.54		
24	Jan-18	399.5	425.42	0.1818	425.72		
25	Feb-18	369.9	416.52	0.1818	415.57		
26	Mar-18	326.85	401.59	0.1818	399.44	401.59	-2.15
27	Apr-18	340.4	392.37	0.1818	388.70	399.44	-10.73
28	May-18	282.5	376.16	0.1818	369.39	388.70	-19.31
29	Jun-18	269.3	365.44	0.1818	351.19	369.39	-18.20
30	Jul-18	264.1	351.70	0.1818	335.36	351.19	-15.84
31	Aug-18	267.5	335.61	0.1818	323.02	335.36	-12.34
32	Sep-18	223.7	317.56	0.1818	304.96	323.02	-18.06

33	Oct-18	179.1	292.29	0.1818	282.08	304.96	-22.88
34	Nov-18	171.95	269.53	0.1818	262.06	282.08	-20.02
35	Dec-18	172.7	249.81	0.1818	245.81	262.06	-16.25
36	Jan-19	181.2	235.25	0.1818	234.06	245.81	-11.75
37	Feb-19	177.45	218.95	0.1818	223.77	234.06	-10.29
38	Mar-19	174.25	208.13	0.1818	214.77	223.77	-9.00
39	Apr-19	214.3	202.63	0.1818	214.68	214.77	-0.08
40	May-19	172.6	193.48	0.1818	207.03	214.68	-7.65
41	Jun-19	162.55	182.98	0.1818	198.94	207.03	-8.09
42	Jul-19	135.6	174.17	0.1818	187.43	198.94	-11.52
43	Aug-19	116.7	167.93	0.1818	174.57	187.43	-12.86
44	Sep-19	117.45	162.48	0.1818	164.18	174.57	-10.38
45	Oct-19	177.7	162.98	0.1818	166.64	164.18	2.46
46	Nov-19	161.5	161.01	0.1818	165.71	166.64	-0.93
47	Dec-19	185.15	161.78	0.1818	169.24	165.71	3.54
48	Jan-20	176.6	162.02	0.1818	170.58	169.24	1.34
49	Feb-20	128.95	153.48	0.1818	163.01	170.58	-7.57
50	Mar-20	71.05	143.33	0.1818	146.29	163.01	-16.72
51	Apr-20	93.25	136.40	0.1818	136.65	146.29	-9.64
52	May-20	87	131.54	0.1818	127.62	136.65	-9.03
53	Jun-20	98.25	129.69	0.1818	122.28	127.62	-5.34
54	Jul-20	104.65	128.41	0.1818	119.07	122.28	-3.21
55	Aug-20	143.2	124.96	0.1818	123.46	119.07	4.39
56	Sep-20	133.3	122.14	0.1818	125.25	123.46	1.79
57	Oct-20	132.65	116.89	0.1818	126.60	125.25	1.35
58	Nov-20	180.35	117.27	0.1818	136.37	126.60	9.77
59	Dec-20	183.85	122.76	0.1818	145.00	136.37	8.63

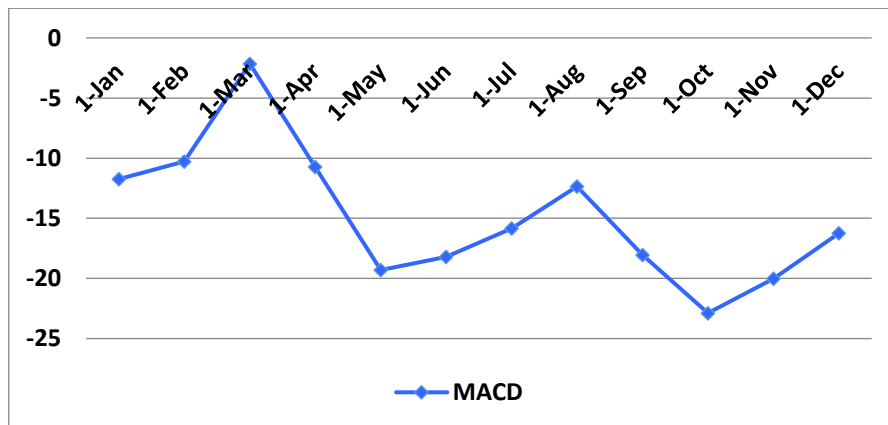


CHART 4.17 SHOWING MACD OF TATA MOTORS DURING FEBRUARY 2016-DECEMBER 2020

INFERENCE

During the study period from February 2016 to December 2020, MACD of Tata Motors shows a zero cross over effect. It was negative, showing bearish trend until July 2020. It meets a rise after August 2020 showing bearish indications. The recent trend of Tata Motors is bullish after August 2020. There are probable chances of it to be bullish. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

TABLE 4.18 RATE OF CHANGE OF TATA MOTORS DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	CP	ROC I	ROC II
1	Feb-16	299.7		
2	Mar-16	386.6		
3	Apr-16	408.35		
4	May-16	459.65		
5	Jun-16	459.25		
6	Jul-16	503.2		
7	Aug-16	537.7		
8	Sep-16	534.85		
9	Oct-16	531.95		
10	Nov-16	459.3		
11	Dec-16	472		
12	Jan-17	523.55	74.69136	174.69136
13	Feb-17	456.75	18.14537	118.14537
14	Mar-17	465.85	14.08106	114.08106
15	Apr-17	458.9	-0.16317	99.83683
16	May-17	476.15	3.67991	103.67991
17	Jun-17	432.55	-14.04014	85.95986
18	Jul-17	444.6	-17.31449	82.68551
19	Aug-17	376.55	-29.59708	70.40292
20	Sep-17	401.5	-24.52298	75.47702
21	Oct-17	428.4	-6.72763	93.27237
22	Nov-17	404.15	-14.37500	85.62500
23	Dec-17	431.85	-17.51504	82.48496
24	Jan-18	399.5	-12.53421	87.46579
25	Feb-18	369.9	-20.59676	79.40324
26	Mar-18	326.85	-28.77533	71.22467
27	Apr-18	340.4	-28.50992	71.49008
28	May-18	282.5	-34.68963	65.31037
29	Jun-18	269.3	-39.42870	60.57130
30	Jul-18	264.1	-29.86323	70.13677
31	Aug-18	267.5	-33.37484	66.62516
32	Sep-18	223.7	-47.78245	52.21755
33	Oct-18	179.1	-55.68477	44.31523

34	Nov-18	171.95	-60.18293	39.81707
35	Dec-18	172.7	-56.77096	43.22904
36	Jan-19	181.2	-51.01379	48.98621
37	Feb-19	177.45	-45.70904	54.29096
38	Mar-19	174.25	-48.81022	51.18978
39	Apr-19	214.3	-24.14159	75.85841
40	May-19	172.6	-35.90791	64.09209
41	Jun-19	162.55	-38.45134	61.54866
42	Jul-19	135.6	-49.30841	50.69159
43	Aug-19	116.7	-47.83192	52.16808
44	Sep-19	117.45	-34.42211	65.57789
45	Oct-19	177.7	3.34400	103.34400
46	Nov-19	161.5	-6.48523	93.51477
47	Dec-19	185.15	2.17991	102.17991
48	Jan-20	176.6	-0.47901	99.52099
49	Feb-20	128.95	-25.99713	74.00287
50	Mar-20	71.05	-66.84554	33.15446
51	Apr-20	93.25	-45.97335	54.02665
52	May-20	87	-46.47801	53.52199
53	Jun-20	98.25	-27.54425	72.45575
54	Jul-20	104.65	-10.32562	89.67438
55	Aug-20	143.2	21.92422	121.92422
56	Sep-20	133.3	-24.98593	75.01407
57	Oct-20	132.65	-17.86378	82.13622
58	Nov-20	180.35	-2.59249	97.40751
59	Dec-20	183.85	4.10532	104.10532

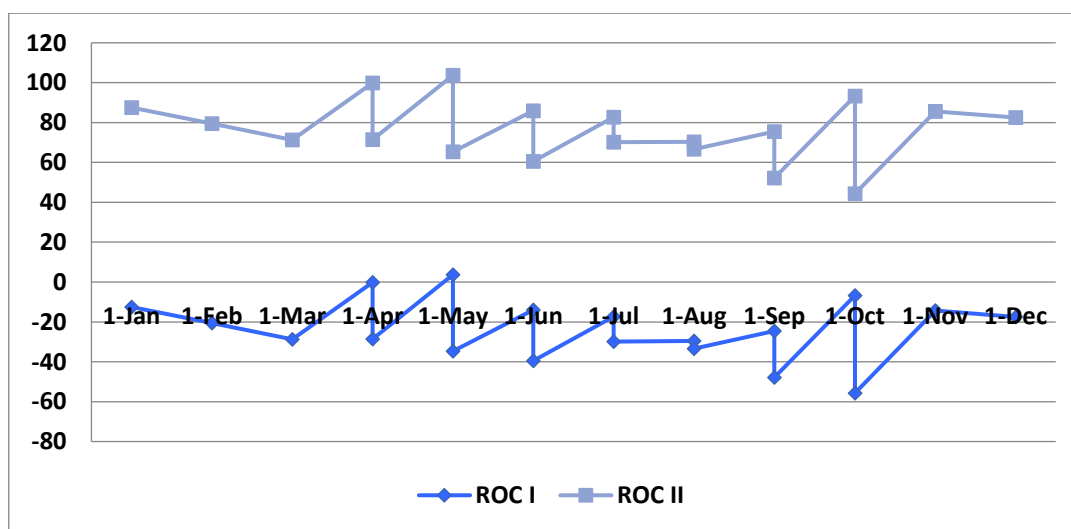


CHART 4.18 SHOWING ROC OF TATA MOTORS DURING FEBRUARY 2016-DECEMBER 2020

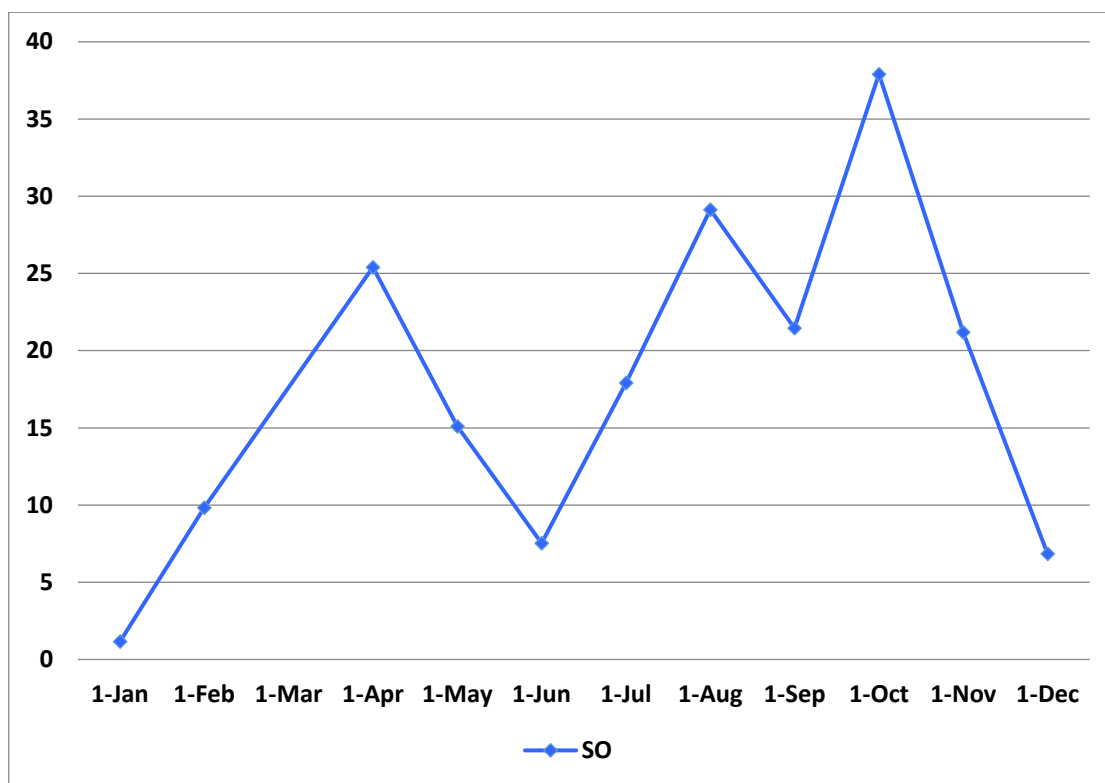
INFERENCE

The chart above shows the 12-day Rate-of-Change calculations of Tata Motors for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of Tata Motors expands into positive territory as an advance accelerates.

**TABLE 4.19 STOCHASTIC OSCILLATOR OF TATA MOTORS FROM
FEBRUARY 2016-DECEMBER 2020**

S.No	Date	High	Low	Highest High (14)	Lowest Low (14)	Current Close	14-day Stochastic Oscillator
1	Feb-16	344.7	265.8			299.7	
2	Mar-16	393.6	301.1			386.6	
3	Apr-16	425.25	369			408.35	
4	May-16	464.9	376.1			459.65	
5	Jun-16	489.9	421.25			459.25	
6	Jul-16	513.35	454.1			503.2	
7	Aug-16	548.8	475.5			537.7	
8	Sep-16	598.4	516.65			534.85	
9	Oct-16	571.1	510.75			531.95	
10	Nov-16	549.35	443.15			459.3	
11	Dec-16	486.25	428.3			472	
12	Jan-17	552	469.05			523.55	
13	Feb-17	544.5	434.35			456.75	
14	Mar-17	484.2	448	598.40	265.80	465.85	60.15
15	Apr-17	480.55	437.6	598.40	301.10	458.9	53.08
16	May-17	488.25	417.25	598.40	369.00	476.15	46.71
17	Jun-17	485.95	428.05	598.40	376.10	432.55	25.39
18	Jul-17	468.35	426	598.40	417.25	444.6	15.10
19	Aug-17	452.35	358.5	598.40	358.50	376.55	7.52
20	Sep-17	427.7	374.05	598.40	358.50	401.5	17.92
21	Oct-17	440.95	409.35	598.40	358.50	428.4	29.14
22	Nov-17	468	402.25	571.10	358.50	404.15	21.47
23	Dec-17	433.45	389.3	552.00	358.50	431.85	37.91
24	Jan-18	443.5	395	552.00	358.50	399.5	21.19

25	Feb-18	403.8	356.5	552.00	356.50	369.9	6.85
26	Mar-18	376.3	324.3	544.50	324.30	326.85	1.16
27	Apr-18	372.35	326	488.25	324.30	340.4	9.82
28	May-18	351.65	281.6	488.25	281.60	282.5	0.44
29	Jun-18	315.55	261.85	488.25	261.85	269.3	3.29
30	Jul-18	277	247.3	485.95	247.30	264.1	7.04
31	Aug-18	274.7	243.1	468.35	243.10	267.5	10.83
32	Sep-18	282	219.5	468.00	219.50	223.7	1.69
33	Oct-18	232.8	164.6	468.00	164.60	179.1	4.78
34	Nov-18	200.75	170.35	468.00	164.60	171.95	2.42
35	Dec-18	180.5	154.65	468.00	154.65	172.7	5.76
36	Jan-19	198.3	165.1	443.50	154.65	181.2	9.19
37	Feb-19	186.1	129	443.50	129.00	177.45	15.41
38	Mar-19	198.35	167.55	403.80	129.00	174.25	16.47
39	Apr-19	239.35	176.35	376.30	129.00	214.3	34.49
40	May-19	213.65	167.4	372.35	129.00	172.6	17.92
41	Jun-19	177.2	152.15	351.65	129.00	162.55	15.07
42	Jul-19	172.35	132.5	315.55	129.00	135.6	3.54
43	Aug-19	136.3	106.2	282.00	106.20	116.7	5.97
44	Sep-19	138.4	106	282.00	106.00	117.45	6.51
45	Oct-19	179.65	112.65	282.00	106.00	177.7	40.74
46	Nov-19	178.9	159.9	239.35	106.00	161.5	41.62
47	Dec-19	187.9	157.4	239.35	106.00	185.15	59.36
48	Jan-20	201.7	174.9	239.35	106.00	176.6	52.94
49	Feb-20	184.95	127.05	239.35	106.00	128.95	17.21
50	Mar-20	133.9	63.5	239.35	63.50	71.05	4.29
51	Apr-20	93.75	64.8	239.35	63.50	93.25	16.92
52	May-20	92.5	79.6	239.35	63.50	87	13.36
53	Jun-20	119.15	88	213.65	63.50	98.25	23.14
54	Jul-20	112.6	98.2	201.70	63.50	104.65	29.78
55	Aug-20	147.95	102.9	201.70	63.50	143.2	57.67
56	Sep-20	155.2	122.15	201.70	63.50	133.3	50.51
57	Oct-20	145.8	126	201.70	63.50	132.65	50.04
58	Nov-20	183.85	131.1	201.70	63.50	180.35	84.55
59	Dec-20	188.8	156.7	201.70	63.50	183.85	87.08



**CHART 4.19 SHOWING STOCHASTIC OSCILLATOR OF TATA MOTORS
FROM FEBRUARY 2016-DECEMBER 2020**

INFERENCE

From the 14 days SO of Tata Motors, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in December 2020 as 87.08 and the lowest being 1.16 in March 2018. The lower low is considered as oversold levels, but the SO is found to be between 0 and 10. The present position of Tata Motors is found as overruled momentum

**TABLE 4.20 MOVING AVERAGE OF TATA MOTORS FROM FEBRUARY 2016-
DECEMBER 2020**

S.No	Date	Price	10-day SMA	Smoothing Constant $2/(10 + 1)$	10-day EMA
1	Feb-16	299.7			
2	Mar-16	386.6			
3	Apr-16	408.35			
4	May-16	459.65			
5	Jun-16	459.25			
6	Jul-16	503.2			
7	Aug-16	537.7			
8	Sep-16	534.85			
9	Oct-16	531.95			
10	Nov-16	459.3	458.06		458.06
11	Dec-16	472	475.29	0.1818	460.59
12	Jan-17	523.55	488.98	0.1818	472.04
13	Feb-17	456.75	493.82	0.1818	469.26
14	Mar-17	465.85	494.44	0.1818	468.64
15	Apr-17	458.9	494.41	0.1818	466.87
16	May-17	476.15	491.70	0.1818	468.56
17	Jun-17	432.55	481.19	0.1818	462.01
18	Jul-17	444.6	472.16	0.1818	458.84
19	Aug-17	376.55	456.62	0.1818	443.88
20	Sep-17	401.5	450.84	0.1818	436.18
21	Oct-17	428.4	446.48	0.1818	434.76
22	Nov-17	404.15	434.54	0.1818	429.20
23	Dec-17	431.85	432.05	0.1818	429.68
24	Jan-18	399.5	425.42	0.1818	424.19
25	Feb-18	369.9	416.52	0.1818	414.32
26	Mar-18	326.85	401.59	0.1818	398.42
27	Apr-18	340.4	392.37	0.1818	387.87
28	May-18	282.5	376.16	0.1818	368.71
29	Jun-18	269.3	365.44	0.1818	350.64
30	Jul-18	264.1	351.70	0.1818	334.90
31	Aug-18	267.5	335.61	0.1818	322.65
32	Sep-18	223.7	317.56	0.1818	304.66
33	Oct-18	179.1	292.29	0.1818	281.83
34	Nov-18	171.95	269.53	0.1818	261.85
35	Dec-18	172.7	249.81	0.1818	245.64
36	Jan-19	181.2	235.25	0.1818	233.92
37	Feb-19	177.45	218.95	0.1818	223.66
38	Mar-19	174.25	208.13	0.1818	214.67
39	Apr-19	214.3	202.63	0.1818	214.61
40	May-19	172.6	193.48	0.1818	206.97
41	Jun-19	162.55	182.98	0.1818	198.89
42	Jul-19	135.6	174.17	0.1818	187.38
43	Aug-19	116.7	167.93	0.1818	174.53
44	Sep-19	117.45	162.48	0.1818	164.15
45	Oct-19	177.7	162.98	0.1818	166.62
46	Nov-19	161.5	161.01	0.1818	165.69

47	Dec-19	185.15	161.78	0.1818	169.23
48	Jan-20	176.6	162.02	0.1818	170.57
49	Feb-20	128.95	153.48	0.1818	163.00
50	Mar-20	71.05	143.33	0.1818	146.28
51	Apr-20	93.25	136.40	0.1818	136.64
52	May-20	87	131.54	0.1818	127.61
53	Jun-20	98.25	129.69	0.1818	122.28
54	Jul-20	104.65	128.41	0.1818	119.07
55	Aug-20	143.2	124.96	0.1818	123.46
56	Sep-20	133.3	122.14	0.1818	125.25
57	Oct-20	132.65	116.89	0.1818	126.59
58	Nov-20	180.35	117.27	0.1818	136.37
59	Dec-20	183.85	122.76	0.1818	145.00

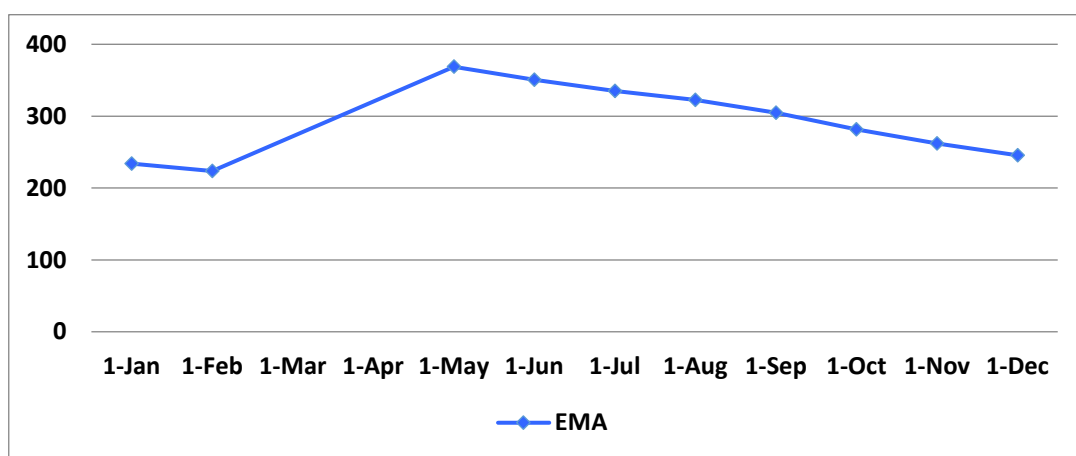


CHART 4.20 SHOWING MOVING AVERAGE OF TATA MOTORS FROM FEBRUARY 2016-DECEMBER 2020

INFERENCE

The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of Tata Motors shows a mild trend during the past months. Tata Motors EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS OF THE STUDY

HDFC BANK:

- ✓ During the study period from February 2016 to December 2020, MACD of HDFC Bank shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after April 2018 indicating bullish trends. It meets a fall on June 2018 and a sudden fall after July 2018 and become bearish. The recent trend of HDFC Banks is bullish after October 2018. There are probable chances of it to be bullish again. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.
- ✓ The chart shows the 12-day Rate-of-Change calculations of HDFC Bank for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of HDFC Bank expands into positive territory as an advance accelerates.
- ✓ From the 14 days SO of HDFC Bank, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in January 2018 as 99.08 and the lowest being 21.73 in March 2020. The lower low is considered as oversold levels, but the SO is found to be between 20 and 30. The present position of HDFC bank is found as overruled momentum
- ✓ The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of HDFC banks shows a mild trend during the past months. HDFC EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

RELIANCE INDUSTRIES

- ✓ During the study period from February 2016 to December 2020, MACD of Reliance Industries shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after May 2018 indicating bullish trends. It meets a fall on September 2020 and become bearish. The recent trend of Reliance Industries is bullish after November 2020. There are probable chances of it to be bullish again. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.
- ✓ The chart shows the 12-day Rate-of-Change calculations of Reliance Industries for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of Reliance Industries expands into positive territory as an advance accelerates.
- ✓ From the 14 days SO of Reliance Industries, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in July 2018 as 99.18 and the lowest being 32.09 in March 2020. The lower low is considered as oversold levels, but the SO is found to be between 30 and 40. The present position of Reliance Industries is found as overruled momentum
- ✓ The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of Reliance Industries shows a mild trend during the past months. HDFC EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

ONGC

- ✓ During the study period from February 2016 to December 2020, MACD of ONGC shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after March 2019 indicating bullish trends. It meets a fall on June 2019 and become bearish. The recent trend of ONGC is bearish after September 2019. There are probable chances of it to be bullish again as per the recent MACD on December 2020. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.
- ✓ The chart shows the 12-day Rate-of-Change calculations of ONGC for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of ONGC expands into positive territory as an advance accelerates.
- ✓ From the 14 days SO of ONGC, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in January 2018 as 83.69 and the lowest being 2.74 in February 2020. The lower low is considered as oversold levels, but the SO is found to be between 10 and 30. The present position of ONGC is found as countermand momentum
- ✓ The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of ONGC shows a mild trend during the past months. ONGC EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the decreasing trend showing a bearish trend of the stock

INFOSYS

- ✓ During the study period from February 2016 to December 2020, MACD of Infosys shows few zero cross over effect. It was negative, showing bearish trend during February 2020 to May 2020 may be an impact of Covid 19 pandemic outburst hitting the IT market of US and Europe, but started increasing from June 2020 and indicating bullish trends. The recent trend of Infosys is bullish after July 2020. There are probable chances of it to remain bullish. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.
- ✓ The chart shows the 12-day Rate-of-Change calculations of Infosys for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of Infosys expands into positive territory as an advance accelerates.
- ✓ From the 14 days SO of Infosys, it is noted that a steady trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in December 2020 as 99.59 and the lowest being 4.75 in April 2017. The lower low is considered as oversold levels, but the SO is found to be between 0 and 10. The present position of Infosys is found as overruled momentum
- ✓ The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of Infosys shows a mild trend during the past months. Infosys EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

TATA MOTORS

- ✓ During the study period from February 2016 to December 2020, MACD of Tata Motors shows a zero cross over effect. It was negative, showing bearish trend until July 2020. It meets a rise after August 2020 showing bearish indications. The recent trend of Tata Motors is bullish after August 2020. There are probable chances of it to be bullish. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.
- ✓ The chart shows the 12-day Rate-of-Change calculations of Tata Motors for the period from February 2016 to December 2020. The Rate of Change occurred from the 12th period, i.e from January 2017. Keeping 100 as boundary, ROC crossing 100 yields positive ROC and that falling below 100 bear negative ROC. The differences are shown as ROC I and the actual deviation are marked in ROC II. In general, prices are rising as long as the Rate-of-Change remains positive. Conversely, prices are falling when the Rate-of-Change is negative. ROC of Tata Motors expands into positive territory as an advance accelerates.
- ✓ From the 14 days SO of Tata Motors, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest SO is noticed in December 2020 as 87.08 and the lowest being 1.16 in March 2018. The lower low is considered as oversold levels, but the SO is found to be between 0 and 10. The present position of Tata Motors is found as overruled momentum
- ✓ The Exponential Moving Average (EMA) is used to measure the strength or weakness of a trend, not the actual direction. EMA of Tata Motors shows a mild trend during the past months. Tata Motors EMA shows directional indicators that can be combined with a complete trading system. The trend chart found to be in the increasing trend showing a favourable effect of the stock

5.2 SUGGESTIONS

Technical analysis is simple and more reliable than fundamental analysis because the information required for technical analysis is free available as compared to fundamental analysis. The following are the suggestions made to the investors while choosing selected scripts for investment purposes;

- Reliance Industries has been the first to achieve the feat of a new milestone in market capitalisation; first to reach Rs 10 lakh crore, Rs 11 lakh crore and Rs 12 lakh crore. RIL started as a textiles company in the 1950s and then diversified into multiple business channels. Currently, the company has oil and gas, refining and petrochemicals as its core businesses. Other businesses include retail, telecom, media and many other subsidiaries. RIL is one of the top 10 stocks to buy for long term.
- HDFC Bank, one of the HDFC twins, was set up in 1994 and promoted by HDFC. Since its inception, Aditya Puri had been leading the bank as its managing director and became the longest-serving MD of a private bank. More than 50% of the bank's loan book comes from retail loans, which many analysts think is the reason behind its success. In the last eight quarters, since the first quarter of FY 20-21, the net NPA ratio of the bank has been less than 0.5% of its advances. In the July to September quarter, its net NPA ratio was 0.17% of its net advances. Its net profit has risen at a CAGR of 16.28% in the past five fiscal years. The bank's businesses are in retail banking, wholesale banking and treasury. This bank is also one of best stocks to buy for 2021 in India.
- Shares of the IT major are among HDFC Securities' top 10 stock picks for 2021 and recommended Buy rating at Rs 1,240.30 apiece. Analysts at HDFC Securities think Infosys' financial profile is robust, led by a debt-free balance sheet and healthy cash-generating ability in the past. Financial flexibility is strong, supported by robust liquidity in the form of cash and cash equivalent of Rs 26,011 crore as of 30th Sep-20.
- ONGC maintained production levels; output by other operators has dropped, leading to an overall fall in India's output and a sharp rise in import dependency. Its standalone production at 47.51 million tonnes of oil and oil equivalent gas in 2010-11 was 52.8 per cent of a total of 89.91 million tonnes of oil and gas produced in the country that year, the data showed.

General Implications to investors

Investor should have knowledge regarding the market terms so that they can take maximum return from maximum investment

- In case a trader entering new industries, he has to first do a careful study on prospects and charts of the stocks before making investment
- Even though equity analysis is enough for making decision in stock market, simultaneous usage of both fundamental and technical analysis will reduce errors in forecasting future prices
- The technician also required a fundamental knowledge, which would clear an idea about the investment decision. Both Technical and Fundamental analysis helps in investment decision in the stock market and predict the future trend of the selected companies in which we have invested. Both the analysis gives guidance to the investors
- The capital adequacy and structure of the selected companies has been between 10 and 20 percent most of the time. A capital adequacy in this range seems to be a safe and optimum bet, neither being so low that there is a problem in case of a recession, and not being so high as to hamper growth. This makes sure one can invest in selected sector to play a safer game with their investment.
- Since selected sector that fuels the entire economic engine, it is important that beyond everything, there is a sense of integrity and ethics in everyone who is involved here; otherwise it will be the lower strata of society that are most affected

5.3. CONCLUSION

The study meant to do the technical analysis of selected companies from top 5 list traded in NSE India. The market is fluctuating very ghastly, real worth of the shares also changing. This study covers few selected companies. This is done by adopting various technical tools. It is found that public software companies' needs are not performing as good as selected companies.

Technical analysis and fundamental analysis are two very different approaches, but one does not completely exclude the other. If you focus on fundamentals, it is still worth checking out the chart of a company, when you are about to buy or sell stocks of it. Similarly, if you focus on technical signals, it is worth checking the fundamentals of companies. For Long-term investing, it is better to use both the fundamental and technical analysis simultaneously. By its nature, technical analysis tends to be useful for short-term trading rather than long-term investing. For the better returns it is always advisable to use the combination of both. The analysis shows that all the selected companies have shown consistently good performance and performance is improving every year. The performance of all the software companies is likely to be much bettering the year to come. The study has shed much light of the strength as a tool for generating and distributing the wealth of the community. The study has also revealed what more is desirable for greater effectiveness in the future. It is on account of the relaxation added to the lockdown policy by the Indian government. The unprecedented pandemic has already brought 19 challenges to almost all countries. Not a single sector is left unaffected because of COVID-19. In brief, the results conclude that the Corona virus outbreak has affected the stock price and increased the volatility in the Indian stock markets, and affect the financial system.

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APPENDIX I (5 YEAR SHARE PRICE CHANGE)

THE PRICES OF HDFC BANK DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	Open	High	Low	Volume	Chg%
1	Feb-16	484.85	527.83	532.32	462.97	71.47	-7.43%
2	Mar-16	534.39	486.39	538.25	484.85	62.70M	10.22%
3	Apr-16	564.92	533.21	567.09	520.27	49.58M	5.71%
4	May-16	589.64	562.62	596.17	555.34	54.88M	4.38%
5	Jun-16	586.92	590.16	594.6	570.85	58.95M	-0.46%
6	Jul-16	621.72	588.69	624.23	579.16	58.24M	5.93%
7	Aug-16	644.17	623.11	646.06	605.55	58.47M	3.61%
8	Sep-16	635.01	642.57	657.76	631.29	52.03M	-1.42%
9	Oct-16	625.26	639.08	648.58	610.72	39.82M	-1.54%
10	Nov-16	598.47	626.6	643.07	577.71	76.08M	-4.28%
11	Dec-16	601.76	599.82	604.65	580.51	46.96M	0.55%
12	Jan-17	641.9	603.38	648.56	590.24	65.71M	6.67%
13	Feb-17	693.51	641.67	725.39	638.83	264.11M	8.04%
14	Mar-17	719.67	696.67	738.33	682.98	72.43M	3.77%
15	Apr-17	771.53	721.39	785.23	710.94	66.81M	7.21%
16	May-17	816.28	771.78	822.17	759.61	50.15M	5.80%
17	Jun-17	824.19	817.68	856.09	808.47	46.75M	0.97%
18	Jul-17	890.22	824.47	897.4	820.67	62.69M	8.01%
19	Aug-17	886.25	888.95	902.57	863.65	51.27M	-0.45%
20	Sep-17	900.84	888.52	931.93	867.07	78.11M	1.65%
21	Oct-17	902.24	901.99	937.71	876.97	67.36M	0.16%
22	Nov-17	924.79	905.53	935.67	892.01	50.92M	2.50%
23	Dec-17	934.12	925.39	949.44	897.5	59.43M	1.01%
24	Jan-18	1,000.62	934.27	1,004.51	923.2	71.52M	7.12%
25	Feb-18	940.01	1,000.77	1,005.26	916.11	55.21M	-6.06%
26	Mar-18	940.96	937.56	947.89	912.22	56.70M	0.10%
27	Apr-18	969.99	943.15	987.3	928.08	52.64M	3.09%
28	May-18	1,067.35	972.84	1,077.60	970.84	79.04M	10.04%
29	Jun-18	1,051.88	1,055.65	1,076.10	1,002.32	171.38M	-1.45%
30	Jul-18	1,087.33	1,051.83	1,107.54	1,029.33	102.00M	3.37%
31	Aug-18	1,028.31	1,079.00	1,085.08	1,026.84	102.83M	-5.43%
32	Sep-18	1,000.80	1,032.40	1,037.17	952.98	110.86M	-2.68%
33	Oct-18	953.75	1,002.67	1,023.82	940.41	165.46M	-4.70%
34	Nov-18	1,061.86	962.86	1,066.40	945.89	137.56M	11.34%
35	Dec-18	1,058.49	1,063.13	1,077.30	1,013.74	95.00M	-0.32%
36	Jan-19	1,037.67	1,061.46	1,080.84	1,008.76	110.09M	-1.97%
37	Feb-19	1,036.47	1,037.67	1,075.11	1,034.30	86.30M	-0.12%

38	Mar-19	1,156.88	1,040.81	1,161.44	1,032.70	145.67M	11.62%
39	Apr-19	1,156.15	1,160.04	1,163.41	1,113.02	154.55M	-0.06%
40	May-19	1,209.98	1,159.17	1,229.76	1,133.28	140.22M	4.66%
41	Jun-19	1,219.16	1,210.81	1,244.48	1,198.83	101.23M	0.76%
42	Jul-19	1,123.32	1,225.27	1,248.87	1,109.06	140.97M	-7.86%
43	Aug-19	1,113.97	1,114.55	1,144.50	1,069.80	180.79M	-0.83%
44	Sep-19	1,227.45	1,110.00	1,282.70	1,084.00	176.05M	10.19%
45	Oct-19	1,230.35	1,231.50	1,263.90	1,181.15	137.20M	0.24%
46	Nov-19	1,274.95	1,239.00	1,287.00	1,227.60	112.33M	3.62%
47	Dec-19	1,272.10	1,273.95	1,305.50	1,234.20	117.02M	-0.22%
48	Jan-20	1,226.30	1,276.10	1,304.85	1,211.75	137.91M	-3.60%
49	Feb-20	1,177.65	1,220.00	1,259.90	1,170.10	131.23M	-3.97%
50	Mar-20	861.9	1,200.20	1,201.15	738.75	473.14M	-26.81%
51	Apr-20	1,001.80	863.85	1,019.00	810	397.75M	16.23%
52	May-20	951.65	957.5	960	826.1	383.20M	-5.01%
53	Jun-20	1,065.85	975	1,082.60	928	467.99M	12.00%
54	Jul-20	1,032.80	1,065.85	1,157.95	1,020.05	352.79M	-3.10%
55	Aug-20	1,115.85	1,025.95	1,148.80	993	292.23M	8.04%
56	Sep-20	1,078.60	1,128.00	1,145.95	1,025.00	208.52M	-3.34%
57	Oct-20	1,183.55	1,090.10	1,251.00	1,090.10	255.63M	9.73%
58	Nov-20	1,440.85	1,194.35	1,464.40	1,177.50	256.00M	21.74%
59	Dec-20	1,436.30	1,440.85	1,449.00	1,345.00	224.47M	-0.32%

THE PRICES OF RELIANCE DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	Open	High	Low	Volume	Chg%
1	Feb-16	478.79	515.09	516.01	439.88	165.29M	-6.64%
2	Mar-16	517.69	477.82	523.04	477.8	143.48M	8.12%
3	Apr-16	486.74	514.67	529.93	484.83	161.22M	-5.98%
4	May-16	474.43	484.9	492.8	458.48	137.69M	-2.53%
5	Jun-16	480.02	474.48	492.41	462.32	120.54M	1.18%
6	Jul-16	502.69	481.81	514.5	480.45	107.21M	4.72%
7	Aug-16	525.02	504.22	531.96	487.08	124.83M	4.44%
8	Sep-16	536.76	521.56	559.47	496.44	207.45M	2.24%
9	Oct-16	520.66	538.4	557.84	516.8	124.86M	-3.00%
10	Nov-16	490.38	520.71	523.02	460.63	132.09M	-5.82%
11	Dec-16	536.12	495.31	537.41	488.62	133.21M	9.33%
12	Jan-17	517.69	536.91	543.6	501.64	125.07M	-3.44%
13	Feb-17	613.21	518.14	622.5	506.2	232.43M	18.45%
14	Mar-17	654.25	614.23	662.54	607.76	302.50M	6.69%
15	Apr-17	691.05	664.7	726.98	662.25	208.78M	5.62%
16	May-17	664.06	694.42	694.42	641.47	148.18M	-3.91%
17	Jun-17	683.52	660.09	715.91	648.35	170.89M	2.93%
18	Jul-17	800.02	687.58	808.09	679.06	224.09M	17.04%
19	Aug-17	789.76	803.76	824.63	757.82	129.81M	-1.28%
20	Sep-17	773.57	792.41	864.31	771.78	176.23M	-2.05%
21	Oct-17	932.02	787.53	948.81	777.98	151.20M	20.48%
22	Nov-17	912.9	938.85	950.49	864.8	132.09M	-2.05%
23	Dec-17	912.4	915.77	930.08	854.55	122.02M	-0.05%
24	Jan-18	952.27	914.04	981.64	897.89	133.38M	4.37%
25	Feb-18	945.59	954.21	963.47	862.82	146.31M	-0.70%
26	Mar-18	874.41	940.83	950.89	871.74	134.07M	-7.53%
27	Apr-18	954.25	884.61	1,001.51	876.94	127.09M	9.13%
28	May-18	912.7	957.92	990.61	898.09	128.11M	-4.35%
29	Jun-18	963.32	911.36	1,026.27	909.83	163.11M	5.55%
30	Jul-18	1,174.86	963.22	1,179.22	948.01	201.17M	21.96%
31	Aug-18	1,229.99	1,179.22	1,316.52	1,155.00	150.21M	4.69%
32	Sep-18	1,246.14	1,233.31	1,269.32	1,172.39	181.64M	1.31%
33	Oct-18	1,051.28	1,245.89	1,245.89	1,006.86	278.10M	-15.64%
34	Nov-18	1,156.59	1,057.87	1,174.86	1,040.14	165.23M	10.02%
35	Dec-18	1,110.72	1,163.87	1,163.87	1,045.09	154.18M	-3.97%
36	Jan-19	1,215.63	1,114.68	1,252.82	1,070.95	215.78M	9.45%
37	Feb-19	1,219.49	1,222.41	1,308.79	1,194.68	176.07M	0.32%
38	Mar-19	1,350.45	1,225.38	1,374.97	1,207.16	188.46M	10.74%
39	Apr-19	1,379.72	1,357.14	1,399.14	1,308.60	168.53M	2.17%
40	May-19	1,317.66	1,378.93	1,404.19	1,215.97	247.53M	-4.50%
41	Jun-19	1,241.33	1,322.46	1,361.35	1,236.93	134.54M	-5.79%
42	Jul-19	1,155.30	1,246.24	1,287.79	1,151.49	159.48M	-6.93%
43	Aug-19	1,236.83	1,152.48	1,292.20	1,085.02	241.37M	7.06%
44	Sep-19	1,319.74	1,230.59	1,323.21	1,161.64	183.24M	6.70%
45	Oct-19	1,450.60	1,324.45	1,475.66	1,269.27	165.83M	9.92%
46	Nov-19	1,536.58	1,441.34	1,569.27	1,409.19	168.62M	5.93%
47	Dec-19	1,499.83	1,584.98	1,602.36	1,493.89	173.09M	-2.39%
48	Jan-20	1,398.39	1,503.75	1,593.89	1,393.99	201.73M	-6.76%
49	Feb-20	1,316.17	1,392.10	1,493.84	1,312.56	185.52M	-5.88%
50	Mar-20	1,103.29	1,342.38	1,356.15	867.43	459.29M	-16.17%

51	Apr-20	1,452.23	1,111.71	1,480.91	1,035.39	478.25M	31.63%
52	May-20	1,464.40	1,426.48	1,599.84	1,393.00	463.92M	0.84%
53	Jun-20	1,704.10	1,480.00	1,804.20	1,475.95	397.69M	16.37%
54	Jul-20	2,067.10	1,720.00	2,198.80	1,708.05	616.55M	21.30%
55	Aug-20	2,080.70	2,051.30	2,196.00	2,000.25	383.27M	0.66%
56	Sep-20	2,234.35	2,100.00	2,369.35	2,044.25	378.77M	7.38%
57	Oct-20	2,064.35	2,257.25	2,309.00	1,992.25	141.36M	-7.61%
58	Nov-20	1,929.80	2,027.00	2,095.00	1,835.10	432.22M	-6.52%
59	Dec-20	1,985.30	1,940.35	2,038.00	1,855.25	232.77M	2.88%

THE PRICES OF ONGC DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	Open	High	Low	Volume	Chg%
1	Feb-16	129.4	151.87	151.87	125.17	138.43M	-14.21%
2	Mar-16	142.73	129.27	146.1	125.7	213.78M	10.30%
3	Apr-16	144.83	143	150.27	136	06.90M	1.47%
4	May-16	140.5	145.33	147.43	133.33	145.51M	-2.99%
5	Jun-16	144.2	140.93	148.47	138	101.93M	2.63%
6	Jul-16	146.73	144.6	161.03	144.3	160.20M	1.76%
7	Aug-16	157.53	148.2	162.6	145.07	126.30M	7.36%
8	Sep-16	171.1	158	175.57	156.73	195.15M	8.61%
9	Oct-16	192.8	171.33	198.27	168.27	187.09M	12.68%
10	Nov-16	192.6	193.53	194.13	166.67	164.62M	-0.10%
11	Dec-16	191.35	196.67	209.73	187.7	156.71M	-0.65%
12	Jan-17	202.55	191.8	211.8	191.15	166.93M	5.85%
13	Feb-17	193.55	203	205	190.8	141.88M	-4.44%
14	Mar-17	185	196.7	197.2	183	159.69M	-4.42%
15	Apr-17	186.55	185.2	188.7	178.3	103.22M	0.84%
16	May-17	177	188	194.75	171.2	152.44M	-5.12%
17	Jun-17	157.3	176.9	178.5	155.2	141.50M	-11.13%
18	Jul-17	169.4	157.4	170	155.9	176.17M	7.69%
19	Aug-17	156.95	170.25	170.3	156.05	133.77M	-7.35%
20	Sep-17	170.95	158	174.35	157.3	210.19M	8.92%
21	Oct-17	191.1	174	192	167.75	135.47M	11.79%
22	Nov-17	180.65	192	205.5	175.8	158.38M	-5.47%
23	Dec-17	195.2	182	197.15	175.35	129.70M	8.05%
24	Jan-18	203.45	195.2	212.85	192	198.60M	4.23%
25	Feb-18	188.3	204.05	207.05	180.1	128.67M	-7.45%
26	Mar-18	177.8	187.9	190.2	173.6	88.39M	-5.58%
27	Apr-18	180.55	179.1	186.25	174.7	87.65M	1.55%
28	May-18	177.9	181.5	192	155.15	183.06M	-1.47%
29	Jun-18	158.4	176	176	151.8	134.88M	-10.96%
30	Jul-18	165.7	157.85	166.75	152.45	144.36M	4.61%
31	Aug-18	180.05	165.25	181.9	162.5	134.22M	8.66%
32	Sep-18	177.2	180.75	185.4	166.2	121.62M	-1.58%
33	Oct-18	153.25	179.3	183.5	144.7	215.18M	-13.52%
34	Nov-18	140.3	155.5	165	137.65	182.51M	-8.45%
35	Dec-18	149.9	140.95	151.5	134.75	288.39M	6.84%
36	Jan-19	141.25	150	150.1	138.5	185.62M	-5.77%
37	Feb-19	148.65	141	150.75	127.6	280.62M	5.24%
38	Mar-19	159.75	149.9	163.2	145.7	339.47M	7.47%
39	Apr-19	169.2	160.5	171.15	153.3	322.75M	5.92%
40	May-19	171.95	169.3	178.9	160.85	229.11M	1.63%
41	Jun-19	167.75	173	173.5	162.95	184.56M	-2.44%
42	Jul-19	138.85	168.2	170.4	136.25	284.76M	-17.23%
43	Aug-19	121.2	138.5	139.75	115.75	234.73M	-12.71%
44	Sep-19	131.8	120.5	140.85	115.55	271.43M	8.75%
45	Oct-19	141.7	131.5	146.15	123.95	229.64M	7.51%
46	Nov-19	131.75	140.55	149.65	129.25	165.12M	-7.02%
47	Dec-19	128.8	131.05	131.45	124.05	168.14M	-2.24%
48	Jan-20	108.95	128.75	133.4	106.75	345.49M	-15.41%
49	Feb-20	91.95	109	109.75	89.5	457.64M	-15.60%
50	Mar-20	68.3	94	95	50	1.13B	-25.72%

51	Apr-20	79.9	67	81.05	60.8	522.48M	16.98%
52	May-20	83.2	76	83.75	72.4	430.80M	4.13%
53	Jun-20	81.35	85	93.1	80	546.50M	-2.22%
54	Jul-20	78.3	79	84.9	75	376.04M	-3.75%
55	Aug-20	81.95	78.35	85.5	75.55	400.77M	4.66%
56	Sep-20	69.25	82.75	82.8	65.5	438.86M	-15.50%
57	Oct-20	64.9	67.5	73.35	64.1	426.81M	-6.28%
58	Nov-20	78.5	65.4	81.8	64.2	481.31M	20.96%
59	Dec-20	93.05	78.5	105.6	77.05	981.75M	18.54%

**SHOWING THE PRICES OF INFOSYS DURING FEBRUARY 2016-DECEMBER
2020**

S.No	Date	Price	Open	High	Low	Volume	Chg%
1	Feb-16	534.83	577.24	589.55	526.42	107.70M	-6.94%
2	Mar-16	601.07	540.14	610.29	540.14	157.60M	12.38%
3	Apr-16	596.03	599.93	625.54	567.91	130.36M	-0.84%
4	May-16	616.04	596.97	627.56	577.56	110.29M	3.36%
5	Jun-16	577.63	614.76	631.16	569.89	134.14M	-6.23%
6	Jul-16	529.8	582.17	590.09	519.02	206.64M	-8.28%
7	Aug-16	511.05	528.64	540.24	497.86	156.23M	-3.54%
8	Sep-16	511.15	512.11	527.36	505.21	118.83M	0.02%
9	Oct-16	494.4	510.88	534.17	489.99	120.03M	-3.28%
10	Nov-16	481.3	496.72	496.72	444.52	166.17M	-2.65%
11	Dec-16	498.6	481.52	504.22	472.64	124.83M	3.59%
12	Jan-17	458.14	498.84	513.1	444.6	229.34M	-8.11%
13	Feb-17	499.48	454.44	508.66	446.57	165.93M	9.02%
14	Mar-17	504.34	499.29	515.07	492.87	135.68M	0.97%
15	Apr-17	453.38	509.23	509.38	449.06	141.62M	-10.11%
16	May-17	482.04	455.87	493.37	451.48	122.59M	6.32%
17	Jun-17	461.57	478.22	487.89	454.39	157.34M	-4.25%
18	Jul-17	498.89	464.31	507.62	460.33	168.97M	8.09%
19	Aug-17	451.4	498.79	507.8	424.3	582.37M	-9.52%
20	Sep-17	443.98	451.9	456.81	431.03	212.42M	-1.64%
21	Oct-17	454.81	449.01	472.5	442.62	183.70M	2.44%
22	Nov-17	481.57	456.36	502.89	452.39	170.10M	5.88%
23	Dec-17	514.11	483.2	517.44	472.18	161.25M	6.76%
24	Jan-18	567.49	511.97	602.42	496.33	264.68M	10.38%
25	Feb-18	578.52	563.52	586.86	537.87	181.42M	1.94%
26	Mar-18	558.39	577.04	590.56	555.65	150.69M	-3.48%
27	Apr-18	591.79	562.93	599.14	543.69	238.89M	5.98%
28	May-18	607.73	591.5	616.04	569.84	152.66M	2.69%
29	Jun-18	650.03	607.04	653.91	597.96	148.89M	6.96%
30	Jul-18	678.82	653.41	693.09	630.58	222.75M	4.43%
31	Aug-18	716.61	678.17	723.17	670.07	153.22M	5.57%
32	Sep-18	726.06	720.54	744.41	688.22	151.52M	1.32%
33	Oct-18	682.65	733.47	750.77	626.46	186.54M	-5.98%
34	Nov-18	663.8	685.93	685.93	596.57	169.74M	-2.76%
35	Dec-18	655.35	669.47	709.8	633.87	154.71M	-1.27%
36	Jan-19	749.55	657.34	751.3	647.44	212.51M	14.37%
37	Feb-19	734.3	751.35	772.25	721.3	119.01M	-2.03%
38	Mar-19	743.85	735.5	747.95	705.35	162.36M	1.30%
39	Apr-19	751.35	742	773	712.6	171.63M	1.01%
40	May-19	737.75	747	748.4	697.45	195.60M	-1.81%
41	Jun-19	732	729.8	759	728.15	124.69M	-0.78%
42	Jul-19	793.65	735	804	706.5	177.83M	8.42%
43	Aug-19	814.9	786.45	817.35	760.15	150.02M	2.68%
44	Sep-19	805.65	815	847	741.9	162.14M	-1.14%
45	Oct-19	685.6	807	823.8	615.1	383.04M	-14.90%
46	Nov-19	696.35	690	732.5	678.15	222.30M	1.57%
47	Dec-19	731.15	703.1	737.95	688.55	141.18M	5.00%
48	Jan-20	775.95	735	792.8	708.3	189.28M	6.13%

49	Feb-20	731.7	775.1	811.6	722.05	112.89M	-5.70%
50	Mar-20	641.5	737	773.55	509.25	305.19M	-12.33%
51	Apr-20	715.5	634.35	720	582.15	203.54M	11.54%
52	May-20	691	689.8	710	646.7	180.61M	-3.42%
53	Jun-20	735.95	698.75	751.6	675.5	240.82M	6.51%
54	Jul-20	966	737.25	986.45	729.75	397.11M	31.26%
55	Aug-20	928.6	960	974.4	914.6	155.09M	-3.87%
56	Sep-20	1,008.25	926.25	1,037.00	912.1	232.40M	8.58%
57	Oct-20	1,060.60	1,020.60	1,186.00	1,011.75	285.00M	5.19%
58	Nov-20	1,100.00	1,065.00	1,154.90	1,051.10	208.54M	3.71%
59	Dec-20	1,255.80	1,105.05	1,258.85	1,105.05	205.79M	14.16%

THE PRICES OF TATA MOTORS DURING FEBRUARY 2016-DECEMBER 2020

S.No	Date	Price	Open	High	Low	Volume	Chg%
1	Feb-16	299.7	338.75	344.7	265.8	251.27M	-11.04%
2	Mar-16	386.6	301.1	393.6	301.1	180.65M	29.00%
3	Apr-16	408.35	386.4	425.25	369	124.23M	5.63%
4	May-16	459.65	407.95	464.9	376.1	310.85M	12.56%
5	Jun-16	459.25	455.75	489.9	421.25	242.21M	-0.09%
6	Jul-16	503.2	463.6	513.35	454.1	130.37M	9.57%
7	Aug-16	537.7	506.8	548.8	475.5	158.43M	6.86%
8	Sep-16	534.85	540.5	598.4	516.65	164.09M	-0.53%
9	Oct-16	531.95	539.4	571.1	510.75	108.14M	-0.54%
10	Nov-16	459.3	534.4	549.35	443.15	169.88M	-13.66%
11	Dec-16	472	457	486.25	428.3	181.55M	2.77%
12	Jan-17	523.55	472	552	469.05	110.53M	10.92%
13	Feb-17	456.75	527.5	544.5	434.35	163.81M	-12.76%
14	Mar-17	465.85	455.9	484.2	448	134.17M	1.99%
15	Apr-17	458.9	468.25	480.55	437.6	105.62M	-1.49%
16	May-17	476.15	456.6	488.25	417.25	152.32M	3.76%
17	Jun-17	432.55	476.95	485.95	428.05	113.98M	-9.16%
18	Jul-17	444.6	431.5	468.35	426	105.83M	2.79%
19	Aug-17	376.55	446.55	452.35	358.5	153.20M	-15.31%
20	Sep-17	401.5	379.35	427.7	374.05	172.23M	6.63%
21	Oct-17	428.4	428	440.95	409.35	115.68M	6.70%
22	Nov-17	404.15	430.95	468	402.25	247.20M	-5.66%
23	Dec-17	431.85	407.9	433.45	389.3	135.15M	6.85%
24	Jan-18	399.5	430.95	443.5	395	170.43M	-7.49%
25	Feb-18	369.9	399.9	403.8	356.5	181.51M	-7.41%
26	Mar-18	326.85	369.75	376.3	324.3	161.93M	-11.64%
27	Apr-18	340.4	335	372.35	326	242.72M	4.15%
28	May-18	282.5	349.2	351.65	281.6	307.24M	-17.01%
29	Jun-18	269.3	284.5	315.55	261.85	286.08M	-4.67%
30	Jul-18	264.1	276	277	247.3	225.62M	-1.93%
31	Aug-18	267.5	250	274.7	243.1	308.33M	1.29%
32	Sep-18	223.7	271.4	282	219.5	255.08M	-16.37%
33	Oct-18	179.1	225	232.8	164.6	434.21M	-19.94%
34	Nov-18	171.95	182	200.75	170.35	340.51M	-3.99%
35	Dec-18	172.7	173.25	180.5	154.65	293.36M	0.44%
36	Jan-19	181.2	173.5	198.3	165.1	305.92M	4.92%
37	Feb-19	177.45	182	186.1	129	413.63M	-2.07%
38	Mar-19	174.25	178.65	198.35	167.55	348.31M	-1.80%
39	Apr-19	214.3	176.35	239.35	176.35	804.24M	22.98%
40	May-19	172.6	211	213.65	167.4	581.85M	-19.46%
41	Jun-19	162.55	170.5	177.2	152.15	332.45M	-5.82%
42	Jul-19	135.6	163.7	172.35	132.5	590.09M	-16.58%
43	Aug-19	116.7	135.5	136.3	106.2	890.85M	-13.94%
44	Sep-19	117.45	113.05	138.4	106	1.09B	0.64%
45	Oct-19	177.7	118	179.65	112.65	1.17B	51.30%
46	Nov-19	161.5	175.2	178.9	159.9	554.11M	-9.12%
47	Dec-19	185.15	160.95	187.9	157.4	812.75M	14.64%
48	Jan-20	176.6	185.15	201.7	174.9	886.71M	-4.62%
49	Feb-20	128.95	175.4	184.95	127.05	1.06B	-26.98%
50	Mar-20	71.05	133	133.9	63.5	1.63B	-44.90%

51	Apr-20	93.25	70.5	93.75	64.8	1.17B	31.25%
52	May-20	87	87	92.5	79.6	1.14B	-6.70%
53	Jun-20	98.25	88.9	119.15	88	2.06B	12.93%
54	Jul-20	104.65	99	112.6	98.2	1.24B	6.51%
55	Aug-20	143.2	103	147.95	102.9	1.87B	36.84%
56	Sep-20	133.3	143.4	155.2	122.15	1.58B	-6.91%
57	Oct-20	132.65	135.9	145.8	126	1.29B	-0.49%
58	Nov-20	180.35	133.65	183.85	131.1	1.28B	35.96%
59	Dec-20	183.85	182.35	188.8	156.7	1.19B	1.94%

APPENDIX-II (ARTICLE)

A STUDY ON STOCK SELECTION BASED ON TECHNICAL ANALYSIS

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ABSTRACT

Stock market is a place used for buying and selling of commodity to be exchanged for money or some other commodity. The Indian Stock Exchange Market Has Experiencing a rapid Growth In Recent Years. The Indian Stock Market Is One Of The Fastest Growing Stock Market In The World. The Indian securities market has become one of the most emerging and efficient securities market in asia today .When The Stock Market Is Booming in the peak The People Are Interested In Investing In The Stocks, But The Main Concern arises is Lack Of Knowledge About The Stocks and the market In The Common Man And Also About The Company In Which To Invest. So Here A Question Arise, How Investors Should Assess Risk and reward In The Stocks when They Buy Or Sell.

The Purpose Of This Project Is To Study How Should Investors Asses Risk and reward In The Stock They Buy And Sell. As We Can Imagine, The Concept Of Risk Is Hard To Pin Down And Factor Into Stock Analysis And Valuation. The Most Popular Indicators Of Risk Is A Statistical Measure Called Beta, which measures the risk of the stock. The input data required for the calculation of beta are the historical data of return of the individual securities as well as representative Stock market index. Two statistical methods can be used for the calculation of beta .1.correlation method 2.regression method. Analysts Use This Measure To Get A Sense Of Stocks' and the Profiles which are associated with risk appetite. Here We shower Some Light On What The Measure of beta Means For Investors. While Beta Does Say Something About Price Risk, It Does Have Its Limits For Investors Looking For Fundamental Risk And Return Factors.

KEYWORDS: Technical Analysis, Trading, Share Market, Financial Market, NSE.

1. INTRODUCTION

An Investor are People Who Invest Their Savings. Investment Is An commitment of a person's fund to derive future income in the form of interest ,dividend ,premium ,pension benefits or appreciation in the value of their capital, Which Is totally Different From Savings. Savings Are Generated When A Person saves From Present Consumption For A Future Use. Savings Kept As a Cash Are useless And Do Not Earn Anything. Hence, The Saver Has To Find A Temporary way For His Saving Until They Are Required For His Future. This Results In Investment. This Is An Era In Which The Investors Or Public Are Thinking Of Changing Their Investments From Bank Deposit To Share Market. They Got Better Return From The Investment In Capital Market Than In Case Of Bank Deposit. Today, Investment" Has Become A Very Popular With People From All

Lifestyles of people even a small family starts to invest with small amount of fund for (eg..chit funds). It Is Because Of Increase In Working Population in family, Higher Family Incomes automatically it Saves the income and Availability Of Large And Attractive Investment Alternatives, Increase In Investment Related Publicity And So On.

It may mean many things to many person ,if one person has advanced some money to another, he consider his loan as investment as it give some returns along with his loan amount and another person may have purchased one kg of gold for the purpose of price appreciation and he consider this as his investment.

Today Investment Is A Word for many. A Person Has Advanced Some Money To Other; He May Consider His Loan As An Investment. He Expects To Get Back The Principle Along With Interest At A Future Date. Another Person May Have Purchased A plot For The Purpose Of Price Appreciation And May Consider It Is An Investment. In The Above Cases, It Can Be Seen That Investment Involves Of Money With An Aim Of Achieving Additional Income Or Growth In Values. Thus, Investment May Be Defined As, “A Commitment Of Funds Made In The view Of Some Positive Rate Of Return”. In future.The Capital Market Is A Sub System Of The Financial System .The Capital Market Is A Market For Long-Term Funds- Shares, Debentures And Bonds. Today The Indian Capital Market Offers A Variety Of Financial Products With Varied Features And Benefits, For Investors To Choose From Them. . Investing In Stock Is Most Popular Method Of Investment. However, The Knowledge About A Particular Investment Alternative Is An Essential For The Investor. The objective of investors can be stated as 1.maximization of return 2.minimization of risk 3.hedge against inflation.

Research Objective

The Main Objective Is Stock Selection On Technical Analysis Of Top 5 Companies Traded In NSE India

2.REVIEW OF LITERATURE

Cootner (1962) found that the stock prices move at random when studied at one week interval. The data for his study was week-end prices of forty five stocks from New York stock exchange. He tested randomness of share by means of a mean square successive difference test. He concluded that there was not one random walk model. He concluded that the share price trends could be predicted when studied at fourteen-week interval. But in total the stock prices followed a random walk at weekly intervals.

Cooter (2009) discovered that stock rates be in motion accidentally when considered in a one-week gap. The data for its study was the end week prices of forty-five shares of the New York Stock Exchange. He proved the uncertainty of participation through the successive square dissimilarity test. He got that there was no sudden walk model. He feels that trends in stock cost could be predicted when premeditated at 14-week intervals. But in entire the stock prices keeping random actions at weekly intervals.

Dietze, Oliver and Macro (2010) in their research work to assess the risk-adjusted return of mutual funds in corporate ,s classified in Europe. The funds were evaluated on the basis of a single index and several models of multiple indices and asset classes. The results specify that the corporate , funds, on average, have a low performance in the reference portfolios and that there was not a particular fund that revealed a transcendental activist performance. The results also indicate that the risk-adjusted return of larger and larger funds, and a poorer charge for funds was higher 33.

Cory Janssen, Chad Langager and Casey Murphy (2014) in their technical analysis of the research article are a system of evaluating standards by analyzes information moving up by market action, such as prices and past volume. Technical analysts do not to effort to calculate security and intrinsic value, but use graph and additional tools to recognize patterns that suggest future actions.

Edwards, Magee and Bassetti" (2016) in their technical analysis of research refers to the study of market achievement as something divergent from the study of the goods in which the market deals. Technical Analysis is the science of recording, usually explicitly, the definitive history of changes in the negotiation price, the volume of dealings, etc., in a given action or in the averages and then deduce from that the past the potential future trend.

3.RESEARCH METHODOLOGY

➤ Research Design

A research design is the arrangement conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The research design used for the study is analytical in nature.

➤ Sampling Design

Sampling method

The researcher has used his own judgment and discretion in selecting the companies from each industry, which represents the population, this type of sampling is known as judgment sampling.

Sample size: top 5 companies traded in nse india are taken as samples for this study

Top 5 Companies Taken For Study (Nifty 50):

- Hdfc Bank (Hdfcbank)
 - Reliance Industries (Reliance)
 - Oil And Natural Gas Corporation (Ongc)
 - Infosys (Infy)
 - Tata Motors (Tata Motors)
-
- **Study Period:** stocks required for the analysis in the research are taken from february 2016-december 2020

➤ Source of data

All the data are collected from internet sources articles, books and journals. All the data were collected from already available websites, so the data is secondary in nature.

➤ Data collection Method

The research will be done by collecting secondary data's from respective company's website and from the annual reports published by the companies, analyst reports, and broking firm estimates. In addition, primary data would be gathered from share brokers, company executive, industry expert, financial analyst and investors

➤ TOOLS USED FOR ANALYSIS:

MACD

Developed by Gerald Appel in the late seventies, the Moving Average Convergence/Divergence oscillator (MACD) that measures the convergence and divergence between two exponential moving average. a short term exponential moving average and a long term moving average exponential moving average are calculated with the help of the closing price data.

MACD Line: (12-day EMA - 26-day EMA)

Signal Line: 9-day EMA of MACD Line

A 12 day and 48 day exponential moving average constitute a popular combination. The difference between short and long term EMA represents MACD.

4.DATA ALYSIS AND INTERPRETATION

Among Top 10 Blue chip companies in India, this report focuses on five from different sectors are listed below,

- HDFC Bank – Banking and Financial Sector
- Reliance Industries Fast Moving Consumer Durable Goods Sector
- Oil and Natural Gas Corporation – Energy Sector
- Infosys – Information Technology Services
- Tata Motors – Automobile sector

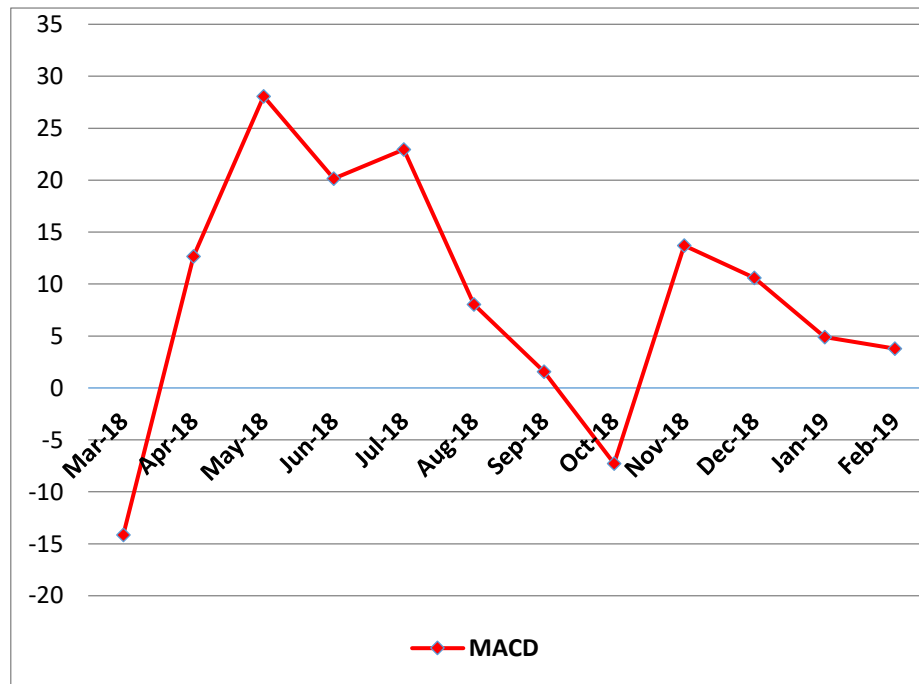
TABLE 1 SHOWING PRICES OF 5 STOCK SELECTED FOR STUDY

S.No	Date	price of hdfc	price of ril	price of ongc	price infy	price of tata motors
1	Feb-16	484.85	478.79	129.4	534.83	299.7
2	Mar-16	534.39	517.69	142.73	601.07	386.6
3	Apr-16	564.92	486.74	144.83	596.03	408.35
4	May-16	589.64	474.43	140.5	616.04	459.65
5	Jun-16	586.92	480.02	144.2	577.63	459.25
6	Jul-16	621.72	502.69	146.73	529.8	503.2
7	Aug-16	644.17	525.02	157.53	511.05	537.7
8	Sep-16	635.01	536.76	171.1	511.15	534.85
9	Oct-16	625.26	520.66	192.8	494.4	531.95
10	Nov-16	598.47	490.38	192.6	481.3	459.3
11	Dec-16	601.76	536.12	191.35	498.6	472
12	Jan-17	641.9	517.69	202.55	458.14	523.55
13	Feb-17	693.51	613.21	193.55	499.48	456.75
14	Mar-17	719.67	654.25	185	504.34	465.85
15	Apr-17	771.53	691.05	186.55	453.38	458.9
16	May-17	816.28	664.06	177	482.04	476.15
17	Jun-17	824.19	683.52	157.3	461.57	432.55
18	Jul-17	890.22	800.02	169.4	498.89	444.6
19	Aug-17	886.25	789.76	156.95	451.4	376.55
20	Sep-17	900.84	773.57	170.95	443.98	401.5
21	Oct-17	902.24	932.02	191.1	454.81	428.4
22	Nov-17	924.79	912.9	180.65	481.57	404.15
23	Dec-17	934.12	912.4	195.2	514.11	431.85
24	Jan-18	1,000.62	952.27	203.45	567.49	399.5
25	Feb-18	940.01	945.59	188.3	578.52	369.9
26	Mar-18	940.96	874.41	177.8	558.39	326.85
27	Apr-18	969.99	954.25	180.55	591.79	340.4
28	May-18	1,067.35	912.7	177.9	607.73	282.5
29	Jun-18	1,051.88	963.32	158.4	650.03	269.3
30	Jul-18	1,087.33	1,174.86	165.7	678.82	264.1
31	Aug-18	1,028.31	1,229.99	180.05	716.61	267.5

32	Sep-18	1,000.80	1,246.14	177.2	726.06	223.7
33	Oct-18	953.75	1,051.28	153.25	682.65	179.1
34	Nov-18	1,061.86	1,156.59	140.3	663.8	171.95
35	Dec-18	1,058.49	1,110.72	149.9	655.35	172.7
36	Jan-19	1,037.67	1,215.63	141.25	749.55	181.2
37	Feb-19	1,036.47	1,219.49	148.65	734.3	177.45
38	Mar-19	1,156.88	1,350.45	159.75	743.85	174.25
39	Apr-19	1,156.15	1,379.72	169.2	751.35	214.3
40	May-19	1,209.98	1,317.66	171.95	737.75	172.6
41	Jun-19	1,219.16	1,241.33	167.75	732	162.55
42	Jul-19	1,123.32	1,155.30	138.85	793.65	135.6
43	Aug-19	1,113.97	1,236.83	121.2	814.9	116.7
44	Sep-19	1,227.45	1,319.74	131.8	805.65	117.45
45	Oct-19	1,230.35	1,450.60	141.7	685.6	177.7
46	Nov-19	1,274.95	1,536.58	131.75	696.35	161.5
47	Dec-19	1,272.10	1,499.83	128.8	731.15	185.15
48	Jan-20	1,226.30	1,398.39	108.95	775.95	176.6
49	Feb-20	1,177.65	1,316.17	91.95	731.7	128.95
50	Mar-20	861.9	1,103.29	68.3	641.5	71.05
51	Apr-20	1,001.80	1,452.23	79.9	715.5	93.25
52	May-20	951.65	1,464.40	83.2	691	87
53	Jun-20	1,065.85	1,704.10	81.35	735.95	98.25
54	Jul-20	1,032.80	2,067.10	78.3	966	104.65
55	Aug-20	1,115.85	2,080.70	81.95	928.6	143.2
56	Sep-20	1,078.60	2,234.35	69.25	1,008.25	133.3
57	Oct-20	1,183.55	2,064.35	64.9	1,060.60	132.65
58	Nov-20	1,440.85	1,929.80	78.5	1,100.00	180.35
59	Dec-20	1,436.30	1,985.30	93.05	1,255.80	183.85

Table 1 presents the price moment of shares selected for the study period from February 2016-December 2020. based on the table one can notice that how much share price has fluctuated during this period. if we notice the share price of HDFC BANK it has increased drastically from January 2018 till date and the same momentum has found in RELIANCE INDUSTRIES , the share price of reliance industry started to raise from july 2018 . but ONGC AND TATA MOTORS were not performing better like hdfc bank or reliance industries. If we see the price of both the stocks ,its been decreasing from February 2016 and started consolidating in the price of rs.202 and started decreasing .let us understand through MACD chart the performance of 5 stock .

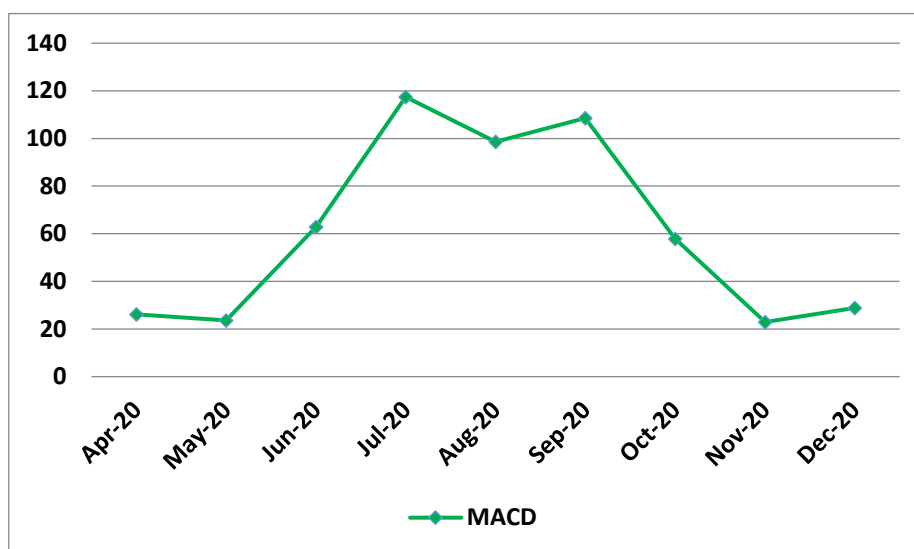
TABLE 1: CHART SHOWING THE MACD OF HDFC BANK DURING FEBRUARY 2016-DECEMBER 2020



INTERPRETATION:

During the study period from february 2016 to december 2020, macd of hdfc bank shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after april 2018 indicating bullish trends. It meets a fall on june 2018 and a sudden fall after july 2018 and become bearish. The recent trend of hdfc banks is bullish after october 2018. There are probable chances of it to be bullish again. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

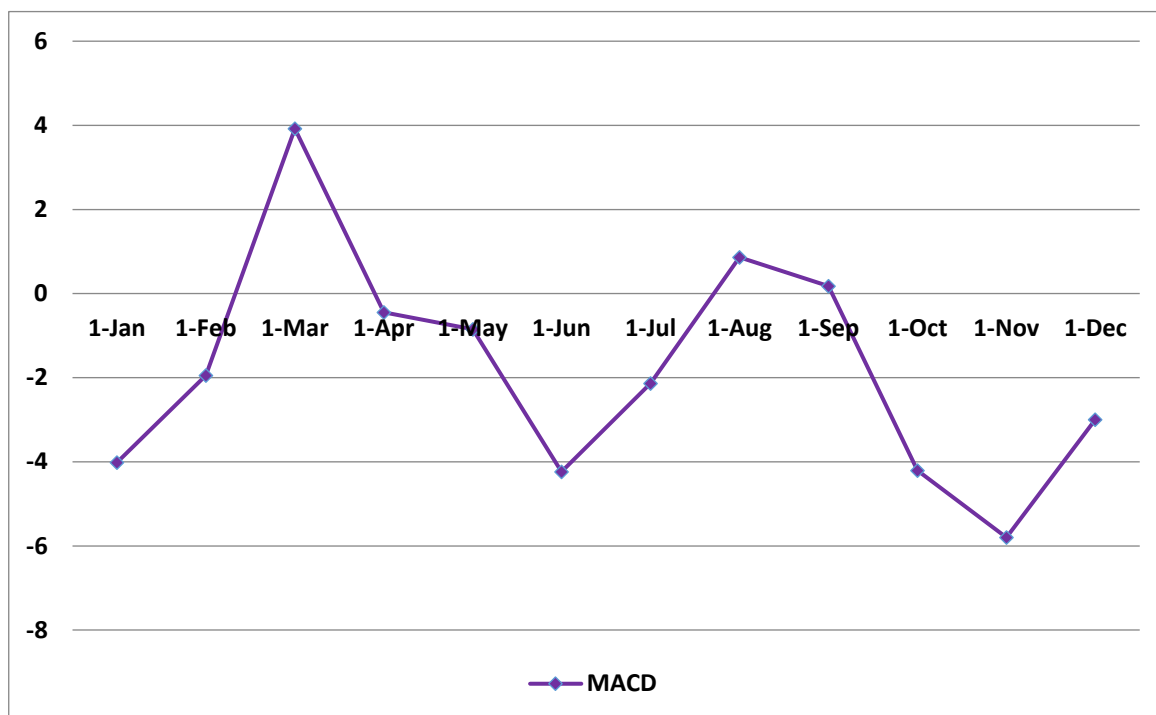
**TABLE2: CHART SHOWING MACD OF RELIANCE DURING FEBRUARY 2016-
DECEMBER 2020**



INTERPRETATION:

During the study period from february 2016 to december 2020, macd of reliance industries shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after may 2018 indicating bullish trends. It meets a fall on september 2020 and become bearish. The recent trend of reliance industries is bullish after november 2020. There are probable chances of it to be bullish again. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

**TABLE3: CHART SHOWING THE MACD OF ONGC DURING FEBRUARY 2016-
DECEMBER 2020**



INTERPRETATION:

During the study period from february 2016 to december 2020, macd of ongc shows a zero cross over effect. It was negative, showing bearish trend and started increasing and crossed zero after march 2019 indicating bullish trends. It meets a fall on june 2019 and become bearish. The recent trend of ongc is bearish after september 2019. There are probable chances of it to be bullish again as per the recent macd on december 2020. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

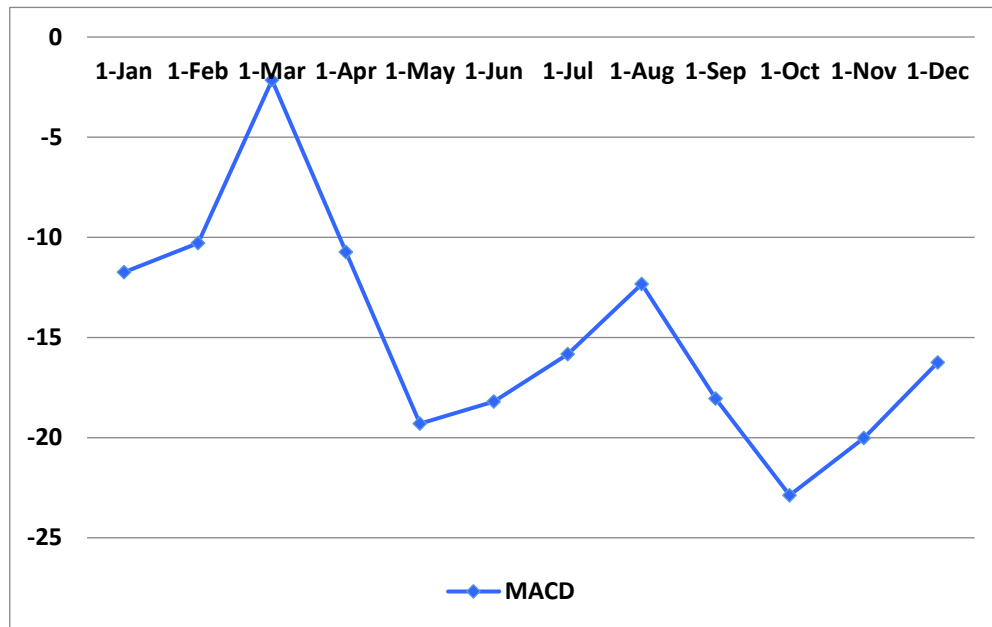
**TABLE 4:CHART SHOWING THE MACD OF INFOSYS DURING FEBRUARY 2016-
DECEMBER 2020**



INTERPRETATION:

During the study period from february 2016 to december 2020, macd of infosys shows few zero cross over effect. It was negative, showing bearish trend during february 2020 to may 2020 may be an impact of covid 19 pandemic outburst hitting the it market of us and europe, but started increasing from june 2020 and indicating bullish trends. The recent trend of infosys is bullish after july 2020. There are probable chances of it to remain bullish. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

TABLE 5:CHART SHOWING THE MACD OF TATA MOTORS DURING FEBRUARY 2016-DECEMBER 2020



INTERPRETATION

During the study period from february 2016 to december 2020, macd of tata motors shows a zero cross over effect. It was negative, showing bearish trend until july 2020. It meets a rise after august 2020 showing bearish indications. The recent trend of tata motors is bullish after august 2020. There are probable chances of it to be bullish. Zero crossovers provide evidence of a change in the direction of a trend but less confirmation of its momentum than a signal line crossover.

5.FINDINGS OF THE STUDY

- ✓ From the HDFC Bank, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest MACD is noticed in May 2018 as 29 and the lowest being less than 10 in March 2020. The lower low is considered as oversold levels, but the MACD is found to be between 25 to 30. The present position of HDFC bank is found as uptrend momentum .
- ✓ From the Reliance Industries, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest macd is noticed in July 2018 as and bearish in March 2020. The lower low is considered as oversold levels, but the MACD is found to be between 30 and 40. The present position of Reliance Industries is found as positive trend momentum and share price started to increase from march 2020.
- ✓ From the ONGC, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest macd is noticed in February 2018 and the lowest being February 2020. The lower low is considered as oversold levels, but the macd is found to be between 10 and 30. The present position of ONGC is found as bearish momentum .
- ✓ From the Infosys, it is noted that a steady trend is witnessed during the study period from February 2016 to December 2020. The highest MACD is noticed in December 2020 and the lowest being in october 2017. The lower low is considered as oversold levels, but the macd is found to be between 0 and 10. The present position of Infosys is found as positive uptrend momentum.
- ✓ From the Tata Motors, it is noted that a positive trend is witnessed during the study period from February 2016 to December 2020. The highest MACD is noticed in november 2020 and the lowest being February . The lower low is considered as oversold levels, but the MACD is found to be between 0 and 10. The present position of Tata Motors is found as negative momentum.

6.CONCLUSION

The study meant to do the technical analysis of selected companies from top 5 list traded in NSE India. The market is fluctuating very ghastly, real worth of the shares also changing. This study covers few selected companies. This is done by adopting various technical tools. It is found that public software companies' needs are not performing as good as selected companies.

Technical analysis and fundamental analysis are two very different approaches, but one does not completely exclude the other. If you focus on fundamentals, it is still worth checking out the chart of a company, when you are about to buy or sell stocks of it. Similarly, if you focus on technical signals, it is worth checking the fundamentals of companies. For Long-term investing, it is better to use both the fundamental and technical analysis simultaneously. By its nature, technical analysis tends to be useful for short-term trading rather than long-term investing. For the better returns it is always advisable to use the combination of both. The analysis shows that all the selected companies have shown consistently good performance and performance is improving every year. The performance of all the software companies is likely to be much bettering the year to come. The study has shed much light of the strength as a tool for generating and distributing the wealth of the community. The study has also revealed what more is desirable for greater effectiveness in the future. It is on account of the relaxation added to the lockdown policy by the Indian government. The unprecedented pandemic has already brought 19 challenges to almost all countries. Not a single sector is left unaffected because of COVID-19. In brief, the results conclude that the Coronavirus outbreak has affected the stock price and increased the volatility in the Indian stock markets, and affect the financial system.

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