ANALYSIS OF IT COMPANIES USING TOOLS AND TECHNIQUES OF TECHNICAL ANALYSIS

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Abstract

Technical analysis in its basic sense is the analysis of the market action through charts to predict future price movements. There are various tools and techniques to perform technical analysis like moving averages, charting techniques, MACD, ROC, RSI, etc. For this research, RSI (Relative Strength Index) indicator will be used to predict future price movements and to determine whether the shares are overbought or not. The samples selected from the NIFTY-IT index based on market capitalization are Infosys Ltd., Tech-Mahindra Ltd. and Wipro Ltd. The objectives of this research are to study the price movement of the shares of selected companies and use RSI indicator to know the momentum of price change and advice the investors in taking investing decisions.

Keywords: Technical analysis, NIFTY-IT, RSI, Price movement, market capitalization, Investing decision.

Introduction

Technical analysis in its basic sense is the analysis of the market action through charts to predict future price movements. The term "market action" includes information about the price, volume and open interest. With the help of past data on prices and volume, technical analysis is a tool to forecast future price movements. Technical analysis in its purest form analyzes charts of past data of price and volume. It helps investors to gain profits in the secondary market. Technical analysis uses various indicators which indicate possible fluctuations in the stock market. It uses historical data to predict future prices.

RSI (Relative Strength Index)

J. Welles Wilder, Jr. developed the concept of the RSI and presented it in his book "New Concepts in Technical Trading System" in 1978. RSI is a momentum indicator which is used in technical

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Vol-5, Issue-01, January 2024 ISSN (E): 2583-1348
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analysis. This indicator measures the magnitude and speed of price change. The word magnitude means the number of securities traded and speed means the speed at which the securities are traded. The RSI helps the investor to determine whether the securities are overbought or oversold. The RSI indicator predicts price movement by analysing the speed and direction of past price movements. Also, The RSI indicates the trend reversal of the prices and gives the investor signals of buying and selling. RSI plots the data in a vertical range from 0 to 100. If RSI is above 70, it indicates a situation where securities are overbought and their prices follow a bearish trend. This situation gives sell signals to the investors. If RSI is below 30, it indicates that the securities are oversold and soon the prices will rise, and it gives a signal to buy such securities.

The formula for calculating RSI:

$$RSI = 100 - \frac{100}{1 + \frac{average\ gain}{average\ loss}}$$

For ease of calculation, the above formula has been broken into smaller parts. The steps followed in the calculation are:

Step 1: The change in the prices is calculated.

Step 2: Gain and loss are calculated. If the change is positive there is a gain and if the change is negative, it is a loss.

Step 3: Average gain and the average loss are calculated by using the following formula

First averages:

For the first average gain = (The sum of gains over the past 14 periods/14) For the first average loss = (The sum of losses over the past 14 periods/14) Prior averages:

$$\text{Prior average gains} = \frac{\text{Previous average gain} \times 13 + \text{current gain}}{14}$$

$$\text{Prior average losses} = \frac{\text{previous average loss} \times 13 + \text{current loss}}{14}$$

Step 4: Calculate RS (Relative Strength) using the following formula

$$\frac{\text{Average gain}}{\text{Average loss}}$$

Step 5: The formula used to calculate RSI is as follows:

$$100 - \frac{100}{(1 + RS)}$$

Literature review:

R, CHITRA. (2011) in her research paper studied technical analysis and interprets whether to buy or sell the selected stocks. The researcher also examined the market risk using Beta, price movements using RSI, and trends in price by using a simple moving average. A stratified sample has been taken from the companies listed on National Stock Exchange. The ten companies that were

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selected are ONGC NTPC, GAIL, CAIRN, BPCL, Reliance Power, Reliance Industries Ltd and Suzlon. The data for 3 years (i.e. 1st April 2007-31st March 2010) of share price has been analyzed with the help of Beta, RSI and simple moving average. The study concluded that technical analysis helps investors in providing the right direction in understanding stocks and making investment decisions. Small investors should use the tools of technical analysis rather than making blind decisions.

P. PRAKASH AND S. SUNDARARAJAN. (2016) in their paper performed analytical research that deals with the facts and data related to the stock prices of ICICI Bank. For the purpose of fundamental research, company analysis has been done with the help of ratio analysis. And for technical analysis, tools such as Beta analysis, Relative strength index (RSI), and rate of change (ROC) have been employed. The stock market is very volatile and is very important to have its knowledge for making a profit. The researchers concluded that the fundamental and technical analysis helps the investor in wisely investing their funds.

MURTADHA, ALHILFI. (2019). The purpose of the study is to determine how the Relative Strength Index can help investors choose how to speculate on stocks listed on the Iraqi Stock Exchange. This study came to the conclusion that the usage of the Relative Strength Index played a crucial and useful function in justifying the investment choices made for the shares of the Bank of Baghdad that were listed on the Iraq Stock Exchange. Where anticipating the rising and negative movement of share prices can help with choosing the best time to invest. The speculator buys when they anticipate an increase in price and sells when they anticipate a decrease in price.

Research Methodology

The present research studies the technical analysis by analyzing the share prices of the selected companies. It also includes an analysis of share price movement through the RSI indicator. Therefore, this research is analytical in nature.

Objectives

1. To study the price movement of the share price of selected companies.
2. To analyze the share price movements using the RSI indicator.
3. To advise investors regarding buy, sell or hold decisions.

Sample Design

For the purpose of taking samples, three companies are selected based on market capitalization from the NIFTY-IT index. The companies are:-

Infosys Ltd.

Tech-Mahindra Ltd.

Wipro Ltd.

The data regarding the share prices of the companies are taken for three years starting from January 2020 to February 2023.

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Method of data collection

Secondary data is used in the research which is collected from various websites like the website of the National Stock Exchange, websites of the respective companies and various investing websites.

Data Collection and Interpretation

The trend in price movement is studied using a line chart. The 14-period RSI is calculated using monthly price data starting from January 2020 till February 2023 which is studied with the price to analyze the momentum of price changes and the overbought/oversold condition. The data is shown in the table below.
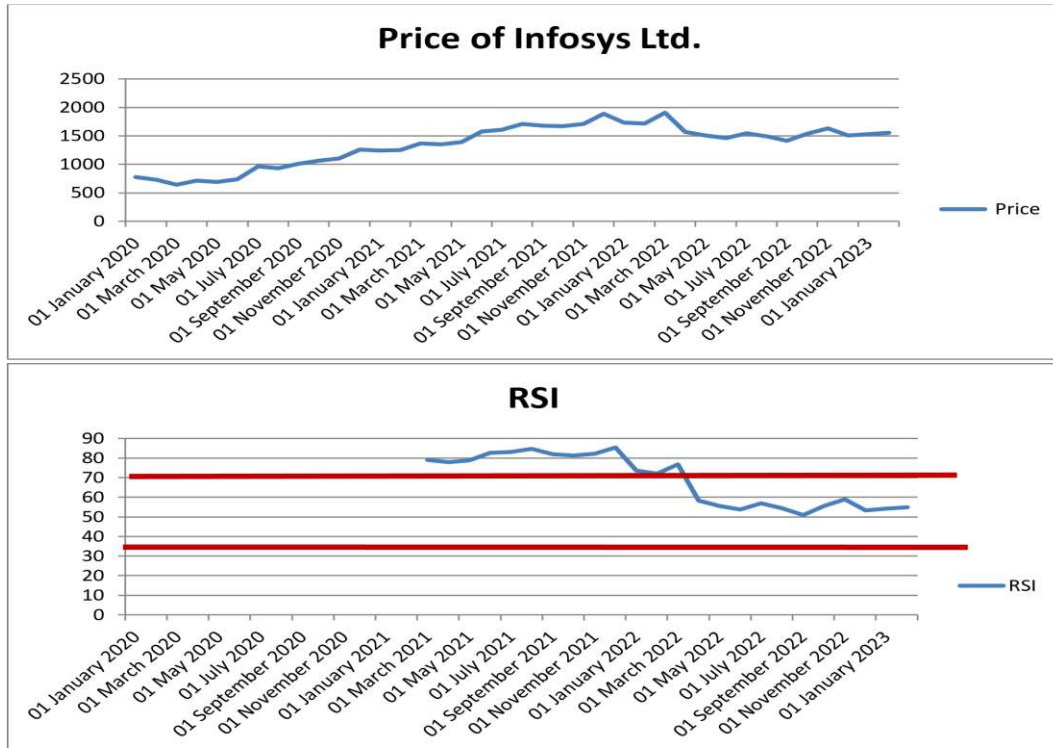
INFOSYS LTD.
Table 1. Monthly price and RSI of Infosys Ltd.

Date	Price	RSI
01 January 2020	0775.95	-
01 February 2020	0731.70	-
01 March 2020	0641.50	-
01 April 2020	0715.50	-
01 May 2020	0691.00	-
01 June 2020	0735.95	-
01 July 2020	0966.00	-
01 August 2020	0928.60	-
01 September 2020	1,008.25	-
01 October 2020	1,060.60	-
01 November 2020	1,100.00	-
01 December 2020	1,255.80	-
01 January 2021	1,239.05	-
01 February 2021	1,253.30	-
01 March 2021	1,368.05	79.07296475
01 April 2021	1,354.35	77.94366218
01 May 2021	1,393.75	78.8779459
01 June 2021	1,580.80	82.63798013
01 July 2021	1,610.50	83.15086132
01 August 2021	1,706.45	84.72115296
01September 2021	1,675.20	82.03942364
01 October 2021	1,667.75	81.37808864

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01 November 2021	1,712.65	82.30395817
01 December 2021	1,887.75	85.3607674
01 January 2022	1,736.20	73.52299777
01 February 2022	1,715.60	72.06013824
01 March 2022	1,906.85	76.69598506
01 April 2022	1,567.55	58.23496344
01 May 2022	1,503.60	55.52232377
01 June 2022	1,461.90	53.76368157
01 July 2022	1,549.70	56.86191318
01 August 2022	1,492.95	54.32789601
01 September 2022	1,413.45	50.90543739
01 October 2022	1,537.65	55.61019944
01 November 2022	1,634.95	58.93065713
01 December 2022	1,508.20	53.3338831
01 January 2023	1,533.75	54.2765603
01 February 2023	1,550.65	54.92515893

Source: Research calculation

Fig. 1 Graphical presentation of monthly price and RSI of Infosys Ltd.

From the data shown in the table, it can be seen that the prices drop from 775.95 and reaches the minimum price of 641.5 from January 2020 to March 2020 due to the pandemic effect. After March 2020 there is an upward trend followed by the share prices. The prices reach a maximum of 1906.85 in March 2022 followed by a drop up to 1,413.45 till September 2022. The prices again start rising and reached 1,550.65 in February 2023.

It can be seen that the RSI was above 70 till March 2022 which is an overbought situation. This indicates that the security prices will come down and follow a bearish trend. In this situation, investors should sell the securities. From March 2022 to February 2023 The RSI is within the limit that is below 70 and above 30.

TECH MAHINDRA LTD.
TABLE 2. Monthly price and RSI of Tech-Mahindra Ltd.

Date	Prices	RSI
01 January 2020	740.11	-
01 February 2020	691.62	-
01 March 2020	525.4	-
01 April 2020	507.52	-
01 May 2020	492.84	-
01 June 2020	504.87	-
01 July 2020	633.32	-
01 August 2020	688.46	-
01 September 2020	735.61	-
01 October 2020	769.99	-
01 November 2020	830.16	-
01 December 2020	921.38	-
01 January 2021	910.2	-
01 February 2021	869.92	-
01 March 2021	938.65	62.47110553
01 April 2021	909.26	60.08210449
01 May 2021	967.25	63.08204721
01 June 2021	1,037.12	66.36220794
01 July 2021	1,160.29	71.21720873
01 August 2021	1,388.70	77.65730358
01 September 2021	1,324.38	72.72277782

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01 October 2021	1,417.67	75.18563909
01 November 2021	1,493.39	77.00079071
01 December 2021	1,734.73	81.61652507
01 January 2022	1,432.89	64.2493618
01 February 2022	1,366.04	61.14602903
01 March 2022	1,452.70	63.60049473
01 April 2022	1,219.75	53.76780038
01 May 2022	1,143.45	50.98731452
01 June 2022	968.82	45.22312808
01 July 2022	1,030.73	47.48958749
01 August 2022	1,057.71	48.48983952
01 September 2022	991.37	46.16141925
01 October 2022	1,045.23	48.33071441
01 November 2022	1,077.00	49.62020156
01 December 2022	1,016.40	47.20044992
01 January 2023	1,015.00	47.14325309
01 February 2023	1,119.00	51.8144932

Source: Research calculation

From the above data, it is noted that the prices start to drop from January 2020 from 740.11 to the lowest of 492.84 in May 2020. Afterwards, the prices follow a bullish trend and reach the maximum price of this period of 1734.73 December 2021. The trend line also depicts the head and shoulder chart between July 2021 and April 2022 which means prices will follow a bearish trend after this. Then declined to 968.82 in June 2022 and was followed by an upward trend thereafter.

The RSI was under 70 up to June 2021 but it crossed 70 in July 2021. It is an overbought situation which indicates that the security prices will come down and follow a bearish trend. In this situation, investors should sell the securities to earn maximum profit. After being in an overbought situation for months The RSI finally comes under 70 in January 2022.
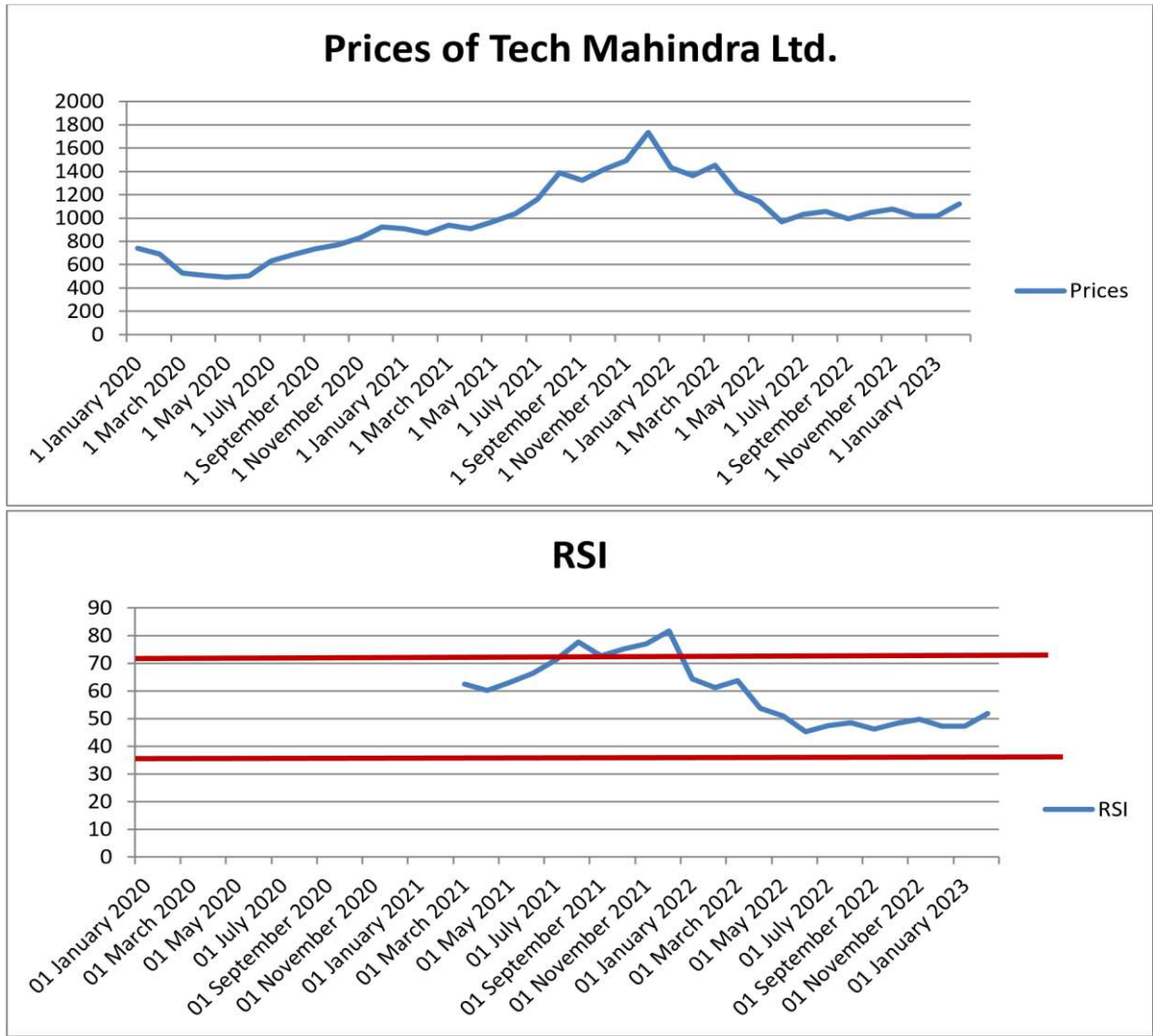
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Fig. 2 Graphical presentation of monthly price and RSI of Tech-Mahindra Ltd.

WIPRO LTD.

TABLE 3. Monthly price and RSI of Wipro Ltd.

Date	Prices	RSI
01 January 2020	0236.80	-
01 February 2020	0221.45	-
01 March 2020	0196.70	-
01 April 2020	0190.95	-
01 May 2020	0212.80	-
01 June 2020	0219.65	-
01 July 2020	0280.95	-
01 August 2020	0271.30	-

	0313.55	-
01 September 2020		
01 October 2020	0340.70	-
01 November 2020	0350.50	-
01 December 2020	0386.25	-
01 January 2021	0417.90	-
01 February 2021	0410.30	-
01 March 2021	0414.15	79.2126503
01 April 2021	0492.75	83.74533097
01 May 2021	0539.05	85.72053141
01 June 2021	0545.65	85.9820279
01 July 2021	0587.15	87.52856103
01 August 2021	0640.95	89.19310022
01 September 2021	0634.10	87.59012944
01 October 2021	0646.75	88.01837675
01 November 2021	0637.25	85.62856432
01 December 2021	0715.35	88.41370509
01 January 2022	0572.60	63.99987621
01 February 2022	0555.80	61.83579236
01 March 2022	0591.90	64.6053782
01 April 2022	0508.80	54.75484692
01 May 2022	0478.05	51.61849288
01 June 2022	0416.05	45.90860173
01 July 2022	0423.70	46.69215417
01 August 2022	0413.55	45.74531594
01 September 2022	0394.25	43.92148395
01 October 2022	0386.55	43.18178184
01 November 2022	0406.90	45.78069729
01 December 2022	0392.75	44.26456381
01 January 2023	0398.85	45.10851646
01 February 2023	0393.30	44.4490436

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Source: Research calculation
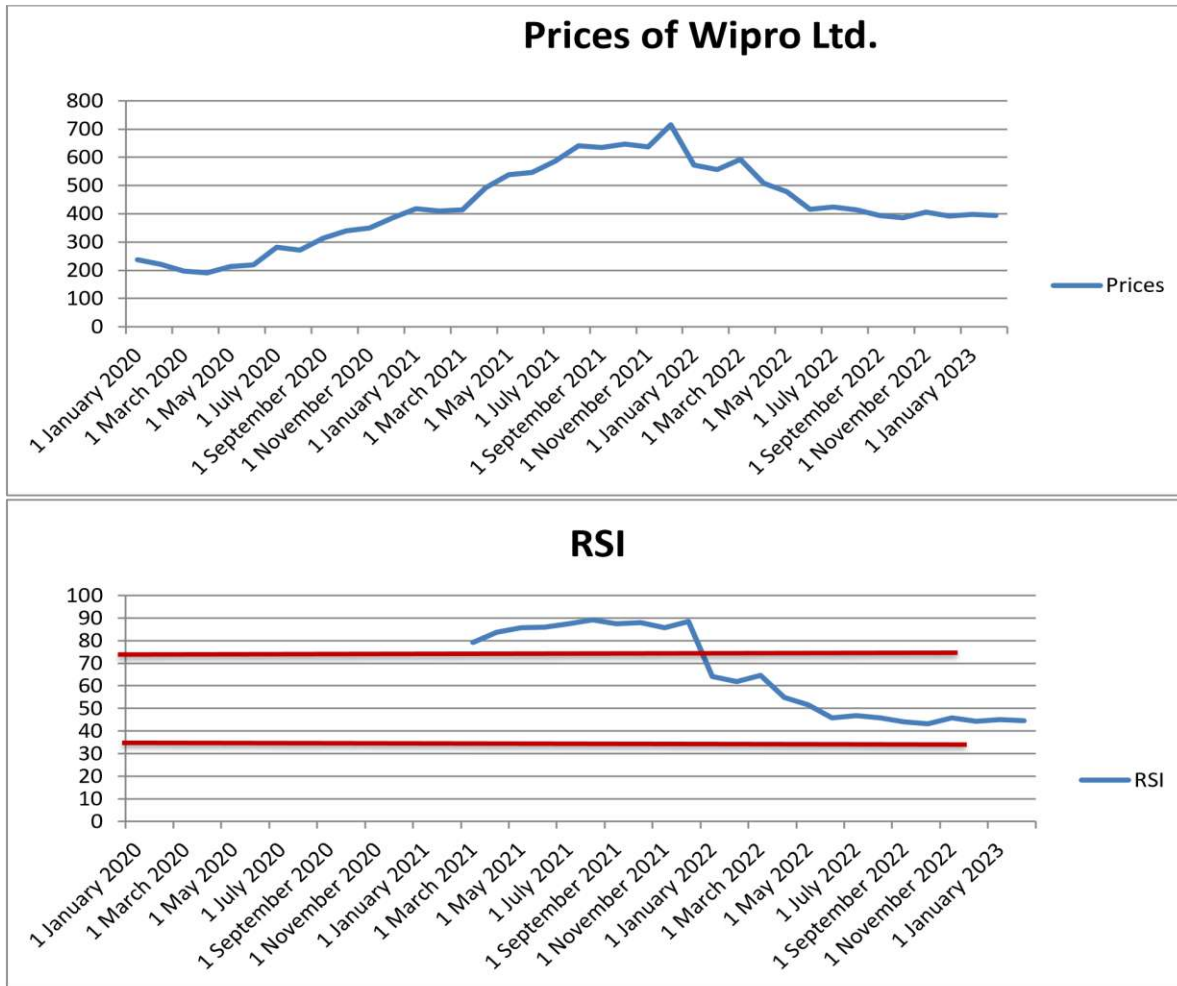

Prices of Wipro Ltd.

RSI

Fig. 3 Graphical presentation of monthly price and RSI of Wipro Ltd.

From the monthly data of share prices, a price drop is witnessed from January 2020 to April 2020 and prices reached the minimum of the period which is 190.95. After that, it shoot up to its maximum of 715.35 in December 2021. And then starts to decline with some daily fluctuations. 14-period RSI was constantly above 70 from March 2021 to December 2021 which indicates a bearish trend and gives a sell signal to the investors. In January 2022 it is calculated as 63.99987621 and it comes under 70. The RSI remained within the limit that is above 30 and below 70 from January 2022 till February 2023.

Conclusion:

Initially, the IT industry reacted to the pandemic but it bounced back within 3 to 4 months and followed a bullish trend and traded at much higher prices than before. And the industry performed very well from November 2021 to March 2022. From the analysis of the data, it can be concluded that the RSI is a very useful tool that can be used by investors in making buy, sell or hold

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decisions. It is analysed, when the RSI is above 70 it is followed by a bearish trend and prices fall. Therefore investors should sell their securities when the RSI indicates an overbought situation.

In the situation where RSI is below 30, it indicates an oversold situation followed by a rise in the prices. Therefore, the investors are advised to buy the securities in such a situation.

From the analysis of the past data, the investors who own the shares of IT companies can adopt a hold strategy as the RSI is within the 70-30 limit. Investors who want to invest in the IT sector should choose the securities of Infosys Ltd. As there are indications of a price rise in future.

Limitations of the study:

This study does not take into consideration other tools of technical analysis.

This research is conducted on the IT sector, specifically the NIFTY-IT index.

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