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Original Research Article

Trend identification with the relative strength index (RSI) technical indicator –A conceptual study

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ABSTRACT

We all must agree that the word "trend" is now the buzzword of the stock market. As a part of investment strategy and analysis, it is always suggested that the investors should keep an eye on medium-term and short-term changes in addition to longer-term (secular) patterns. Traders and investors use the RSI as a momentum indicator. Overbought and oversold situations are indicated by RSI values between 70 and 30. Over the past two decades, several techniques have been developed to analyze NIFTY 50 data for investment purposes. In this paper, we have estimated the returns by looking at the two trends i.e., 50-50 and 60-40. In addition to this, how to trade and back-test our strategy is also explained. Applying these two RSI strategies to the NIFTY 50 chart revealed that 50-50 offers a higher long-term return, while 60-40 provides a superior short-term return. Finally, the strategies' returns F-statistics and P-values were calculated and analyzed to determine their significance level and acceptability.

1. Introduction

1.1. Introduction to RSI technical indicator

The Relative Strength Index (RSI) is a J. Wilder-invented momentum oscillator that estimates price changes by measuring how quickly and in which direction prices move. The RSI may be anything between 0 and 100. According to author Donald J. Wilder, RSI is overbought when it rises over 70, and oversold when it falls below 30. There are several ways to use swinging points, divergences, and crossing the centreline to produce signals. Furthermore, the RSI is often utilized to detect the unfolding trend. It is very important to pay attention to the main trend to guarantee those indicator findings are correctly interpreted. According to Constance Brown, CMT, a well-known market analyst, a reading of the RSI that is much higher than the historical average would indicate a bullish trend, while a reading that is significantly lower than the historical average would signal a bearish trend.[1]

1.2. Calculation of RSI

To make things simpler, RSI has been broken down into its basic components: RS, Average Gain, and Average Loss. Wilder suggested the 14 periods in his book as the default period lengths. If there are no losses, there are no positive values to reflect them. To get initial estimates of average gain and average loss, simple 14-period averaging is employed:

1. FAG= Sum of Gains over the past 14 periods / 14
2. FAL= Sum of Losses over the past 14 periods / 14

Where FAG=first average gain and FAL=first average loss

In the second part of calculations, it is based on the prior averages and the current gain loss:

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1. AG= [(previous Average Gain) x 13 + current Gain] / 14.
2. AL= [(previous Average Loss) x 13 + current Loss] / 14.

Where, AG=average gain and AL=average loss

Smoothing techniques comparable to those used to build an exponential moving average are utilized in this case. In addition to being more precise as computation time increases, RSI readings also become more consistent. [2]

1.3. Scope of research

Despite the vast amount of information available about stock trading and investing, new traders and investors often lose money in the stock market owing to a lack of knowledge about trading and investing in stocks using technical indicators. The RSI technical indicator and two strategies for modifying the RSI's default parameters were the subjects of our paper. By presenting knowledge of market trends and by utilizing the RSI indicator, these papers demonstrate how to find particular market trends. These two strategies have also been applied to the NIFTY 50 index chart, and the resulting trend has been studied using two modified RSI strategies mentioned in the paper. [3]

1.4. Research methodology

Trends and the RSI technical indicator were two of the most significant topics we discussed in this paper. We utilized trading view.com, a website that allows traders and investors to analyze charts and apply technical indicators to them. [4] I gathered all the secondary data from the Yahoo Finance website to determine the NIFTY 50 indexs' closing price. Excel is used to compute RSI readings, and the resulting calculations are generated. Because TradingView.com offers free charting, these new RSI strategies may be used in observational research. We have described how to apply the RSI technical indicator to a chart and then how to analyze a trend using a new RSI technique in the paper that follows. To compute the F-test, we first estimated the return in a particular year of both strategies and then calculated the F- statistical value and P-value in excel.

2. Literature Review

The currency market served as a platform for Bing Anderson and Shuyun Li to explore market efficiency (2015). If the market is efficient, there will be no profitability for the RSI, which implies that the market is not efficient. Conversely, if the market is not efficient, then it must have profitability, which implies that the market is efficient. While these researchers found that over the last decade when an RSI equal to 30 is used to indicate a buying opportunity and an RSI of over 70 is used to signal a selling opportunity, RSI does not provide profitable trading but rather results in small losses. According to the paper, they note that the profitability of an indicator diminishes when well-known technical indicators and conventional parameter configurations are used by practitioners. As well, the study's advice was also passed on to practitioners, who were advised to pursue the "unpaved" route, and to academics, who found the study's conclusions to apply to the market efficiency theory. [5]

Murtadha Alhilfi (2019) said in his study that one method to assist speculators in making sound trading decisions is to use technical analysis through the RSI. His objective is to show the value of technical analysis by using the RSI in generating speculations, forecasting future market changes, and contributing to the process of making critical decisions by providing suggestions. Using the Relative Strength Index (RSI) enables the Bank of Baghdad to maintain a steady position on the Iraqi Stock Exchange. By offering a proactive suggestion, the RSI helped speculators at the Bank of Baghdad on the Iraqi Stock Exchange. He computed and used RSI analysis to the Bank of Baghdad's stocks and found that RSI is a useful and effective technique for doing technical analysis on the bank's equities. RSI allows traders at the Iraq Stock Exchange's bank of Baghdad to anticipate market trends and forecast future prices. [6]

Dr. Yogesh D Mahajan and Dr. Krishnamurthy Inumula (2015) used the RSI AND MACD technical indicators to analyze companies in the information technology, financial, automotive, and fast-moving consumer goods (FMCG) sectors listed on Indian stock exchanges such as the NSE. To increase the effectiveness of the MACD and RSI indicators, they were simulated; the simulations changed the parameters of both indicators. This research demonstrates empirically that both the optimum MACD and optimal RSI indicators are advantageous for creating a successful investing strategy and accepts the concept that optimized MACD and RSI indicators are much more lucrative than the conventional buy-and-hold strategy. The findings indicate that optimizing the MACD and RSI indicators significantly reduced the number of trading sessions. [7]

Giner Alor-Hernandez, Rubén Posada-Gomez, Guillermo Cortes-Robles, Alejandro Rodrguez- González, Fernando Guldrs-Iglesias, Ricardo Colomo-Palacios, Juan Miguel Gomez-Berbis, and Enrique Jimenez-Domingo (2010) conducted RSI-based research intending to develop systems capable of investing automatically This stock market simulation was built entirely using RSI financial indicators and heuristic methods since the formula was derived using these techniques. Additionally, the researchers recommended four additional studies that might be conducted based on the current results. [8]

Adrian Taran-Morosan (2011) examined the same set of data using both traditional and modified RSI. He also

incorporated trading volume in the method's calculating formula. Finally, findings acquired using the indicator's traditional form will be compared to those obtained using the modified version. He found that, in comparison to the original form, his version resulted in a greater advantage when a different, even opposing interpretation was used. And, in the alternative case, it resulted in much larger losses. This implies that the study indicates that short-term trends will persist, at least temporarily. It seems as if the conventional view is incorrect, while the alternative understanding produces beneficial results. Using the RSI version that we suggest yields the best results.

Dr. Bhargavi. R, Dr. Srinivas Gumparthi, and Anith. R (2017) evaluated short-term investment performance by computing the 14-day RSI for chosen short-term investment stocks and determining if the 14-day RSI is equal to or greater than the original 14-day RSI. They noticed that investors suffered as a result of portfolio securities being mismanaged. Selecting inappropriate securities may result in investor losses. And to address this issue, they recommended using the RSI tool and incorporating it into the stock-picking process. They discovered that RSI can be utilized to construct portfolios and make short- and long-term investment choices. It predicts the buy and sells signals for a variety of stocks accurately. The P/E ratio is a more accurate indicator of profitability than earnings per share. Their study emphasized the short- and long-term investment potential of the twenty companies. They concluded as a result of their study.

Firuz Kamalov and Ikhlaas Gurrib (2019) use an improved version of the Relative Strength Index (RSI) model to forecast currency pairs where one of the instruments is the US dollar. A new model (AdRSI) was constructed and implemented by taking daily data spanning 2001– 2015 into consideration. When it comes to energy markets, their results show that the risk was considerable; in contrast, the annualized risk for the Chinese yuan was quite low. AdRSI's new model provided an impressive increase in annualized returns, a decrease in the number of transactions, and a significant increase in annualized risk. Concerning reward-to-volatility, the buy-and-hold investment strategy came out on top. [1,9]

3. Need of research

When we conducted a literature analysis of many papers, we found that similar types of studies had been conducted on the RSI subject. Various authors have addressed the use of RSI indicators on stock charts and conducted a comparative study. Additionally, the authors utilized other indicators within RSI and conducted a research study. RSI is a momentum indicator that provides insight into market trends. However, no study on the subject of trend analysis using RSI has been performed. As a result, we chose to write a research paper on trend analysis utilizing RSI.

Many traders and investors lose money in the stock market by using technical indicators. When it comes to trading, new traders make one common mistake: they do not follow the market's trend. To put it another way, whenever a trader wants to enter a trade, traders must first determine if the market is trending upward or downward. If there is an uptrend, traders should take a long position, and if there is a downtrend, traders should take a short position. Similarly, when it comes to short-term trends, investors make mistakes as well. By analyzing the NIFTY 50 index chart over the past 20 years, we were able to develop two methods for identifying market trends.

4. Steps To Add Rsi Indicator On Chart

STEP-1: We have explained both strategies using a weekly time frame so a selection of weekly time frames is necessary.

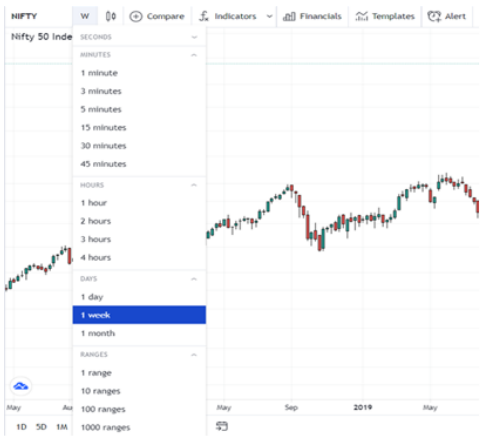

Fig. 1: (Selection of weekly time frame) (https://in.tradingview.com/)

Step-2: In this step, we have to click the indicators section to add RSI to the chart.

Fig. 2: (Adding RSI indicator to chart) (https://in.tradingview.com/)

STEP-3: After selection of indicator section in that drop down menu will be shown in that in search section type "RSI". Then select relative strength index from built-in

sections. Then RSI will be added to the chart.

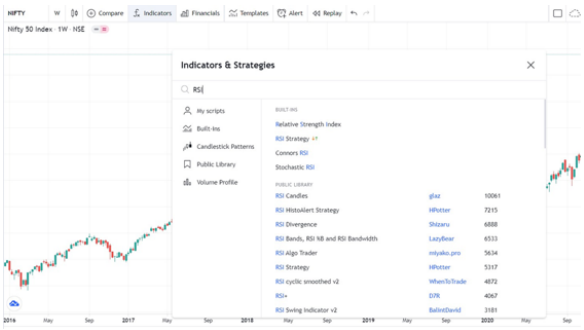

Fig. 3: (Searching and selection of RSI indicator in indicator tab) (https://in.tradingview.com/)

After applying all the three steps one can see Figure 4 will appear.

Fig. 4: (Chart after applying RSI on the chart) (https://in.tradingview.com/)

Fig. 5: (Default RSI on the chart) (https://in.tradingview.com/)

5. Default RSI

To help investors/traders in dealing with a variety of circumstances, one should establish RSI parameters in advance to achieve your analytical goals for the situation. The default RSI period is 14 days. But we may utilize the RSI to detect overbought and oversold conditions for a limited period. Since the RSI rises, it is better at identifying wide market changes. Price changes affect the RSI's range-bound behavior (0-100). The upper/lower bars denote

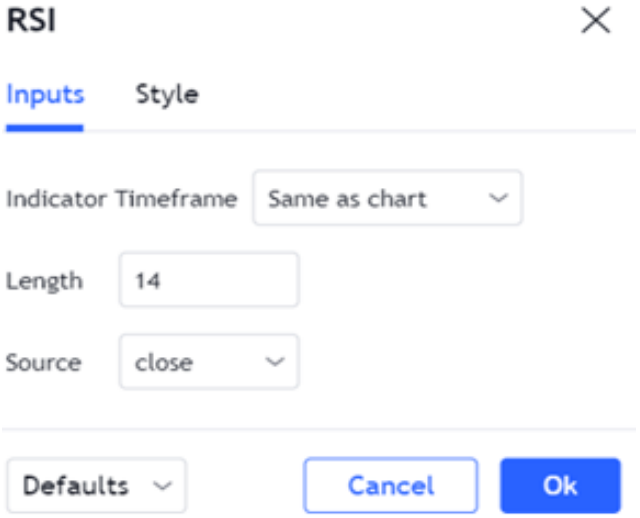

Fig. 6: (Default setting of RSI length) (https://in.tradingview.com/)

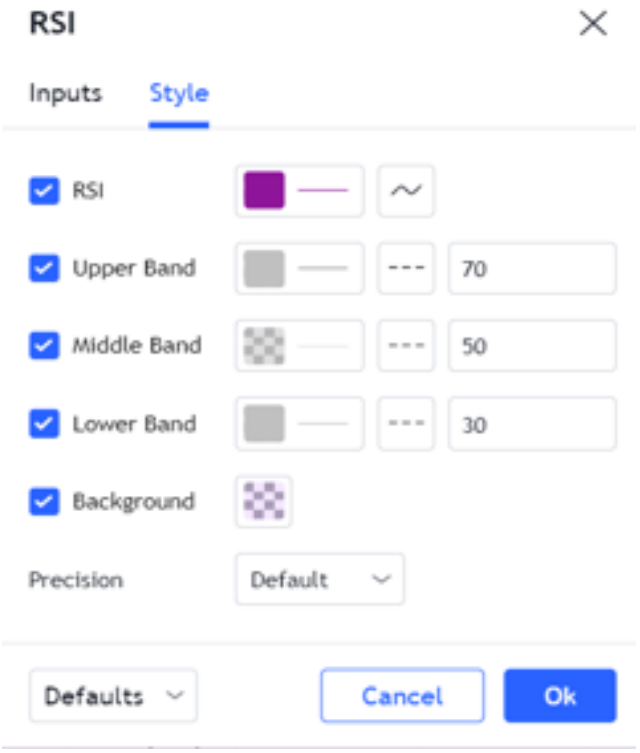

Fig. 7: (Default setting of RSI bands (https://in.tradingview.com/)

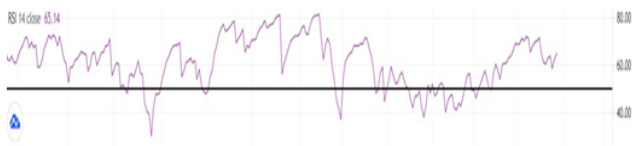

Fig. 8: (50-50 RSI chart) (https://in.tradingview.com/)

Fig. 9: (50-50 strategy settings) (https://in.tradingview.com/)

Fig. 10: (uptrend using 50-50 strategy) (https://in.tradingview.com/)

Fig. 11: (downtrend using 50-50 strategy) (https://in.tradingview.com/)

Fig. 12: (60-40 RSI chart) (https://in.tradingview.com/)

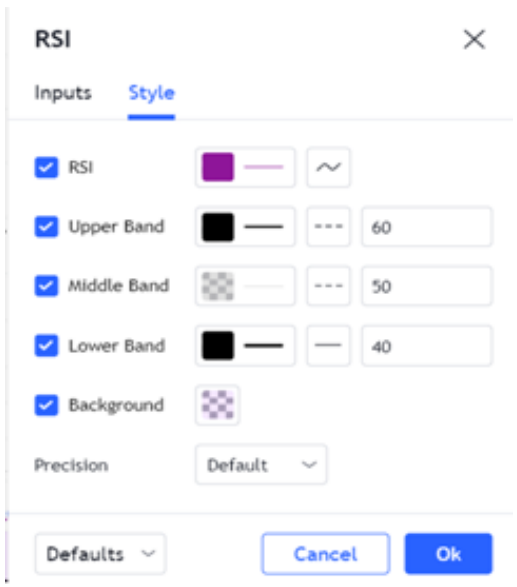

Fig. 13: (60-40 settings) (https://in.tradingview.com/)

Fig. 14: (uptrend using 60-40 strategy) (https://in.tradingview.com/)

Fig. 15: (downtrend using 60-40 strategy) (https://in.tradingview.com/)

the 70/30 levels accordingly. As seen inFigure 5below, applying RSI to the chart and figure produces the default view.Figures 6 and 7 show the RSI's default settings.

6. Strategy-1 (RSI 50-50)

The RSI's default settings include a 14-period length and an upper and lower band of 70, and We will change the parameters in this method and see an example of how to apply this strategy in practice. In this approach, the length will remain constant; the only change will be in the values of the lower and upper bands. Instead of the existing values, the new lower and upper bands will have values of 50 and 50, respectively. We will apply these strategies on weakly time frame of NIFTY 50. We will now learn how to use the 50-50 approach to forecast the direction of a trend. Follow the steps below to get a better understanding of the strategy:

1. STEP-1: Apply new settings which are upper band=50 and lower band=50. When looking at the RSI chart, one can notice one single line as shown in theFigure 9. To set up the new preferences, do so as indicated in Figure 10.
2. STEP-2: Now analyze the RSI chart which one can find below the candlestick chart. In that chart whenever the value of RSI closes above 50, then we will consider the beginning of an uptrend. And whenever the value of RSI closes below 50, we will consider the beginning of a downtrend.Figure 10 is an example of an uptrend, in which the uptrend starts with candle no.1 when the RSI closes above 50 and terminates with candle no.2 when the RSI value is near or below 50, respectively. Similar to that, we can analyze a downtrend inFigure 11, in which candle no.1 represents the beginning of the downtrend and candle no.2 represents the end of the downtrend when the RSI value is below 50.

7. Strategy-2 (RSI 60-40)

Similarly, to the 50-50 strategy, we will maintain the default 14-period length setting in the 60 – 40 approach. Only the parameters for the lower and upper bands will be altered. The upper and lower bands will now be 60 and 40, respectively. In the same manner, as discussed in 50-50 we will apply these strategies in a weakly time frame of NIFTY 50. We'll now examine how to use the 60-40 strategy to forecast the direction of a trend. To get a better understanding of the method, consider the following steps:

1. STEP-1: Apply the updated settings, which have upper band=60 and lower band=40. In the RSI chart, one can see that there are two lines: the top line with a dashed line represents the upper band 60, and the lower line with a thick line represents the lower band 40, as shown inFigure 12. To configure the new preferences, follow the steps shown inFigure 13.

2. STEP-2: As with the 50-50 strategy, one can find the RSI chart below the candlestick chart. When the RSI value closes above 60, we believe that a new uptrend has started; when the RSI value closes below 40, we consider that a new downtrend has begun.Figure 14 illustrates an uptrend in which the uptrend begins with candle no.1 as the RSI value closes above 60 and ends with candle no.2 as the RSI value closes below or around 60. Similarly, as shown inFigure 15, a downtrend begins with candle no.1 as the RSI value closes below 40 and ends with candle no.2 as the RSI value closes above or around 40.

8. How To Trade Using 50-50 And 60-40 Strategy

1. As previously stated, if the RSI closes above 50 during an uptrend, the trader or investor must enter the trade; however, how long the trader or investor must remain in the trade is determined by the risk-reward ratio and other criteria listed below in this section; similarly, the 60-40 strategy follows the same rules.
2. When a trader or investor enters a downtrend when the RSI falls below 50, the trader or investor must decide how long to remain in the trade. Likewise, the 60-40 strategy is applicable.
3. Concerning our findings, we have estimated returns based on historical data, and although looking at the number of returns, it appears that this had an ambitious return, yet it produced that high of a return. When it comes to trading, one must establish a set of trading criteria in advance.
4. Several specific rules that traders should follow include: controlling one's emotions, not over trading, always accepting profits, managing trade risk (the risk-reward ratio), trusting one's analysis, monitoring one's trades, homering stop losses, and preparing one's trade, time frame for trading, and target

9. How To Back-Test Any Strategy

Back-testing any strategy may be accomplished by following the procedures outlined below:

1. Define a specific parameter for testing purposes.
2. Specify the time frame for testing the approach on the chart.
3. Historical price charts may be used to find potential trades.
4. Analyze and record the trade following the specified entry and exit points.
5. Risk to reward and net return of back-tested data should be evaluated.

10. Findings

To comprehend the findings sections, we must first understand the table of findings, as illustrated inTables 1 and 2. The titles in the table are as follows, and they are the same for both tables:

1. TREND FROM: This is the date on which an uptrend or downtrend begins.
2. TREND TO: This column indicates the end of an uptrend or downturn.
3. TOTAL NO. OF TRENDS: This column indicates the total number of days that the NIFTY 50 has been in a specific trend.
4. TYPE OF TREND: These indicate the direction of the trend, either upward or downward.
5. TREND FROM CLOSING PRICE: This is the closing price on the day the trend began.
6. TREND TO CLOSING PRICE: This is the closing price on the day the trend ended.
7. RETURN (%): This column indicates the total number of returns generated by a given trend.

Both strategies may be utilized observation ally in nature since they do not need a great deal of computation. To learn this technique, one must do back-testing on any stock or index chart. One must also examine many charts to master this strategy. The steps for doing a back-test on any strategy are detailed above.

In terms of the 50-50 approach's findings, we have discovered that this technique offers the best long-term return. As shown in Table 1, the larger the duration of the trend, the higher the return. The trend may be down or rising.

We noticed that the 60-40 approach generates a very high rate of return during a short-term trend. As shown inTable 2, a trend that lasted about two months (approximately 60 days) generated a very high rate of return in the short term.

Below shownTable 1 is the formula for the statistical model and Table 2 and Table 3 are actual calculated values for the model.

Were,

1. Between Groups Degrees of Freedom: DF = k − 1, where k is the number of groups
2. Within Groups Degrees of Freedom: DF = N − k, where N is the total number of subjects
3. Total Degrees of Freedom: DF = N — 1
4. Sum of Squares Between Groups: $SSb = \sum_{k\ i=1} ni\ (xi - x)^2$, where n_i is the number of subjects in the i-th group
5. Sum of Squares Within Groups: $SSw = \sum_{k\ i=1} (ni - 1)\ Si^2$, where S_i is the standard deviation of the i-th group
6. Total Sum of Squares: SSt = SSb + SSw
7. Mean Square Between Groups: MSb = SSb / (k − 1)

Table 1: (50-50 strategy findings) (Authors finding)

Trend From	Trend To	Total Days Of Trend	Trend Type (UP/DOWN)	Trend From Closing price	Trend To Closing price	Return (%)
10/4/2000	29/5/2000	49	DOWN	1518.65	1389.65	-8.49%
5/6/2000	10/7/2000	35	UP	1467.2	1509.75	2.90%
17/7/2000	28/8/2000	42	DOWN	1397.25	1394.1	-0.23%
18/9/2000	8/1/2001	112	DOWN	1271.65	1286.75	1.19%
15/1/2001	12/2/2001	25	UP	1329.1	1381.35	3.93%
19/2/2001	5/11/2001	259	DOWN	1320.45	1004.05	-23.96%
19/11/2001	8/4/2002	140	UP	1059	1146.5	8.26%
15/4/2002	11/11/2002	210	DOWN	1100.3	990.35	-9.99%
18/11/2002	24/02/2003	98	UP	1020.15	1063.4	4.24%
3/3/2003	19/5/2003	77	DOWN	1017.1	967.9	-4.84%
26/05/2003	3/5/2004	343	UP	1006.85	1804.45	79.22%
10/5/2004	23/08/2004	105	DOWN	1582.4	1609	1.68%
30/08/2004	4/4/2005	217	UP	1634.1	2031.2	24.30%
11/4/2005	2/5/2005	21	DOWN	1956.3	1977.5	1.08%
9/5/2005	22/5/2006	378	UP	1988.3	3209.35	61.41%
29/05/2006	17/7/2006	49	DOWN	3091.35	2945	-4.73%
24/7/2006	19/2/2007	210	UP	3130.8	3938.95	25.81%
26/2/2007	2/2/2007	35	DOWN	3726.75	3752	0.68%
9/4/2007	14/1/2008	280	UP	3917.35	5705.3	45.64%
21/1/08	16/3/2009	420	DOWN	5383.35	2807.05	-47.86%
23/2/2009	3/1/2011	651	UP	3108.65	5904.6	89.94%
10/1/2011	9/1/2012	364	DOWN	5654.55	4866	-13.95%
16/1/2012	23/4/2012	98	UP	5048.6	5190.6	2.81%
30/4/2012	4/6/2012	35	DOWN	5086.85	5068.35	-0.36%
11/6/2012	11/3/2013	273	UP	5139.05	5872.6	14.27%
18/3/2013	8/4/2013	21	DOWN	5651.35	5528.55	-2.17%
15/4/2013	3/6/2013	49	UP	5783.1	5881	1.69%
10/7/2013	17/7/2013	7	DOWN	5808.4	5667.65	-2.42%
24/7/2013	22/07/2013	28	UP	5842.2	5886.2	0.75%
29/7/2013	2/9/2013	35	DOWN	5677.9	5680.4	0.04%
10/9/2013	13/4/2015	580	UP	5850.6	8606	47.10%
20/4/2015	4/4/2016	350	DOWN	8305.25	7555.2	-9.03%
11/4/2016	24//10/2016	196	UP	7850.45	8638	10.03%
1/11/2017	2/1/2017	62	DOWN	8433.75	8243.8	-2.25%
9/1/2017	26/2/2018	413	UP	8400.35	10458.35	24.50%
5/3/2018	26/3/2018	21	DOWN	10226.85	10113.7	-1.11%
2/4/2018	17/9/2018	168	UP	10331.6	11143.1	7.85%
24/9/2018	18/2/2019	147	DOWN	10930.45	10791.65	-1.27%
25/2/2019	8/7/2019	133	UP	10863.5	11552.5	6.34%
15/7/2019	7/10/2019	84	DOWN	11419.25	11305.05	-1.00%
14/10/2019	17/2/2020	126	UP	11661.85	12080.85	3.59%
24/2/2020	15/6/2020	112	DOWN	11201.75	10244.4	-8.55%
22/7/2020	28/12/2020	189	UP	10383	14018.5	35.01%

8. Mean Square Within Groups: MSw = SSw / (N − k)
9. F-Statistic (or F-ratio): F = MSb / MSw

Now, we'll examine the data implications of our calculated returns for a certain year.Table 3 illustrates the estimated return on a 50-50 strategy over the past two decades, whereasTable 4 illustrates the calculated return on a 60-40 strategy over the same period. The return is computed on the year's last financial day. We performed the F-test and P-value for that return to determine its significance. We examine for significance to determine whether or not the F-a test used is statistically significant. As shown inTable 7, the F-statistical value and P-value for both methods' data are shown. For analysis purposes, the P-values of the 50-50 and 60-40 strategies' returns use a 0.05 standard significant value. We discovered that both strategies had a P-value higher than the 0.05 standard significance level. The F-test we used on this data set is statistically insignificant and therefore cannot be fitted to any regression model.

Table 2: (60-40 strategy findings) (Authors finding)

Trend From	Trend To	Total Days Of Trend	Trend Type (UP/DOWN)	Trend From Closing price	Trend To Closing price	Return (%)
3/1/2000	28/2/2000	56	UP	1599.75	1656	3.52%
8/5/2000	22/5/2000	14	DOWN	1282.8	1275.35	-0.58%
18/9/2000	22/5/2000	63	DOWN	1266.45	1225.2	-3.26%
12/3/2001	23/4/2001	42	DOWN	1193.55	1101.3	-7.73%
27/8/2001	8/10/2001	42	DOWN	1053.75	960.4	-8.86%
11/2/2002	11/3/2002	28	UP	1159.95	1169.75	0.84%
22/7/2002	12/8/2002	21	DOWN	973.5	979.25	0.59%
16/9/2002	4/11/2002	49	DOWN	969.6	951.6	-1.86%
2/12/2002	30/12/2002	28	UP	1069.8	1089.6	1.85%
7/4/2003	5/5/2003	28	DOWN	949.8	937.85	-1.26%
16/9/2003	1/3/2004	259	UP	1100.25	1869.7	69.93%
17/3/2004	21/6/2004	35	DOWN	1560.2	1488.5	-4.60%
27/9/2004	14/3/2005	168	UP	1775.15	2109.15	18.82%
13/6/2005	10/10/2005	119	UP	2123.4	2484.4	17.00%
7/11/2005	8/5/2006	182	UP	2548.65	3650.05	43.22%
28/8/2006	12/2/2007	168	UP	3435.45	4146.2	20.69%
30/4/2007	28/5/2007	28	UP	4117.35	4297.05	4.36%
18/6/2007	30/7/2007	42	UP	4252.05	4401.55	3.52%
3/9/2007	7/1/2008	126	UP	4509.5	6200.1	37.49%
16/6/2008	14/7/2008	28	DOWN	4347.55	4092.25	-5.87%
22/9/2008	2/3/2009	161	DOWN	3985.25	2620.15	-34.25%
4/5/2009	20/10/2009	169	UP	3620.7	4947.05	36.63%
9/11/2009	11/6/2010	63	UP	4998.95	5252.2	5.07%
15/3/2010	26/4/2010	42	UP	5262.8	5278	0.29%
12/7/2010	16/8/2010	35	UP	5393.9	5530.65	2.54%
6/9/2010	8/10/2010	63	UP	5640.05	6071.65	7.65%
1/8/2011	3/10/2011	63	DOWN	5211.25	4888.05	-6.20%
1/9/2012	28/1/2013	140	UP	5577.65	5998.9	7.55%
14/10/2013	28/10/2013	14	UP	6189.35	6307.2	1.90%
3/3/2014	2/3/2015	364	UP	6526.65	8937.75	36.94%
24/8/2015	7/9/2015	14	DOWN	8001.95	7789.5	-2.65%
11/1/2016	22/2/2016	42	DOWN	7437.8	7029.75	-5.49%
27/6/2016	19/9/2016	84	UP	8328.35	8831.55	6.04%
30/1/2017	18/9/2017	231	UP	8740.95	9964.4	14.00%
3/10/2017	20/11/2017	48	UP	9979.7	10389.7	4.11%
11/12/2017	29/1/2018	49	UP	10333.25	10389.7	0.55%
9/7/2018	10/9/2018	63	UP	11018.9	11515.2	4.50%
1/10/2018	22/10/2018	21	DOWN	10316.45	10030	-2.78%
11/3/2019	30/4/2019	50	UP	11426.85	11712.25	2.50%
20/5/2019	10/6/2019	21	UP	11844.1	11823.3	-0.18%
29/7/2019	19/8/2019	21	DOWN	10997.35	10829.35	-1.53%
29/10/2019	20/1/2020	83	UP	11890.6	12248.25	3.01%
24/2/2020	18/5/2020	84	DOWN	11201.75	9039.25	-19.31%
2/11/2020	28/12/2020	56	UP	12263.65	14018.5	14.31%

Table 3: (50-50 strategy return) (Authors finding)

50-50	
Year	**Return (%)**
2001	11.62
2002	27.89
2003	22.49
2004	84.06
2005	25.98
2006	62.49
2007	30.54
2008	46.32
2009	47.86
2010	89.94
2011	13.95
2012	17.44
2013	7.07
2014	47.1
2015	9.03
2016	12.28
20017	24.5
20018	10.23
20019	10.93
20020	43.56

Table 4: (60-40 strategy return) (Authors finding)

60-40	
Year	**Return (%)**
2001	7.36
2002	16.59
2003	5.14
2004	71.19
2005	23.42
2006	60.22
2007	66.06
2008	76.75
2009	15.55
2010	6.2
2011	7.55
2012	1.9
2013	36.94
2014	2.65
2015	11.53
2016	18.11
20017	7.83
20018	4.21
20019	3.01
20020	33.62

Table 5: (Formula for calculating model)

Source	**Degrees of Freedom (DF)**	**Sum of Squares (SS)**	**Mean Square (MS)**	**F-Stat**	**P-Value**
Between Groups	k − 1	SSb	MSb = SSb / (k − 1)	F = MSb / MSw	Right tail of F (k-1, N-k)
Within Groups	N − k	SSw	MSw = SSw / (N − k)		
Total:	N − 1	SSt = SSb+SSw			

Table 6: (Actual calculated values in excel)

Data Summary				
Groups	**N**	**Mean**	**Std. Dev.**	**Std. Error**
Return of 50-50 Strategy	20	32.264	24.5215	5.4832
Return of 60-40 Strategy	20	23.7915	25.0518	5.6018

Table 7: (Actual calculated values in excel)

Source	**Degrees of Freedom** DF	**Sum of Squares** SS	**Mean Square** MS	**F-Stat**	**P-Value**
Between Groups	1	717.8326	717.8326	1.1683	0.2866
Within Groups	38	23349.0363	614.4483		
Total:	39	24066.8688			

Table 8: (Conclusion of F-value and P-value) (Authors finding)

F-statistic value	1.16826
P-value	0.28657

11. Conclusion

With an understanding of the RSI technical indicator and the two RSI strategies, one may trade or invest in stocks and make a profit. Traders lose money because they lack a suitable strategy and trading guidelines to follow while trading. Additionally, the investor may lose money in the stock market by relying on technical indications. In this case, fundamental analysis is critical since the investor may pick companies that are not fundamentally sound and therefore lose money by investing in the incorrect business. In this instance, the technical analysis fails since freshly entering investors are constantly on the lookout for penny stocks that are both volatile and operator-driven. As an investor, one should always adhere to techno funda analysis, which includes both technical and fundamental analysis. Investors should use technical analysis only if the company's fundamentals are strong. In this article, we have explained two methods, one of which generates a high rate of return over the long term and another which generates a high rate of return over the short term. Technical analysis is critical for trading nowadays if the trader maintains it simple and follows all trading principles as outlined in this paper.

12. Source of Funding

None.

13. Conflict of Interest

None.

References

1. Anderson B, Li S. An investigation of the relative strength index. Banks and Bank Systems. *Banks Bank Syst*. 2015;10(1):92–6.
2. Alhilfi M, Alnoor A. Role of using the Relative Strength Index in Making Speculation Decision in Stock Applied Research in the Iraq Stock Exchange. *Int J Acad Res Accounting*. 2019;9(1):123–35. doi:10.6007/IJARAFMS/v9-i1/5855.
3. Mahajan Y. An Empirical Study of Indian Equity Market for Profitable Investment Decisions. *Asian J Res Banking Finance*. 2015;5(12):13. doi:10.5958/2249-7323.2015.00140.6.
4. González AR, Iglesias FG, Palacios RC, Berbis JMG. Improving Trading Systems Using the RSI Financial Indicator and Neural Networks. *Lecture Notes Comput Sci*. 2010;15037:1–3. doi:10.1007/978-3-642-15037-1_3.
5. Moroşan A. The relative strength index was revisited. African journal of business management. *Afr J Business Manag*. 2011;5(14):5855 –62. doi:10.5897/AJBM.9000629.
6. Bhargavi R, Gumparthi S, Anith R. Relative strength index for developing effective trading strategies in constructing an optimal portfolio. *Int J Appl Eng Res*. 2017;12(19):8926–36.
7. Gurrib I, Kamalov F. The implementation of an adjusted relative strength index model in foreign currency and energy markets of emerging and developed economies, Macroeconomics and Finance in Emerging Market Economies. *Macroeconomics Finance Emerg Mark Econ*. 2019;12(19):105–23. doi:10.1080/17520843.2019.1574852.
8. Analysis Education | StockCharts.com. (n.d.); 2021. Available from: https://school.stockcharts.com/doku.php.
9. Panigrahi A, Mistry M, Shukla R, Gupta A. A Study on Performance Evaluation of Equity Linked Saving Schemes (ELSS) of Mutual Funds. *NMIMS J Econ Public Polocy*. 2020;5(1):21.

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