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An analysis of movements in prices of Nifty index, using relative strength index indicator

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Abstract

Technical analysis is conducted to predict the price movements in stocks in future. There are so many technical analysis tools which help the investors to pick the right stock at right time. Such analysis is based on different charts and indicators. Historical data of 249 days for the period of1 June 2021 to 31 May 2022was collected from the website of NSE India for conducting the research. Relative strength index indicator which indicates under price, overprice or optimum price of shares was applied on this data. In this research, we used Microsoft Excel in finding the values of RSI. The result shows that RSI indicators is trustworthy to understand the future predictions of Nifty Index. This study indicates that RSI

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indicator is helpful for the investors to categorize the current movements and risks connected with the stock market. Traders and investors can use this indicator for better trading.

Subject Classification: *G1, G11, N2.*

Keywords: *Nifty index, Relative strength index (RSI), Technical indicator.*

Introduction

Traders and investors participate in the stock market in order to get a higher return, but it is possible only if they pick the right stocks. We must be knowledgeable and patient before investing in the stock market. Unprepared individuals routinely enter this market and lose their hard-earned money. Investors make investments after doing suitable fundamental and technical analysis. Both fundamental and technical analyses are used to forecast future changes in share values. We make an effort to predict future prices using data from the past. Fundamental analysis is concerned with the status of the overall economy, the industry, and the financial stability of particular businesses. Traders use technical analysis to to take up any trade. Technical analysis is the process of predicting future changes in financial price based on an analysis of previous price changes. Investors can forecast what is "possible" to happen to prices over time with the use of technical analysis. A change in the rate of interest of Fed Bank also effect Indian stock market time to time. There are so many good platforms such as money https://www.moneycontrol.com/, https://www.investing.com/, https://www.moneycontrol.com/, https://www.tickertape.in etc. are available to conduct technical analysis. You can use these platforms without any cost, even most broking firms firms are also providing facilities for technical analysis, so that, investors can take the right decision.

78 technical indicators are utilized to forecast future price movement. Applying and understanding all of these is an arduous process. Here, we're using the RSI indicator, a momentum oscillator used to analyze overbought and oversold market conditions by measuring the pace and change of price movements. Technical analysts all around the world frequently employ the leading indicator known as the RSI. It can move into

a range from 0 to 100. If it rises beyond 70, it is thoughtfully overbought; if it falls below 30, it is thoughtfully oversold.

Following formula is used to find the values of RSI : RSI = 100 – 100 / (1 + RS) RS = Average Gain over specified period(14 days)/ Average loss over the same period The default setting for Relative Strength Index is 14, but you may change this value as per your requirement.

Review of literature:

There was a possibility for profit over the following 10 years. In 216 of the 332 instances evaluated in the study to evaluate how well the RSI indicator performed when trading on capital markets using shares of the major steel firms. From this angle, the RSI indicator was successfully employed in trading with steel businesses. However, from the standpoint of a trader, it is crucial to maintain their market position while it is lucrative. (J. ZUZIK, 2014)

Shik and Chong (2007) compared the effectiveness of the RSI and MA trading rules on the daily exchange rates of six different currencies and discovered that the trading rules can produce positive risk-adjusted returns and that their profitability is positively correlated with central bank interventions. Additionally, it was discovered that the effect of interest rate difference, on the return from the trading rule is unimportant.

*According to the effi*cacy of technical trading tactics, this study attempts to examine the efficiency of the Malaysian stock market from the perspective of Shariah-compliant and traditional equities. In Shariah-compliant samples, according to the resultant Jensen's alpha, 8 out of 10 strategies are successful in producing abnormal returns, but only 3 out of 10 strategies are successful in conventional samples (Pick-Soon Ling, 2020).

A technical analysis of a few chosen firms that are part of India's top stock market index, the S&P CNX Nifty 50, was conducted as part of the research. Moving Average Convergence Divergence (MACD), Stochastic Relative Strength Index (Stoch RSI), and Average Directional Index (ADX).

The study has demonstrated that while RSI and MACD provide early warnings, they are dangerous due to the significant numbers of false signals they also produce (Shalini, 2019).

Objectives of the study

- To analyse the significance of RSI indicator in future price movement of the nifty index on the basis of past data.
- To provide valuable suggestions to the traders and investors regarding investment in capital market.

Research methodologies:

For this investigation, we used secondary data that we collected from the NSE India.com website. The closing values of the Nifty index were used to forecast future price movement of the Nifty using the technical indicator, the Relative Strength Index (RSI). RSI is one of the most reliable technical indicators for forecasting future price changes in stocks or the Nifty index. The market was active for just 249 days out of 365, thus we only used data from those 249 days for our analysis. We used data from 1 June 2021 to 31 May 2022. Microsoft Excel was used to calculate the RSI value. It is a descriptive and analytical study by definition. The study is significant for traders as well as investors.

Data analysis and interpretations:

The RSI was determined in this study, using data of 249 trading days. Only the stock's intrinsic strength, which is based on its prior performance, is measured by the RSI indicator. RSI indicator's default computation period is 14 days, it is intended to be used with the most recent 14 candles. However, we may also use a 12 or 16 day time range depending on the nature of the share price volatility. The RSI measurements always range between 0 and 100. The parameters of 70 and 30 are key focused point in the above range of 0 to 100. These parameters of 70 and 30 are not fixed;

these levels must be adjusted by traders and investors in accordance with the scrip's natural volatility. The Central line of 50 is equally important to consider whether this indicates a hold or buy position. The region is considered to be "overbought" when the RSI readings are greater than 70 and profit booking can be done this time. It is predicted that the price will decline after crossing the level of 70. RSI between 50 to 70 indicates bullish momentum and it's a good time to buy the shares to get a profit in short period. But with such levels, we should also focus on different charts pattern. RSI between 30 to 50 shows bearish momentum, this time we can go with hold position. Values of RSI lesser than 30 indicates oversold zone and it's the right time to purchase the shares in little quantities with each dip. RSI Table has been constructed on the basis of 14 days' time frame and RSI values have been displayed in the below mentioned table with four different colours. Red colour indicates overbought conditions, green indicates oversold conditions, orange indicates bullish momentum, and purple indicates hold condition with poor market position.

RSI Table

Date	Closing Price (INR)	14 Day RSI	Indication	Date	Closing Price (INR)	14 Day RSI	Indication
01-Jun-21	15574.9			22-Jun-21	15772.8	61.68	BUY
02-Jun-21	15576.2			23-Jun-21	15687	49.79	HOLD
03-Jun-21	15690.4			24-Jun-21	15790.5	56.71	BUY
04-Jun-21	15670.3			25-Jun-21	15860.4	56.14	BUY
07-Jun-21	15751.7			28-Jun-21	15814.7	54.06	BUY
08-Jun-21	15740.1			29-Jun-21	15748.5	56.42	BUY
09-Jun-21	15635.4			30-Jun-21	15721.5	48.99	HOLD
10-Jun-21	15737.8			01-Jul-21	15680	42.4	HOLD
11-Jun-21	15799.4			02-Jul-21	15722.2	44.5	HOLD
14-Jun-21	15811.9			05-Jul-21	15834.4	47.99	HOLD
15-Jun-21	15869.3			06-Jul-21	15818.3	53.24	BUY
16-Jun-21	15767.6			07-Jul-21	15879.7	62.24	BUY
17-Jun-21	15691.4			08-Jul-21	15727.9	52.44	BUY
18-Jun-21	15683.4			09-Jul-21	15689.8	46.81	HOLD
21-Jun-21	15746.5	60.515	BUY	12-Jul-21	15692.6	45.36	HOLD

Date	Closing Price (INR)	14 Day RSI	Indication	Date	Closing Price (INR)	14 Day RSI	Indication
13-Jul-21	15812.4	56.98	BUY	26-Aug-21	16636.9	71.85	SALE
14-Jul-21	15854	53.8	BUY	27-Aug-21	16705.2	79.36	SALE
15-Jul-21	15924.2	53.82	BUY	30-Aug-21	16931.1	83.61	SALE
16-Jul-21	15923.4	56.87	BUY	31-Aug-21	17132.2	86.1	SALE
19-Jul-21	15752.4	50.22	BUY	01-Sep-21	17076.3	82.17	SALE
20-Jul-21	15632.1	45.48	HOLD	02-Sep-21	17234.2	83.2	SALE
22-Jul-21	15824.1	56.32	BUY	03-Sep-21	17323.6	82.18	SALE
23-Jul-21	15856.1	55.92	BUY	06-Sep-21	17377.8	82.46	SALE
26-Jul-21	15824.5	49.53	HOLD	07-Sep-21	17362.1	80.66	SALE
27-Jul-21	15746.5	46.77	HOLD	08-Sep-21	17353.5	83.2	SALE
28-Jul-21	15709.4	42.17	HOLD	09-Sep-21	17369.3	92.56	SALE
29-Jul-21	15778.5	52.52	BUY	13-Sep-21	17355.3	91.01	SALE
30-Jul-21	15763.1	53.73	BUY	14-Sep-21	17380	90.02	SALE
02-Aug-21	15885.2	58.75	BUY	15-Sep-21	17519.5	91.22	SALE
03-Aug-21	16130.8	62.98	BUY	16-Sep-21	17629.5	92.02	SALE
04-Aug-21	16258.8	65.42	BUY	17-Sep-21	17585.2	88.03	SALE
05-Aug-21	16294.6	64.48	BUY	20-Sep-21	17396.9	70.81	SALE
06-Aug-21	16238.2	61.8	BUY	21-Sep-21	17562	69.84	BUY
09-Aug-21	16258.3	71.37	SALE	22-Sep-21	17546.7	72.55	SALE
10-Aug-21	16280.1	79.86	SALE	23-Sep-21	17823	75.35	SALE
11-Aug-21	16282.3	75.59	SALE	24-Sep-21	17853.2	74.03	SALE
12-Aug-21	16364.4	76.89	SALE	27-Sep-21	17855.1	72.74	SALE
13-Aug-21	16529.1	82.67	SALE	28-Sep-21	17748.6	66.94	BUY
16-Aug-21	16563.1	89.48	SALE	29-Sep-21	17711.3	65.3	BUY
17-Aug-21	16614.6	93.15	SALE	30-Sep-21	17618.2	59.98	BUY
18-Aug-21	16568.9	88.54	SALE	01-Oct-21	17532.1	56.7	BUY
20-Aug-21	16450.5	80.46	SALE	04-Oct-21	17691.3	60.71	BUY
23-Aug-21	16496.5	79.05	SALE	05-Oct-21	17822.3	60.48	BUY
24-Aug-21	16624.6	76.41	SALE	06-Oct-21	17646	50.55	BUY
25-Aug-21	16634.7	73.01	SALE	07-Oct-21	17790.4	56.37	BUY

Date	Closing Price (INR)	14 Day RSI	Indication	Date	Closing Price (INR)	14 Day RSI	Indication
08-Oct-21	17895.2	66.31	BUY	24-Nov-21	17415.1	35.17	HOLD
11-Oct-21	17946	63.58	BUY	25-Nov-21	17536.3	41.17	HOLD
12-Oct-21	17992	65.42	BUY	26-Nov-21	17026.5	28.61	B.I.S.Q
13-Oct-21	18161.8	62.67	BUY	29-Nov-21	17054	24.08	B.I.S.Q
14-Oct-21	18338.6	66.35	BUY	30-Nov-21	16983.2	23.52	B.I.S.Q
18-Oct-21	18477.1	69.19	BUY	01-Dec-21	17166.9	30.32	HOLD
19-Oct-21	18418.8	71.31	SALE	02-Dec-21	17401.7	39.52	HOLD
20-Oct-21	18266.6	66.46	BUY	03-Dec-21	17196.7	29.66	B.I.S.Q
21-Oct-21	18178.1	66.64	BUY	06-Dec-21	16912.3	26.1	B.I.S.Q
22-Oct-21	18114.9	67.56	BUY	07-Dec-21	17176.7	34.54	HOLD
25-Oct-21	18125.4	64.37	BUY	08-Dec-21	17469.8	42.48	HOLD
26-Oct-21	18268.4	64.65	BUY	09-Dec-21	17516.9	45.52	HOLD
27-Oct-21	18211	70.12	SALE	10-Dec-21	17511.3	51.96	BUY
28-Oct-21	17857.3	52.07	BUY	13-Dec-21	17368.3	47.27	HOLD
29-Oct-21	17671.7	43.4	HOLD	14-Dec-21	17324.9	48.15	HOLD
01-Nov-21	17929.7	49.57	HOLD	15-Dec-21	17221.4	43.48	HOLD
02-Nov-21	17889	47.28	HOLD	16-Dec-21	17248.4	55.74	BUY
03-Nov-21	17829.2	40.69	HOLD	17-Dec-21	16985.2	48.42	HOLD
04-Nov-21	17916.8	37.57	HOLD	20-Dec-21	16614.2	42.53	HOLD
08-Nov-21	18068.6	38.06	HOLD	21-Dec-21	16770.9	41.89	HOLD
09-Nov-21	18044.3	38.83	HOLD	22-Dec-21	16955.5	40.67	HOLD
10-Nov-21	18017.2	41.96	HOLD	23-Dec-21	17072.6	47.31	HOLD
11-Nov-21	17873.6	40.52	HOLD	24-Dec-21	17003.8	52.19	BUY
12-Nov-21	18102.8	49.66	HOLD	27-Dec-21	17086.3	47.63	HOLD
15-Nov-21	18109.5	49.55	HOLD	28-Dec-21	17233.3	43.28	HOLD
16-Nov-21	17999.2	42.24	HOLD	29-Dec-21	17213.6	41.25	HOLD
17-Nov-21	17898.7	41.22	HOLD	30-Dec-21	17204	41.15	HOLD
18-Nov-21	17764.8	47.03	HOLD	31-Dec-21	17354.1	49.59	HOLD
22-Nov-21	17416.6	42.59	HOLD	03-Jan-22	17625.7	57.62	BUY
23-Nov-21	17503.4	36.25	HOLD	04-Jan-22	17805.3	64.25	BUY

Date	Closing Price (INR)	14 Day RSI	Indication	Date	Closing Price (INR)	14 Day RSI	Indication
06-Jan-22	17745.9	68.48	BUY	18-Feb-22	17276.3	48.84	HOLD
07-Jan-22	17812.7	84.17	SALE	21-Feb-22	17206.7	42.83	HOLD
10-Jan-22	18003.3	84.48	SALE	22-Feb-22	17092.2	36.2	HOLD
11-Jan-22	18055.8	83.24	SALE	23-Feb-22	17063.3	39.2	HOLD
12-Jan-22	18212.4	83.63	SALE	24-Feb-22	16248	29.36	B.I.S.Q
13-Jan-22	18257.8	87.52	SALE	25-Feb-22	16658.4	41.27	HOLD
14-Jan-22	18255.8	86.76	SALE	28-Feb-22	16793.9	42.75	HOLD
17-Jan-22	18308.1	85.92	SALE	02-Mar-22	16606	36.82	HOLD
18-Jan-22	18113.1	76.9	SALE	03-Mar-22	16498.1	32.79	HOLD
19-Jan-22	17938.4	69.99	BUY	04-Mar-22	16245.4	32.57	HOLD
20-Jan-22	17757	60.79	BUY	07-Mar-22	15863.2	34.15	HOLD
21-Jan-22	17617.2	49.75	HOLD	08-Mar-22	16013.5	25.49	B.I.S.Q
24-Jan-22	17149.1	33.8	HOLD	09-Mar-22	16345.4	33.9	HOLD
25-Jan-22	17278	34.08	HOLD	10-Mar-22	16594.9	39.13	HOLD
27-Jan-22	17110.2	34.28	HOLD	11-Mar-22	16630.5	40.13	HOLD
28-Jan-22	17102	31.9	HOLD	14-Mar-22	16871.3	45.13	HOLD
31-Jan-22	17339.9	33.5	HOLD	15-Mar-22	16663	43.93	HOLD
01-Feb-22	17576.9	39.09	HOLD	16-Mar-22	16975.4	48.85	HOLD
02-Feb-22	17780	40.36	HOLD	17-Mar-22	17287.1	65.66	BUY
03-Feb-22	17560.2	35.56	HOLD	21-Mar-22	17117.6	57.46	BUY
04-Feb-22	17516.3	34.96	HOLD	22-Mar-22	17315.5	58.31	BUY
07-Feb-22	17213.6	29.79	B.I.S.Q	23-Mar-22	17245.7	60.59	BUY
08-Feb-22	17266.8	33.51	HOLD	24-Mar-22	17222.8	62.34	BUY
09-Feb-22	17463.8	40.83	HOLD	25-Mar-22	17153	66.49	BUY
10-Feb-22	17605.9	47.04	HOLD	28-Mar-22	17222	77.85	SALE
11-Feb-22	17374.8	45.41	HOLD	29-Mar-22	17325.3	77.42	SALE
14-Feb-22	16842.8	44.34	HOLD	30-Mar-22	17498.3	75.81	SALE
15-Feb-22	17352.5	51.21	BUY	31-Mar-22	17464.8	71.56	SALE
16-Feb-22	17322.2	53.6	BUY	01-Apr-22	17670.5	73.77	SALE
17-Feb-22	17304.6	53.43	BUY	04-Apr-22	18053.4	75.37	SALE

Date	Closing Price (INR)	14 Day RSI	Indication	Date	Closing Price (INR)	14 Day RSI	Indication
05-Apr-22	17957.4	79.19	SALE	05-May-22	16682.7	33.9	HOLD
06-Apr-22	17807.7	70.25	SALE	06-May-22	16411.3	31.32	HOLD
07-Apr-22	17639.6	59.22	BUY	09-May-22	16301.9	33.59	HOLD
08-Apr-22	17784.4	67.67	BUY	10-May-22	16240.1	35.65	HOLD
11-Apr-22	17675	60	BUY	11-May-22	16167.1	29.79	B.I.S.Q
12-Apr-22	17530.3	57.6	BUY	12-May-22	15808	18.33	B.I.S.Q
13-Apr-22	17475.7	56.64	BUY	13-May-22	15782.2	19.88	B.I.S.Q
18-Apr-22	17173.7	50.48	BUY	16-May-22	15842.3	24.14	B.I.S.Q
19-Apr-22	16958.7	44.23	HOLD	17-May-22	16259.3	29.7	B.I.S.Q
20-Apr-22	17136.6	46	HOLD	18-May-22	16240.3	31.66	HOLD
21-Apr-22	17392.6	47.84	HOLD	19-May-22	15809.4	20.09	B.I.S.Q
22-Apr-22	17172	44.43	HOLD	20-May-22	16266.2	34.59	HOLD
25-Apr-22	16954	36.43	HOLD	23-May-22	16214.7	34.36	HOLD
26-Apr-22	17200.8	32.97	HOLD	24-May-22	16125.2	38.63	HOLD
27-Apr-22	17038.4	32.12	HOLD	25-May-22	16025.8	36.99	HOLD
28-Apr-22	17245.1	39.29	HOLD	26-May-22	16170.2	44.97	HOLD
29-Apr-22	17102.6	39.68	HOLD	27-May-22	16352.5	51.02	BUY
02-May-22	17069.1	35.64	HOLD	30-May-22	16661.4	57.75	BUY
04-May-22	16677.6	32.01	HOLD	31-May-22	16584.6	57.67	BUY

Sources: nseindia.com

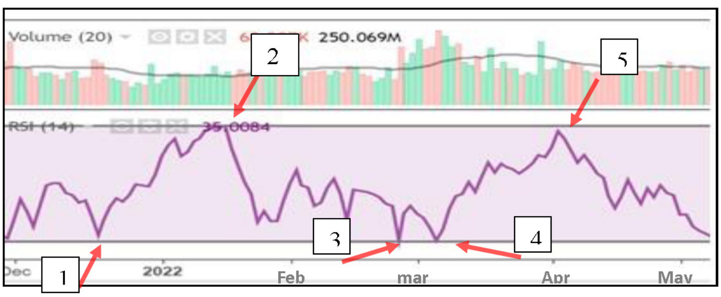
We can notice the hold and buy positions in the 34 RSI indications in the months of June, July and first week of August, since the RSI is fluctuating between 40 and 60. In this duration, investors keeping the hold positions on 9th July, 12th July, 20th July, 26thJuly, 27th July and on 28th July can square off their positions on the days when it is indicating a buying signal. From 9th August 2021 to 27th September 2021, we can see sales indications. In this period, these stock holders earned a gain of around 50% to 75%. We can observe RSI readings over 70 in August and the middle of September, which implies overbought zones. Again, there was bullish momentum from September 28th, 2021 to 6th January 2022. From 7th January 2022 to 18th January 2022, there was a sale indication. During this period, investors again earned a profit of around 50% to 70%. A sluggish market can be seen from October 29 to November 25, after which investors started making fresh purchases that gave them a decent return until mid-January. It once more began a negative momentum in the third week of January, and it continued until the second week of March 2022.

Graph-1

Sources: investing.com

As we can see in graph-1, high green bars indicate a buying trend, while high red bars indicating sales pressure. The price began to fall from the mid of June, following the overbought zone indicated by arrow 1st. From the beginning of August, a bullish momentum can be seen through the 2_{nd} arrow, which remained till mid of August. Graph's 3^{rd}, 4^{th} and 5^{th} arrows indicate an overbought zone. The price drop is indicated by arrows 6^{th} and 7^{th}, and it actually occurred. From mid-October to mid-December, prices are declining but they are range-bound. Price reached the RSI line of 30, which resembled the oversold zone and was signalled with the seventh arrow, in the month of December.

Graph-2



Sources: investing.com

When it reached the oversold zone, the price started increasing till mid of February, giving a good return to shareholders as indicated by 1st arrow refer Graph-2). In mid Febuary it touched the overbought line and started decreasing as indicated by 2nd arrow. For several trading sessions it was range bound. The market remained in a range over the following 20 trading days. In the month of March, it touched the oversold zone twice as indicated by arrow 3rd and an arrow 4th. These arrows are offering signals of buying. Investors made a profit over the following 17 trading sessions. The overbought zone is shown by the 5th arrow, and as the price touched this line, it began to decline. In this case, the short seller made a sizable profit.

Conclusions

The analysis finds that, except from the beginning of the conflict between Ukraine and Russia, which began on February 24, and the rumour of a Federal bank interest rate increase, the stock values of the CNX Nifty 50 Index were regularly distributed across this time period. The stock market is now functioning under pressure due to the conflict between Ukraine and Russia and the USA's inflation rate. This study discovered that the RSI test is reliable for every trader while engaging in stock market trading activities. It is clear from the data and graph above that RSI is a trustworthy technical indicator for anticipating share price movement. Despite the fact that while the outcome is not always certain, in most cases it will provide helpful clues. The outcomes provided by them are not guaranteed. But during the hold and oversold zones, if investors keep patience, they can earn a good return, as we have seen in above RSI Table. People who like to invest in shares or the index of the Nifty 50 can use these technical indicators to increase the value of their investments because emerging markets like India are prone to volatility due to the interdependence of their economies.

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