

Validating Relative Strength Index for Developing Productive Trading Strategies in Indian Stock Market

Viswanatha Reddy Pedirappagari

Assistant Professor, Sri Venkateswara College of Engineering, Tirupati – 517507, India.

Orcid Id: 0000-0003-3974-1116

Cheerla Hareesh Babu

Assistant Professor, Sri Venkateswara College of Engineering, Tirupati – 517507, India.

Abstract

Now a day's investment in stock markets is most difficult decision taken by investors, due to difficulty in choosing right stock at right time. Technical analysis tools is used to predict the future movements of the stock based on an examination of past prices, of which RSI one of the most reliable technical analysis tool. In this research we intend to study the validity of the Relative Strength Index is better to predict the future movements. Here we chosen 15 scripts based better P/E ratio in small capitalization stocks of NSE. Generally P/E ratio is better to reflect the profitability of the company so as to make better decision regarding investment. For short term investment, we find 14 day RSI for all 15 scripts and for long term investment 56 day RSI is being found out for all the 15 scripts. RSI values are calculated for the time period 2017 January to 2018 December.

In order to find the validity of RSI in Indian stock market, we evaluate the performances of short term investments by computing 14 Day RSI for picking the short term investment stocks at future point of time and the performance evaluated with by comparing initial 14 Day RSI of the stock. For long term investments, we use to compute 56 Day RSI for picking the long term investment stocks at future point of time and the performance evaluated with by comparing initial 56 Day RSI of the stock In this case most of results proved positive, hence RSI is valid in Indian stock market.

Keywords: Technical Analysis, RSI, Trading Strategy, benchmarking, National Stock Exchange of India

INTRODUCTION

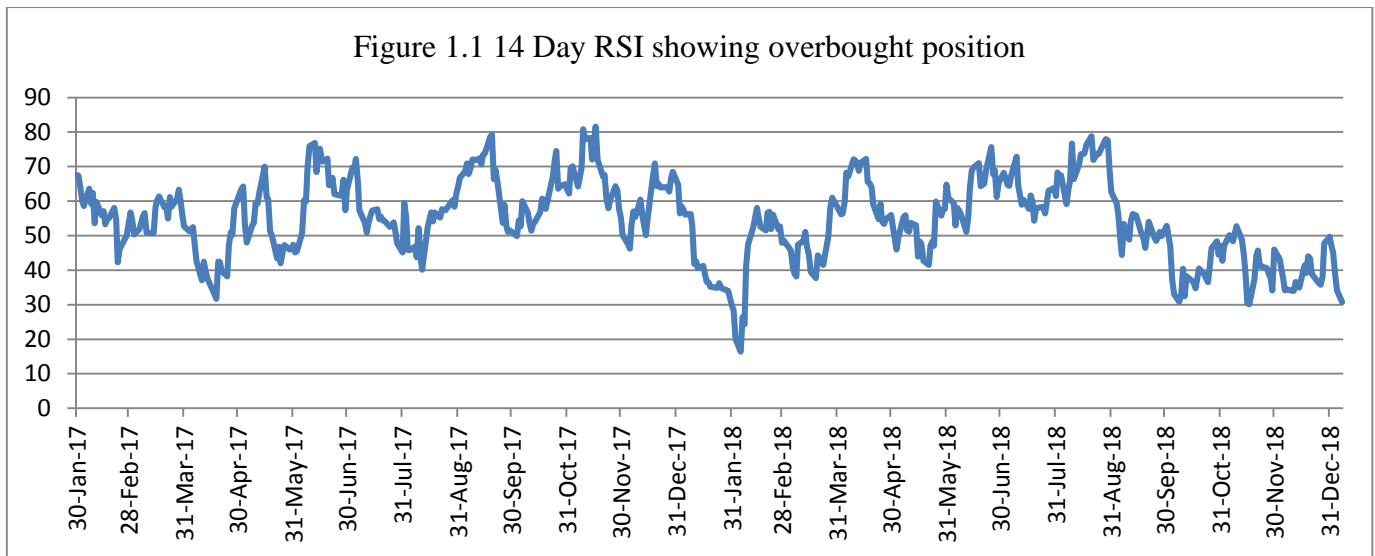
In modern days, Investments in securities is common scenario for making the capital gains. Most of the investors want to make an investment in securities which generates high returns without losing their principal amount. In reality, risk and returns are positively related. i.e., higher returns, the higher is risk and vice versa. While making investments, the investor must choose the right securities, because inappropriate selection of securities leads to unrecoverable losses being suffered by investors. In order overcome risk of making losses and increases the returns, there are many tools which are available among them, the RSI is one which is very

effective tool used to identify the right securities to invest their money and makes earn higher returns with minimum risk. RSI is developed by J. Welles Wilder, the relative strength index works as a momentum indicator on a scale of 0 to 100. Over 70 on the scale will signal that the Stock is overbought and fewer than 30 signals that the stock is oversold in the near term. It is important to remember that the RSI is calculated just off of price movement. Signals can also be generated by looking for divergences, failure swings and centreline crossovers. RSI can also be used to identify the general trend.

Generally, RSI will consider different periods; the default period will 14 day suggested by wilder. Depends on short term, medium term and long term investments, the number of periods will be varied. In case of short term and medium, the number of periods of RSI will be very low and in long term, the number of periods of RSI is very high. Generally, 9 day RSI and 14 day RSI is used for the short and medium term investments and 56 day RSI, 100 day RSI and 200 day RSI used for long term investments. In case short term investments the period to be considered too small when compared with long term investments. For example the short term investments, the period under consideration will be 2 to 3 months data because computes either 9 day RSI or 14 day RSI. While computing 56 day RSI, need to calculate 2 year data, 100 day RSI and 200 day RSI need to compute eight year data for long term investments. Need not to be computing the daily data for RSI in long term investments because it involves lot calculations, instead weekly or monthly data can used to compute the RSI.

Overbought and Oversold

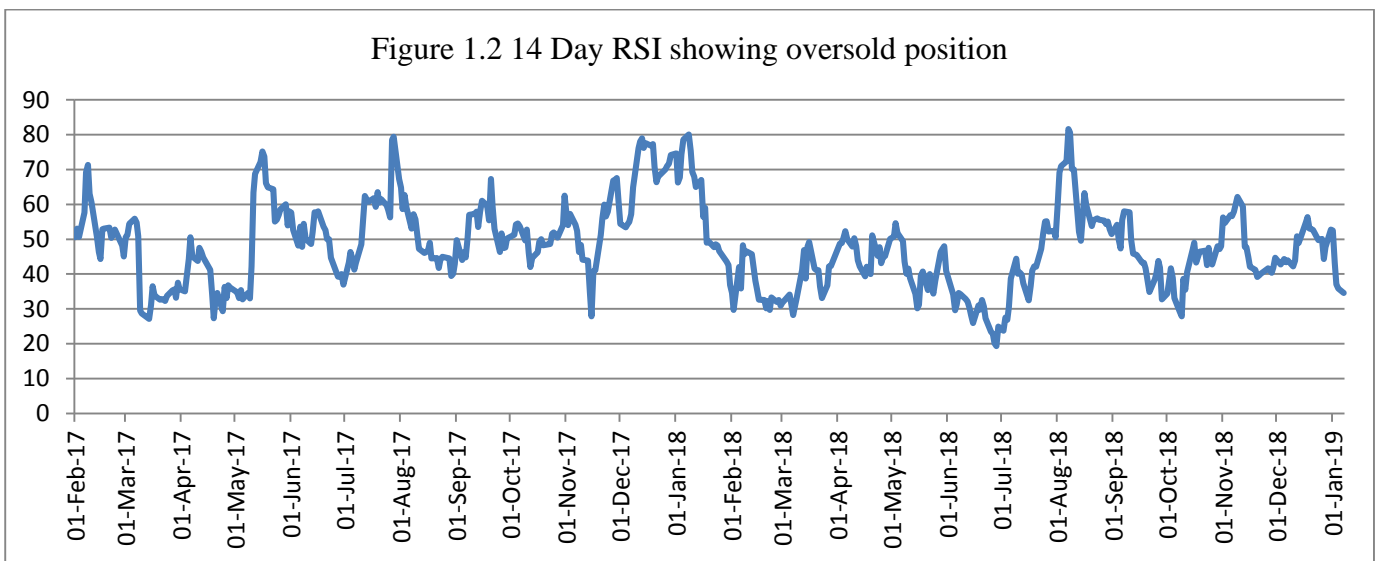
If RSI value of stock breaks above 70, it indicates that the stock is being overbought position and very soon it is expecting to some sought of sell pressure, its prices would come down. The stocks which breaks above 70 RSI value might fall down its stock prices but it may or may not be immediately. The investors who want sell of their security, RSI chart helps better to understand whether to sell the security or hold it for while. The following chart shows the price movements of Page Industries Limited.



From the above chart we can see that the RSI value reaches above 70 during the middle of July and it nears to 80 before trend reversal occurs (down trend). It is better to sell this stock (existing shareholder) as soon as RSI value goes above 70.

If the RSI value of stock breaks below 30, it indicates that the

stock is being oversold position and very soon it is expecting to bring some sought of buying pressure, its prices would raises. The stocks which reach breaks below 30 RSI value might raises up its stock prices but it may s helps better to understand whether to purchase the security immediately or wait for a while. The following chart shows the price movements of Tamil nadu News print limited.



From above table we can see that the RSI value of reaches below 30 during the beginning of October and it nears to 25 before trend reversal occurs (up tend). It is better to buy this stock as soon as soon as RSI value goes below 30.

Centreline crossing

If RSI value indicator crosses the centreline to the upside, it means that the average gains are exceeding the average losses over the period of time; it indicates the strong buy signal. If

RSI value indicator crosses the centreline to the downside, it means that the average losses are exceeding the average gains over the period of time; it indicates the strong sell signal.

Divergence

Divergence means a reversal approach between indicator and stock price. Divergence is divided in to bullish divergence and bearish divergence. Generally, bullish divergence occurs when stock records lower low and RSI forms higher lows

which means the stock is nearing to low and will probably move up. Bearish divergence occurs when stocks records higher highs and RSI forms lower highs which means it is very likely to stop moving up and fall with RSI lower. Divergence can mislead the strong trend. A strong uptrend can mislead and shows the bearish divergence before a top actually occurs.

Failure swings

Failure swings is an indicator proposed by wilder. Failure swings divided in to two types- namely bullish failure swing and bearish failure swing. Failure swing can considered only RSI indicator. A bullish failure swing happens when RSI moves below 30, revert back and maintains above 30 and then breaks its previous high. It means it moves oversold levels and then a higher low above oversold levels. A bearish failure swing happens when RSI moves above the 70, revert back and maintains below 30 and then breaks its prior low, it means it moves overbought levels and then higher low below the overbought.

Trending market

Trending market is proposal is made by financial analyst Constance Brown. In up trending stocks, the RSI tends fluctuate overbought and oversold levels of 40 and 80 respectively. In such up trending stocks, the oversold signals provide good opportunity to enter long position during temporary short term downtrend. In down trending stocks, the overbought and oversold levels have to be shifted downward 60 to 20 respectively. In such down trending stocks, the overbought signals provide the opportunity to exit the long position during the temporary short term uptrend.

Literature Review

Bhargavi R, Srinivas Gumparthi, Anith.R(2017) identified that RSI is one of the most effective technical analysis tools available, it can be effectively used to create a portfolio. Just as it performs well in other stock markets around the world, it also works well in Indian stock market. It has also been found out that P/E ratio better reflects the performance of an organization.

Ugur Sahin, A.Murat Ozbayoglu (2014) found that under good market conditions (trendless or bull market) classic RSI performs well; however, it is vulnerable to trend changes.

Bing Anderson and Shuyun Li (2015) Found that for the past decade or so, using the standard configuration of $RSI < 30$ and $RSI \geq 70$ as buy or sell threshold, RSI offers no trading profit, but a small loss instead. However, When the buy/sell threshold parameters are altered, to deviate from the combination most commonly used, using RSI as the trading signal still yields profits.

M. Hashemi Tilehnoei, Shivaraj (2013) observe that MACD performance in making buy, hold and sell signals is better than RSI Divergence. But we cannot skip the important

role of RSI in overbought and oversold signals and simply we can diagnose the price whether is it undervalued or overvalued or with suitable value.

Michael R. Melton, Xuan (Susan) Nguyen, Michael Simeone, (2017) "Incorporating technical analysis in undergraduate curricula", the paper are presented to provide support for investment decision-making with the understanding that no one technical analysis technique should ever stand alone. Only when used with other technical indicators – in conjunction with fundamental analysis – can a student come to an accurate buy or sell decision.

RESEARCH METHODOLOGY

Need For Study

Generally, while at the time making of short term and long term investments, the investors might confuse to select right securities. Selection of inappropriate securities leads to losses being suffered by the investors. In order to overcome this, there is many technical tools are available, one among those is RSI. The Relative strength index is very power full analytical tool which helps the investors to select the right securities for their investments.

Objectives for Study

- The main objective of study is to understand validity of RSI during short term investments.
- To identify the performance of RSI in Indian stock market.
- To analyse the stocks which have good P/E or EPS ratio as better indicator for profitability of an organization.

Research design is descriptive and analytical in nature. The data used in this research is secondary data. The data is closing prices of 15 scripts listed in NSE, stocks chosen based on its good P/E ratio in Nifty small capitalization index stocks. The tools to include analysis are relative strength index (14 day) and relative strength index (56 day).

Formulae of RSI

$$RSI = 100 - 100 / (1 + RS).$$

$RS = \text{Average of 14 days highs} / \text{Average of 14 days lows}$
(short term investments)

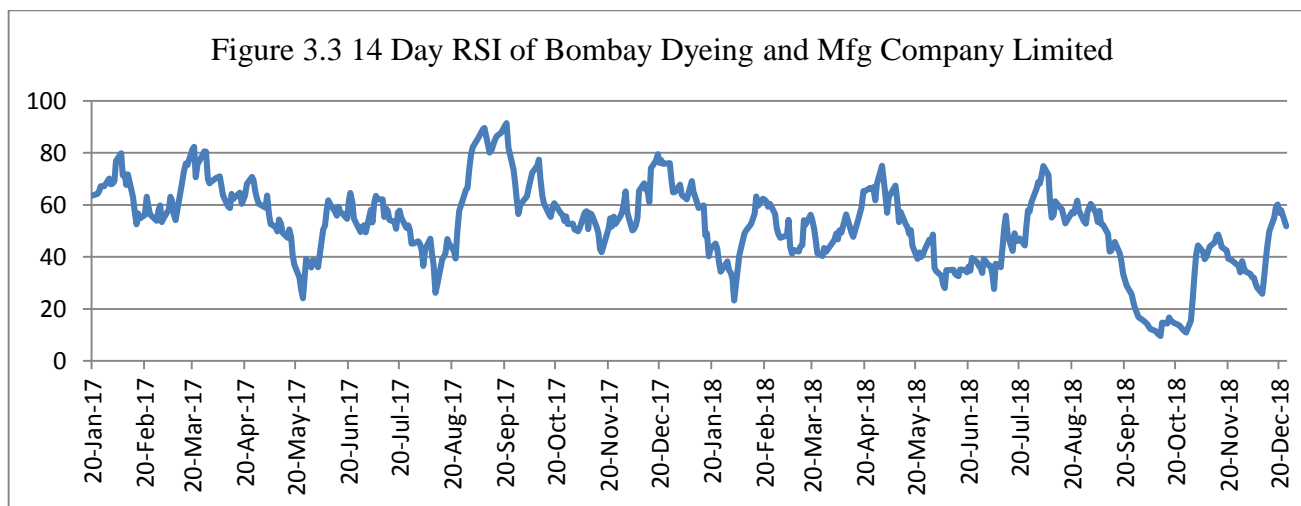
$RS = \text{Average of 56 days highs} / \text{Average of 56 days lows}$
(long term investments)

Data Analysis and Interpretation

The table shows the 15 scripts which have small market capitalizations with good P/E ratio.

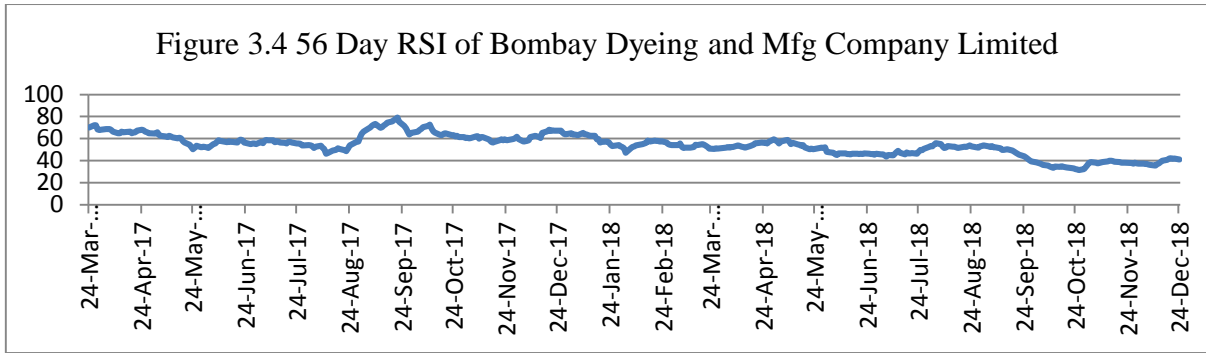
Script Name	P/E Ratio	Market capitalization (cr)	14 Day RSI	56 Day RSI
BOMBAY DYEING	14.16	2360	51.81	41.24
GNA AXLES	12.77	758	44.62	45.77
FIRST SOURCE SOLUTIONS	18.38	3398	33.81	41.80
TRIDENT	11.37	3322	49.04	50.59
KEI INDUSTRIES	18.28	2964	49.40	49.58
PERSISTENT	13.54	4909	60.18	45.32
KNR CONSTRUCTION	18.81	2753	61.06	47.91
IRB INFRA	11.42	5906	59.72	49.23
CEAT	16.22	5342	48.35	49.21
HIMATSINGKA SEI	9.83	2125	51.27	43.03
COX & KINGS	16.84	2893	44.27	43.47
NCL INDUSTRIES	17.58	650	55.88	47.41
GODFREY PHILIP	19.31	4484	41.37	50.52
TATA ELXSI	21.75	6215	43.30	43.88
LAXMI MACHINES	30.54	6332	46.87	42.40

Bombay Dyeing and Manufacturing Company Limited



The graph of Bombay Dyeing has reached lower low by end of November 2018 and currently its trend is upward. Although there is a significant volatility in the movement of RSI graph. The current RSI value is around 51 and the

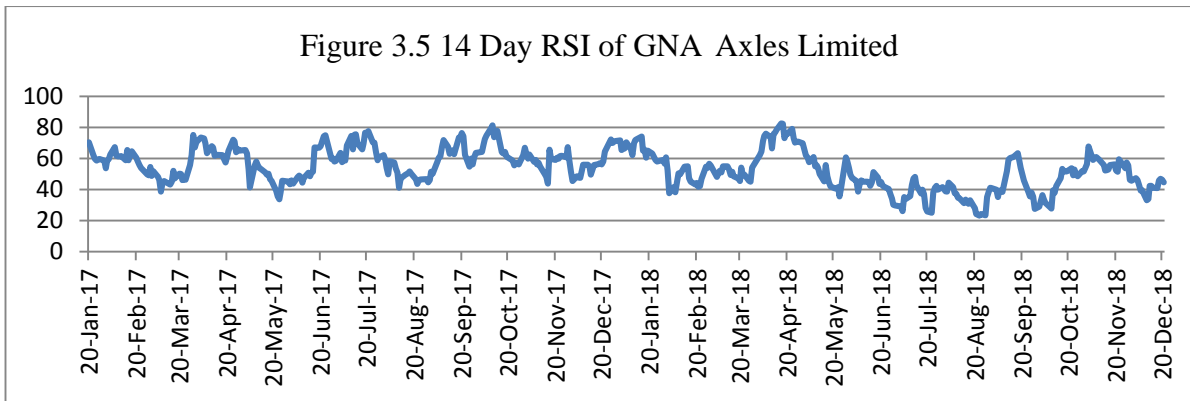
upward momentum is likely to be sustained till it reaches the overbought level, so it is advisable to invest in Bombay Dyeing for short term.



In case Bombay Dyeing, initially it was very strong and later it shows very consistent performance. It was only once during considered period of time that graph dropped below 40. At

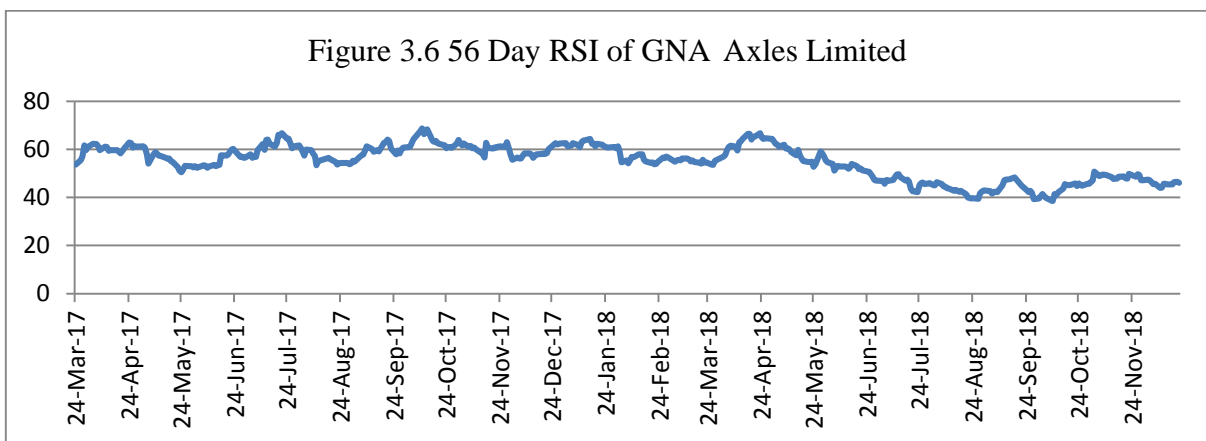
present the momentum is slightly upward, so Bombay Dyeing is just good for long term investment.

GNA Axles Limited



The RSI graph of GNA Axles has just reaches lower low and currently its trend is upward. Even though there is significant volatility in the movement of RSI graph. The current upward trend will expected to sustained for some time, so one can

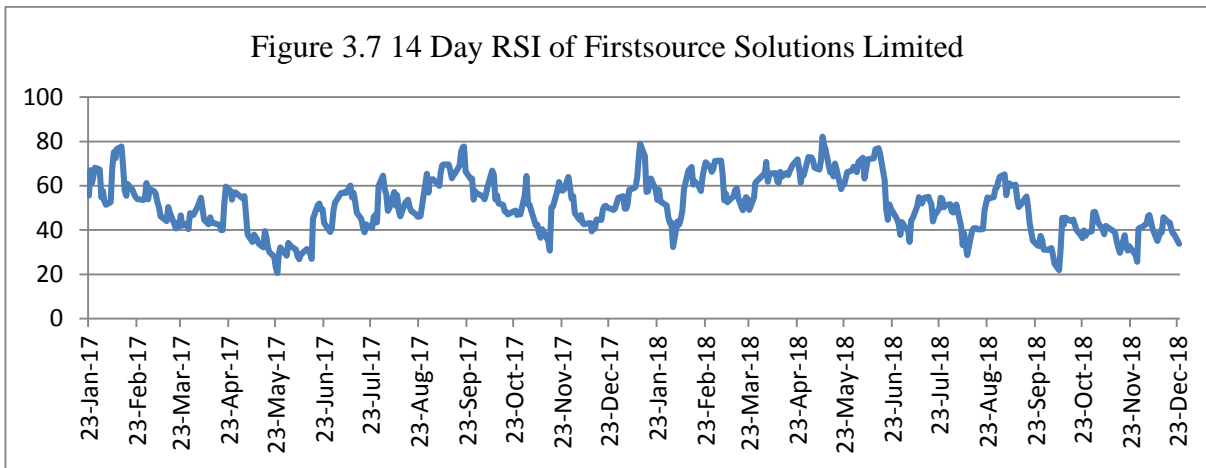
invest in GNA Axles for short term till it reaches overbought position, it is advisable to invest for short term.



The RSI graph of GNA Axles shows that its performance has been consistent and its risk is low. During the past two years, the graph has stood above 40 during most of the time period, there has only been one significant drop. Also, the current

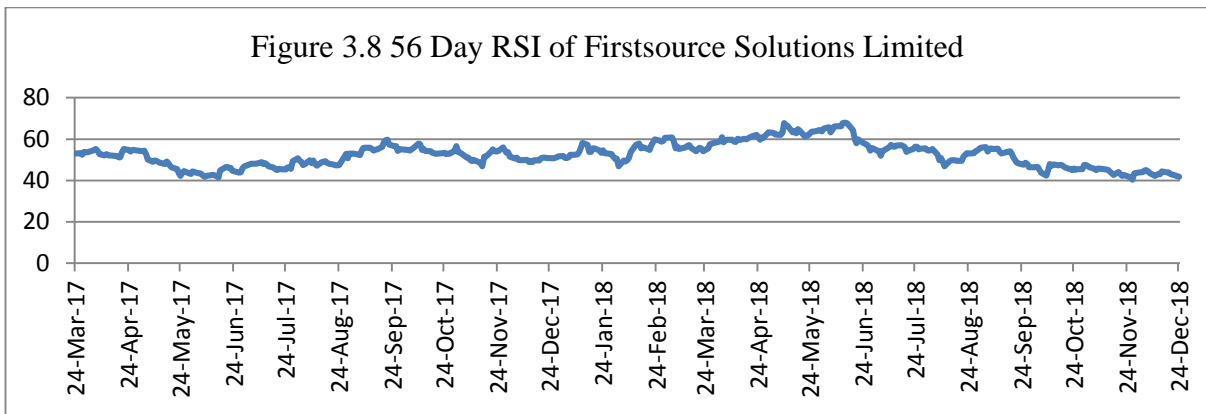
momentum is upward, so GNA Axles will prove to be a good long term investment.

Firstsource Solutions Limited



The graph of First Source has been reached its lower low by end of November and currently it looks like bullish failure wing. At this point of time the RSI value is around 33, so it can be expected to increase significantly short period of time.

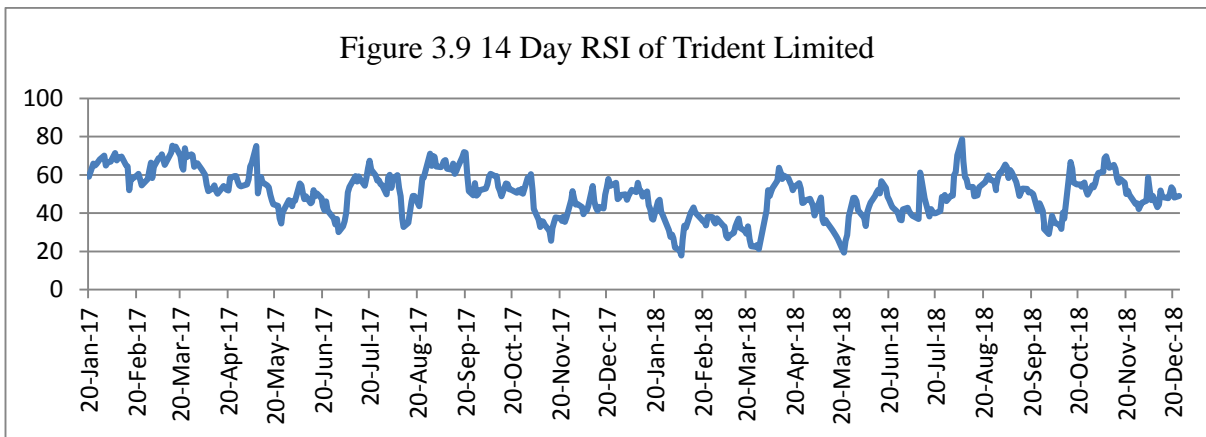
Although it may extent its downward trend for a week or two, it will change its momentum within a short period of time. It is good opportunity for the short investors to invest in First Source.



The RSI graph of First Source shows that there is no significant variability during the past two years; it indicates

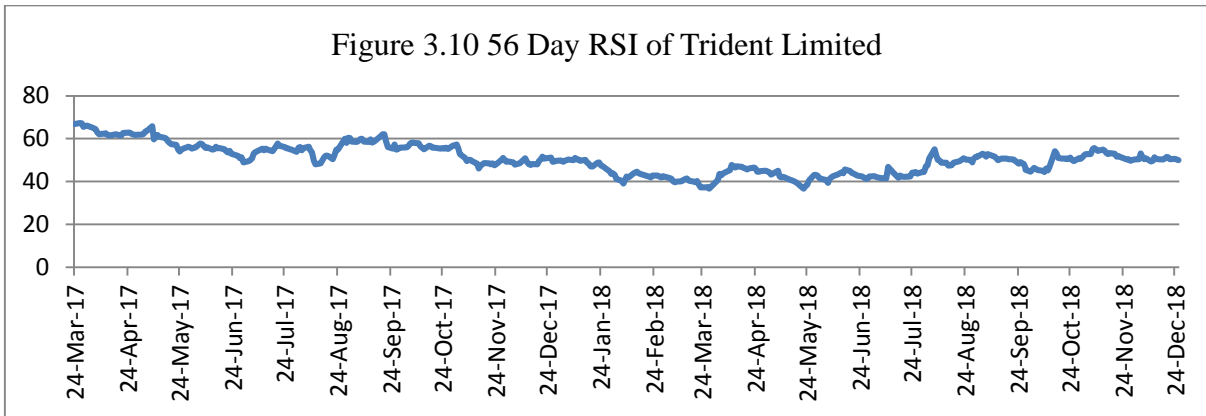
the consistency of First Source. One can choose the First Source to safeguard their long term investment.

Trident Limited



Trident has been very volatile during past two years. During oversold level, most of the times it fetches till 20 and thereafter it moves upwards. The current RSI is around 49,

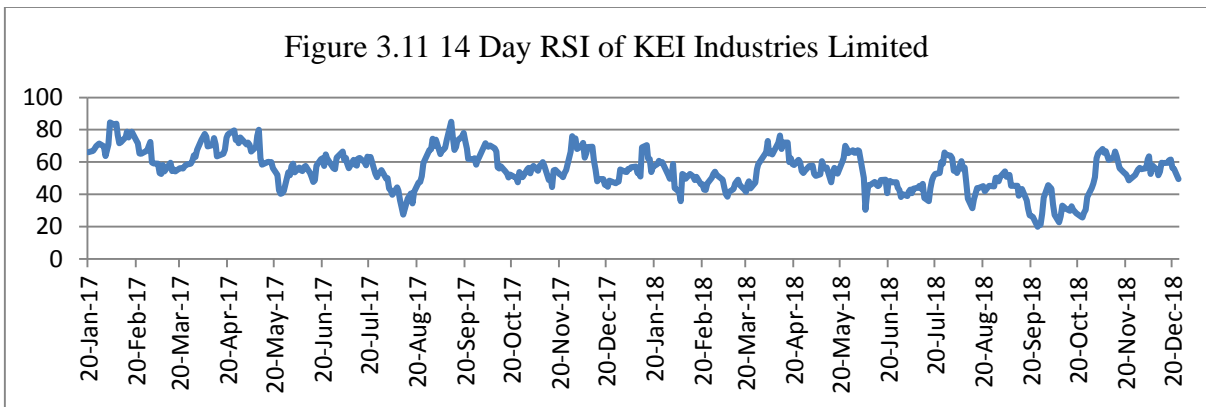
upward momentum is likely be sustained till reaches overbought level. It is suggestible to go for short term investment.



The RSI graph of trident constantly above 40 and its experience only twice it breaks below 40. The graph has maintained in between 40 and 60 for most of the time. It proved that the performance of trident was consistent from

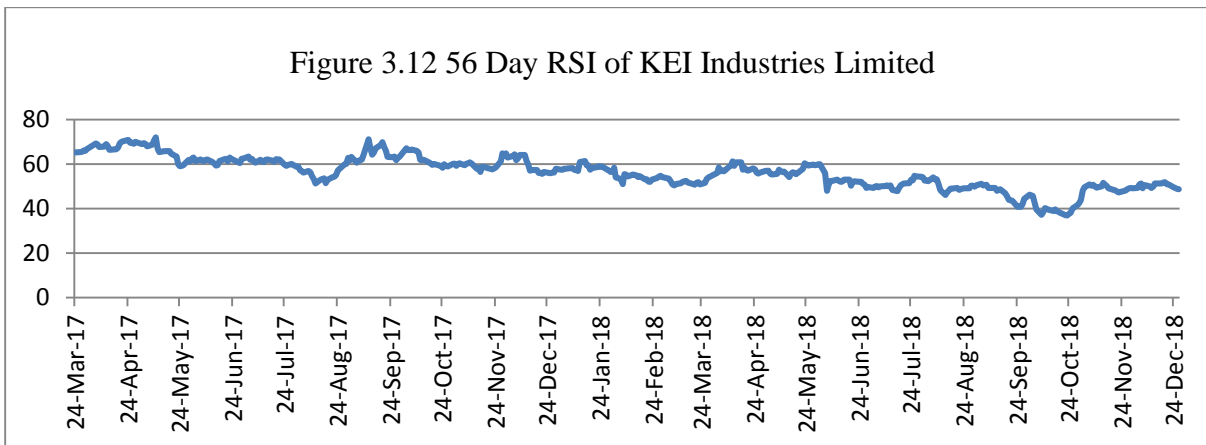
past two years and the risk is low. Generally stock with low risk and consistent performance factors that induce the investor to invest, so Trident is safe for long term investment.

KEI Industries Limited



The RSI graph of KEI Industries initially it was in overbought position to continue for some time but later it falls below 30 mark and immediately bounce back and breaks 80 levels. Like that most of time it was around 40-80 mark

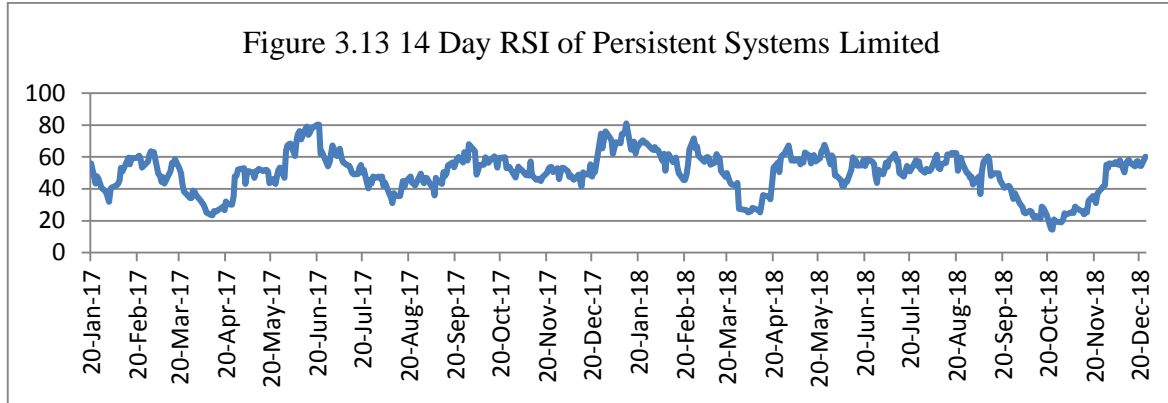
and rarely its breaks below 30 mark. The present RSI is 49.04 and down ward momentum is likely to be sustained till reaches the oversold position, so it is not advisable to short term investment.



The RSI graph of KEI Industries shows that its performance was consistent. It was only once during the considered time period the graph dropped below 40. Its performance was very

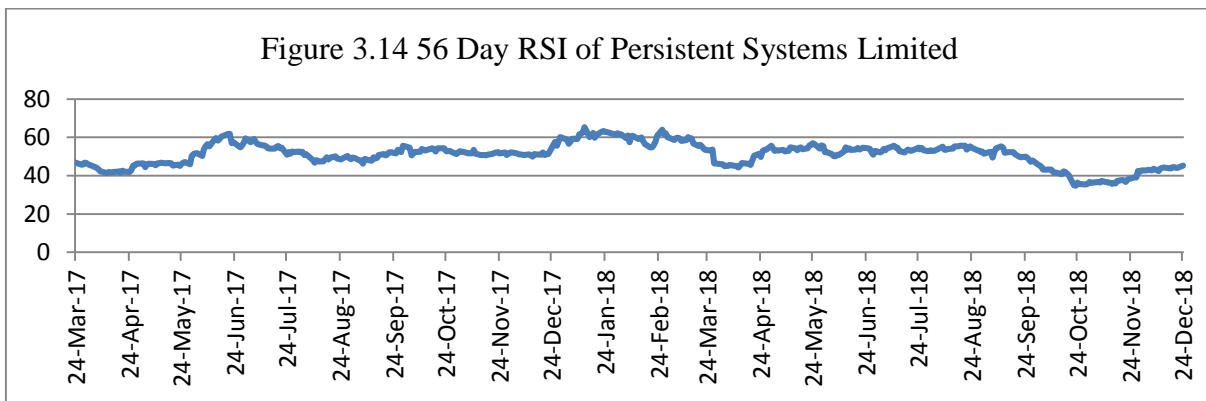
strong over past two years. These factors are enough evidence to go for long term investment.

Persistent Systems Limited



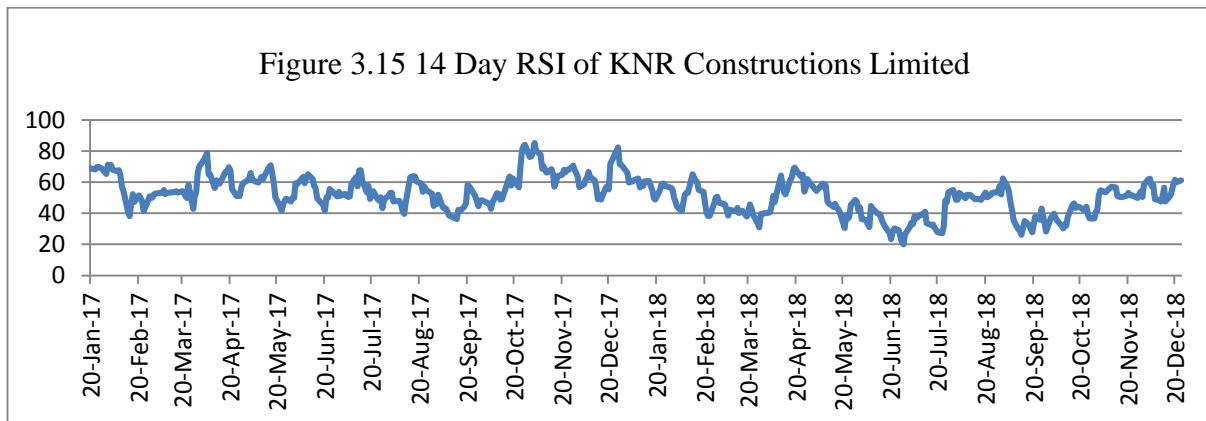
The RSI graph of Persistent has reached higher high by end of the December 2018. Currently the RSI value is 60.18 and upward momentum is likely sustained for till reaches the

overbought level but due to its nearing to overbought position, so it is not advisable to invest in persistent for short term.



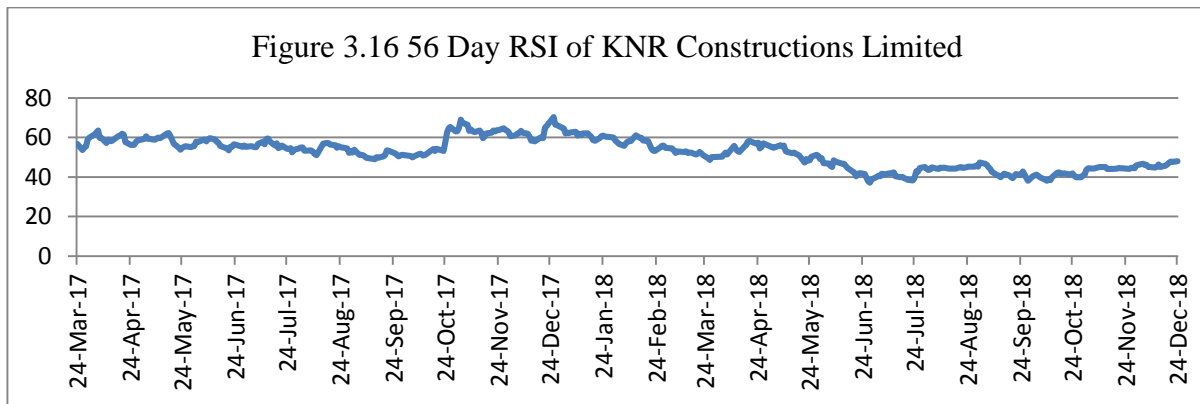
The RSI graph of Persistent shows that it moves around the range of 40-60 mark. So, it indicates that the stock was very positive during the considered time period. It can capable to generate reasonable returns over long period of time.

KNR Constructions Limited



The graph shows that the RSI was very volatile during the period of January 2017 to March 2018. It makes short and quick swings around range of 40-80 and thereafter it breaks below 20 mark. At present the RSI is around 61 which is

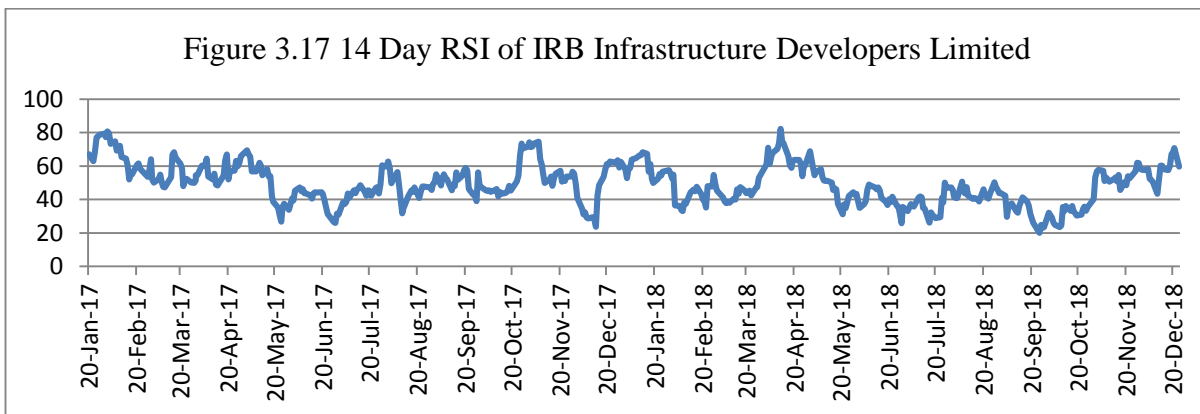
nearby overbought position, upward momentum will sustained till reaches overbought position, so one cannot expect much returns from this stock. It is not recommendable for short term investments.



The RSI graphs shows that initially it makes short and quick wings, later it breaks above 70 twice and then started downward movement till it breaks below 40. At present the

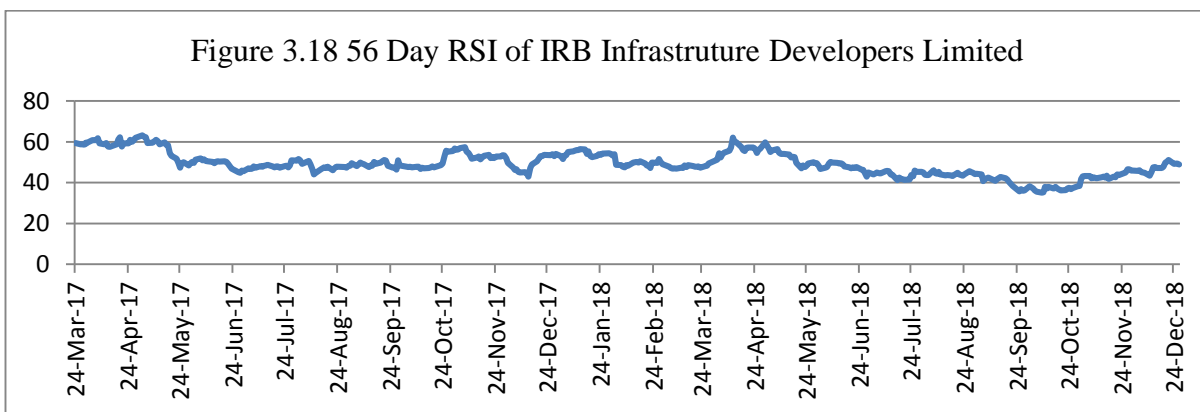
RSI is 47.91 moving towards upwards. It can capable to generate fruitful results for long term investments.

IRB Infrastructure Developers Limited



The graph shows that during considered period of time, it moves overbought and oversold positions constantly. At present the RSI value is 59.72, just few days back it breaks

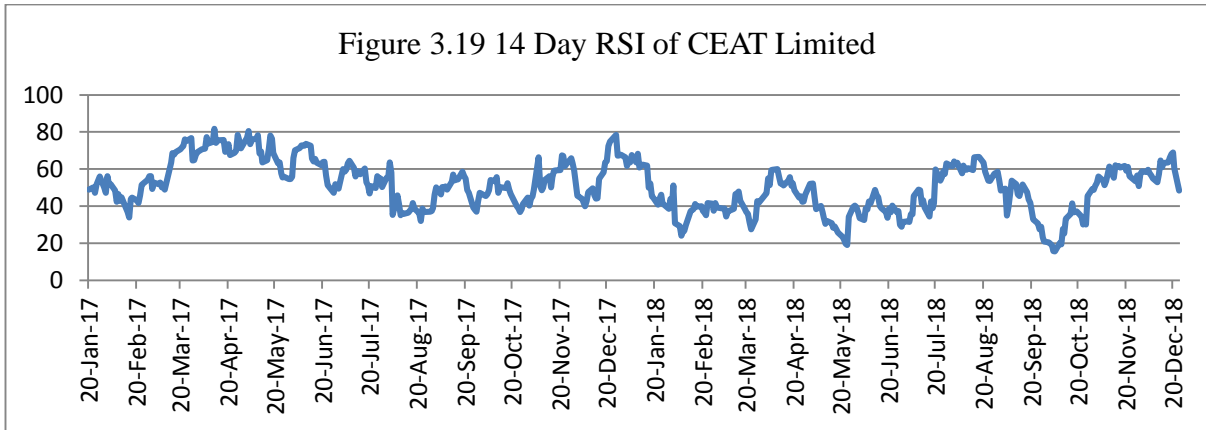
above 70 mark and started to slide down towards oversold position. At this moment, it is not advisable to buy this stock.



The RSI graph of IRB shows that its performance has been consistent. It was only once during considered period of time that graph dropped below 40. Now it shows strong uptrend

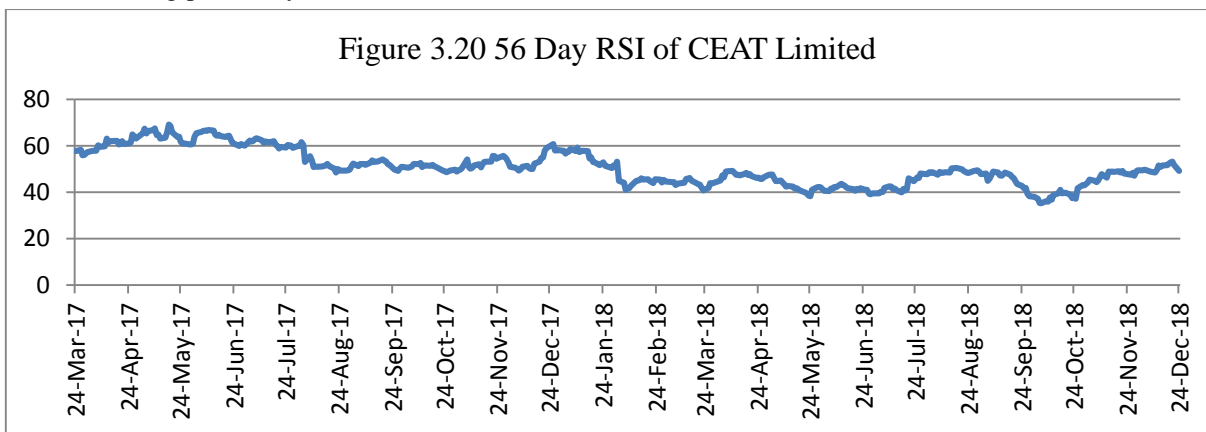
movement. Also, the deviation is low which signifies lower risk. These factors make IRB suitable for long term investment.

CEAT Limited



The RSI graph clearly shows that initially it was nearly oversold position, later it moved upwards reached 80 mark and after wards it was in bearish failure swings for few months. Like that during past two years, it shows few bullish

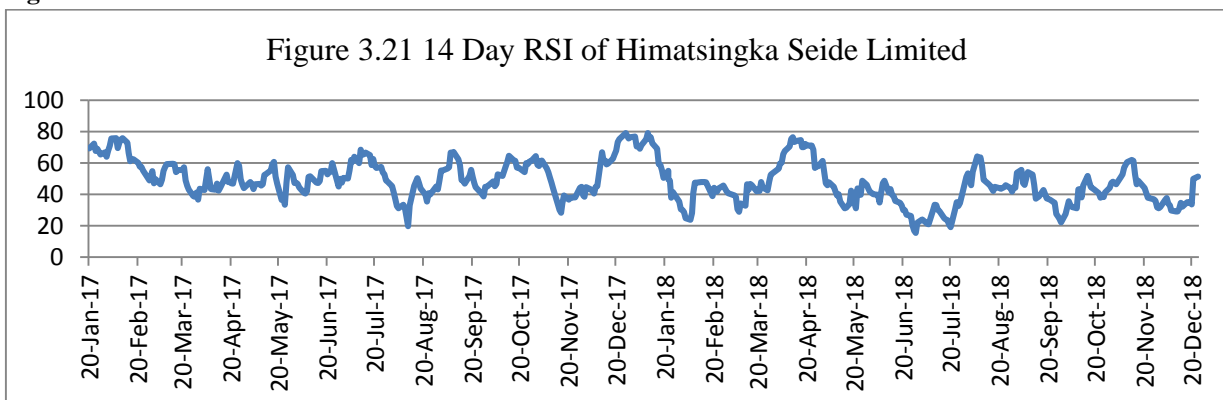
failures swing also. At present, the RSI value is around 48 and down trend likely to be sustained till it reaches for oversold position, so it is not advisable to buy this stock at this moment.



The RSI graph of Ceat has been constantly above 40, and it has experienced only once a significant dip below 40. As a matter of fact the graph has stayed between 40 and 60 for most of the time, this shows that the performance of Ceat has

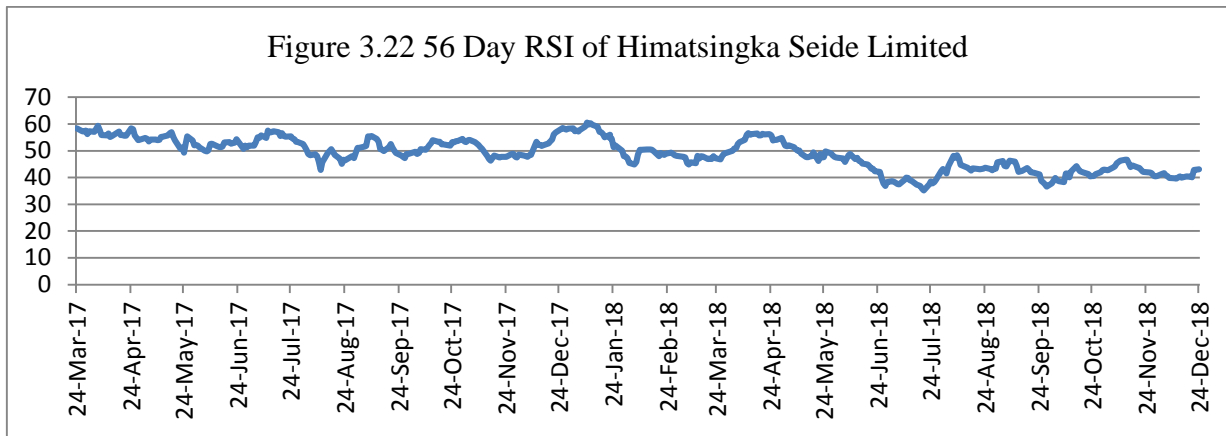
been consistent for the past two years and the risk is low. Consistent performance and low risk are the factors that induce the investor to invest. So, we can say that Ceat is safe for long term investment.

Himatsingka Seide Limited



The graph shows that initially it was in overbought position and later the graph simultaneously breaches the 70 mark and keeps on increasing; it changes its trend only after it has breached 80. Currently, the RSI value of Himatsingka is

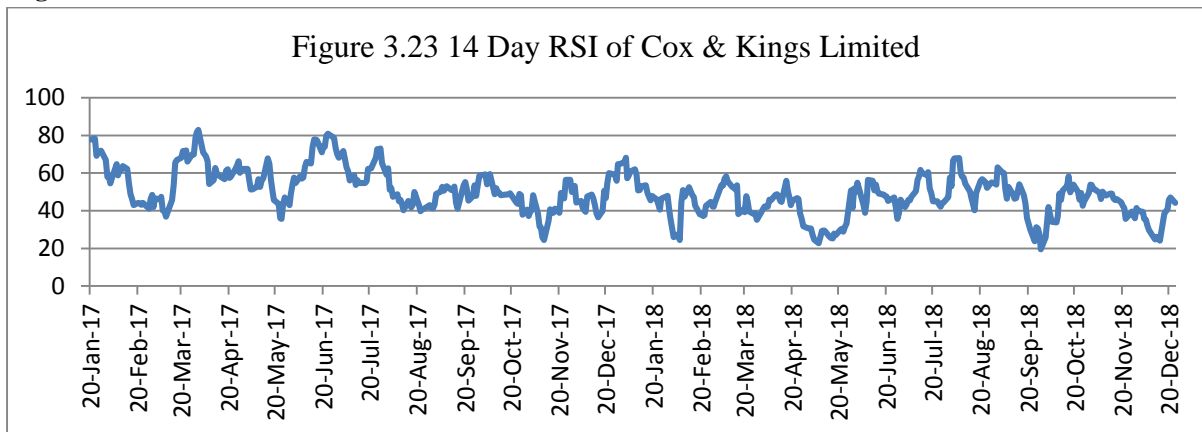
51.27 and up trend momentum likely to be sustained till it reaches overbought position. Surely one can make fruitful gains for making short term investment.



The graph shows that initially it was just below the 60 mark, thereafter identified several ups and downs. Currently, the

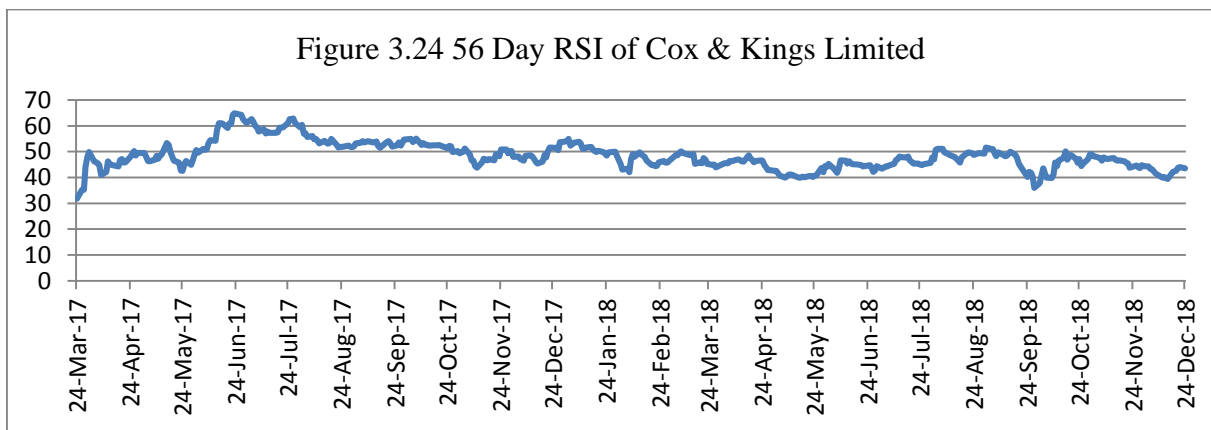
graph indicates consistent movement, so at current level it can better hold the stock for investment for long term.

Cox & Kings Limited



The Cox & Kings shows huge volatility during the past two years. Generally the stock which have high volatility will give short term investment opportunity even though high risk. The current RSI value is around 44 and the upward

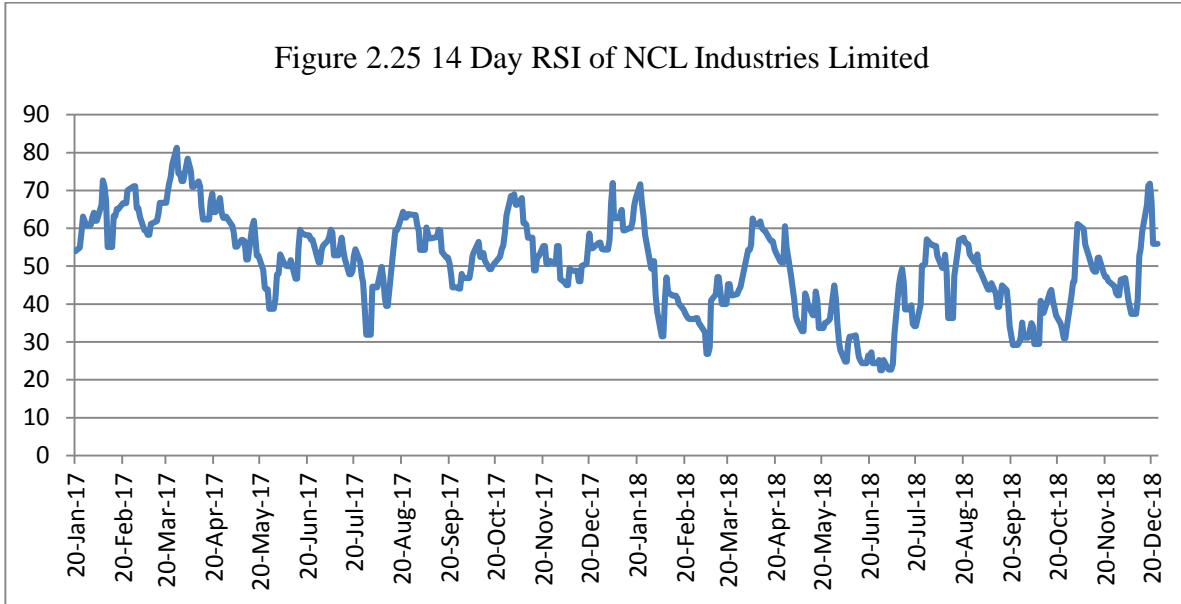
momentum is likely to be sustained till it reaches the overbought level, so it is advisable to invest in Cox & Kings for short term.



Cox & Kings, like the other chosen stocks for long term investment has shown consistent performance and its risk is low. During the two years, the graph has stood above 40 during most of the time period, initially the RSI is around 30

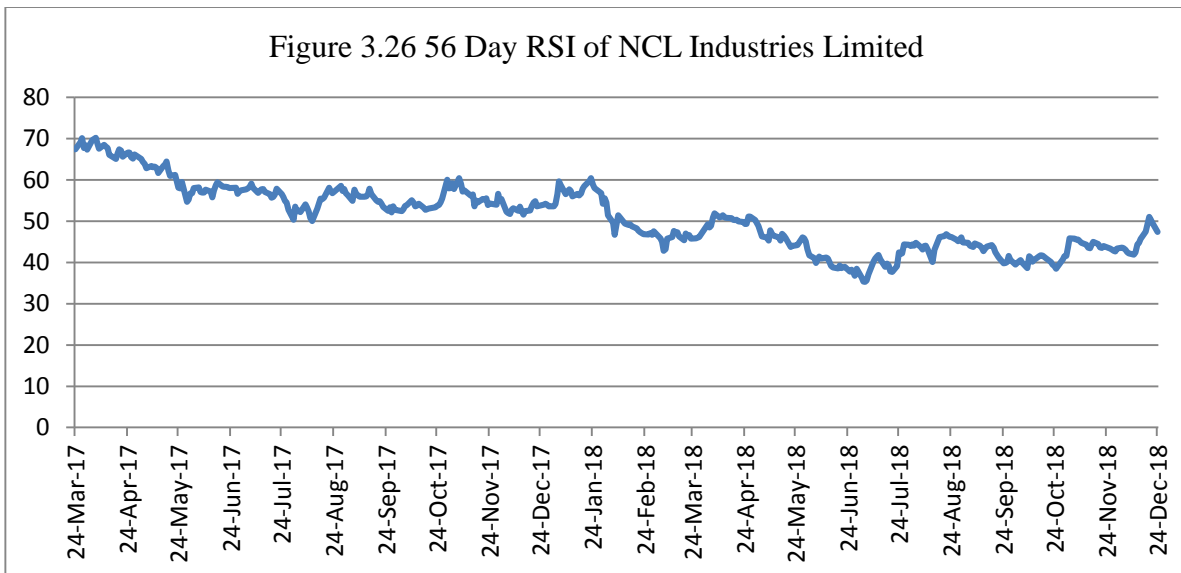
and thereafter it has only been two significant drops. Also, the current momentum is upward, so Cox & Kings will prove to be a good long term investment.

NCL Industries Limited



The RSI graph of NCL Industries has reached its higher high in the month of December and currently its trend is downward. Most importantly there is huge volatility in the movement of RSI graph, the current RSI value is around 55

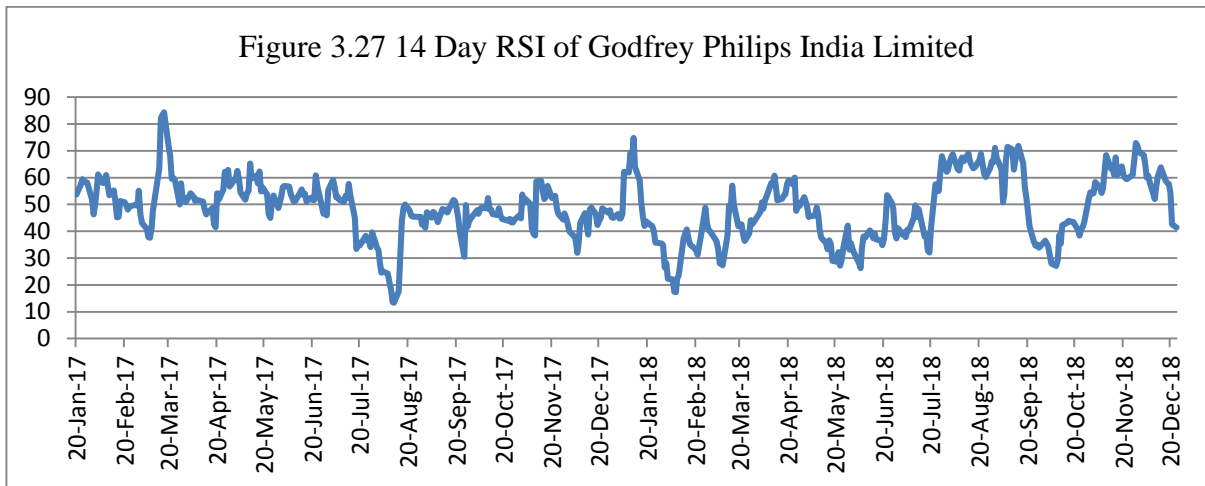
and downward momentum will sustained till it reaches the overbought level. So, it is not advisable to invest in NCL industries for short term.



The graph of NCL Industries has initially in overbought position; thereafter it has shown consistent performance till June 2018. Even if past few months NCL industries not

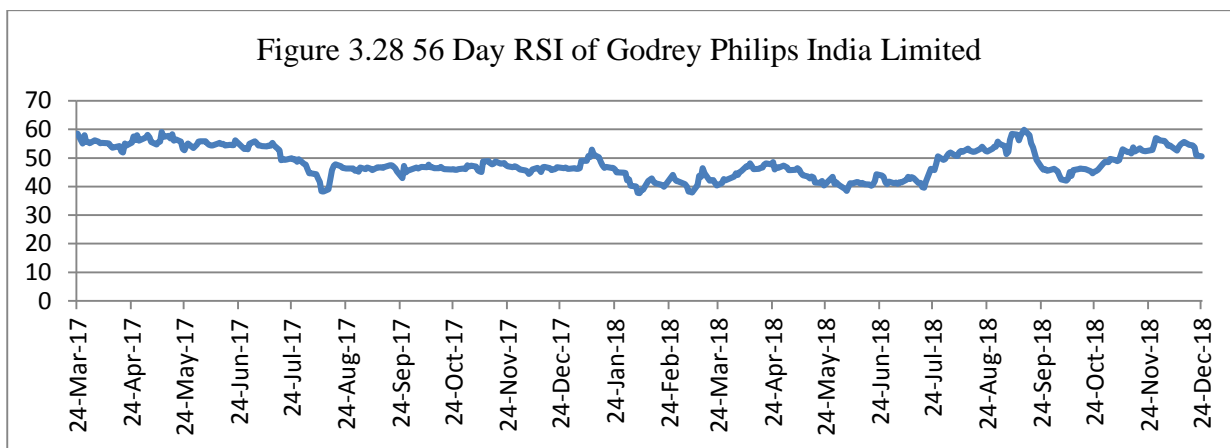
shown significant performance, currently it has been showing strong upward movement. So it is advisable to invest in NCL Industries for long term.

Godfrey Philips India Limited



The RSI graph of Godfrey Phillip has just reached its lower low and currently its trend is down trend but still RSI value is around 40 which mean it is still moving towards oversold

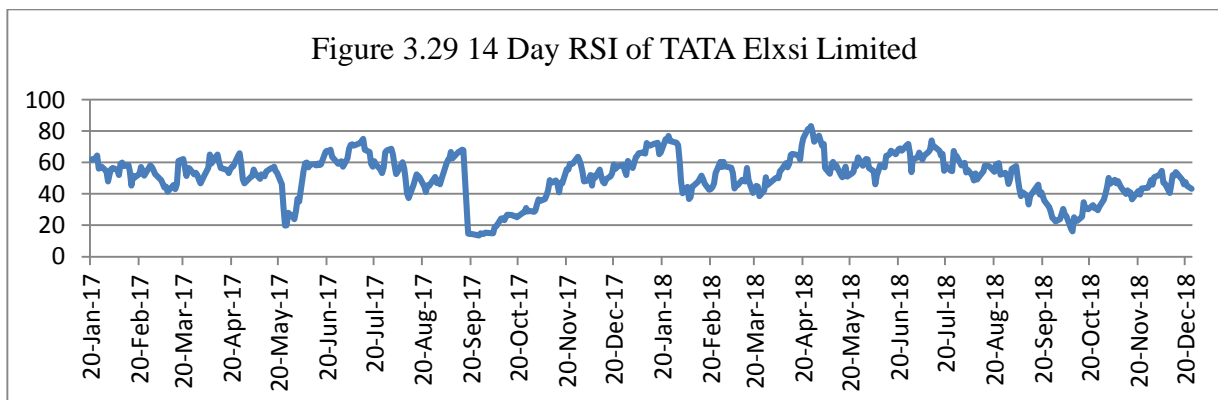
position, so one can wait still it reaches the oversold position and make investment in Godfrey Philip for short term till RSI value reaches 70, it is a safe bet.



The current trend of Godfrey Philip is bullish failure swing. Irrespective of the trend, the performance has been consistent except few dips below 40. Since the performance has been

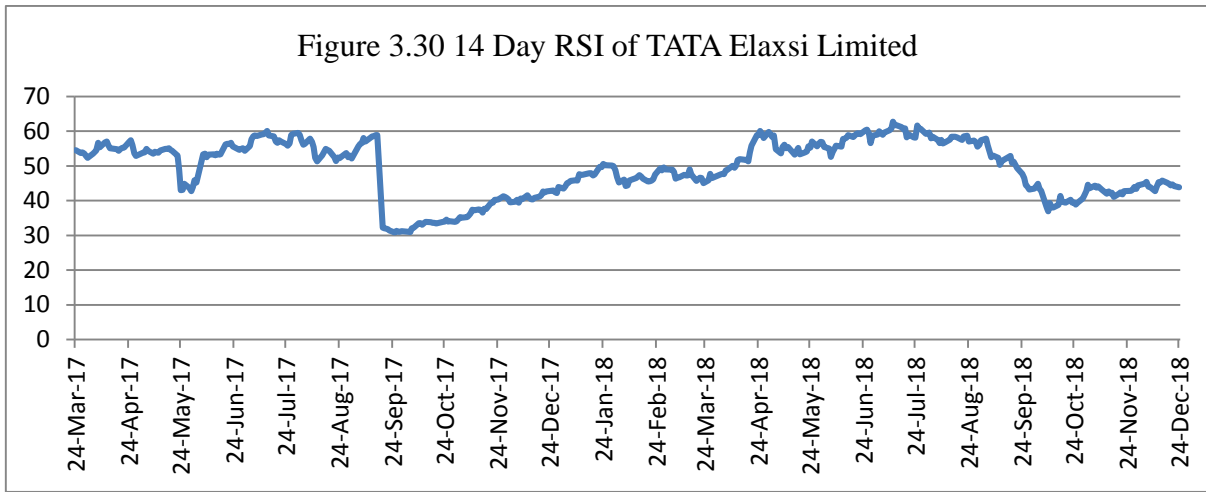
quite consistent and the risk being acceptable, we go for Godfrey Philip for long term investment.

TATA Elxsi Limited



In case TATA Elxsi, it has reached lower low in the month of October 2018 and later it sustained above the 40. The current RSI value is around 43 and even though temporarily

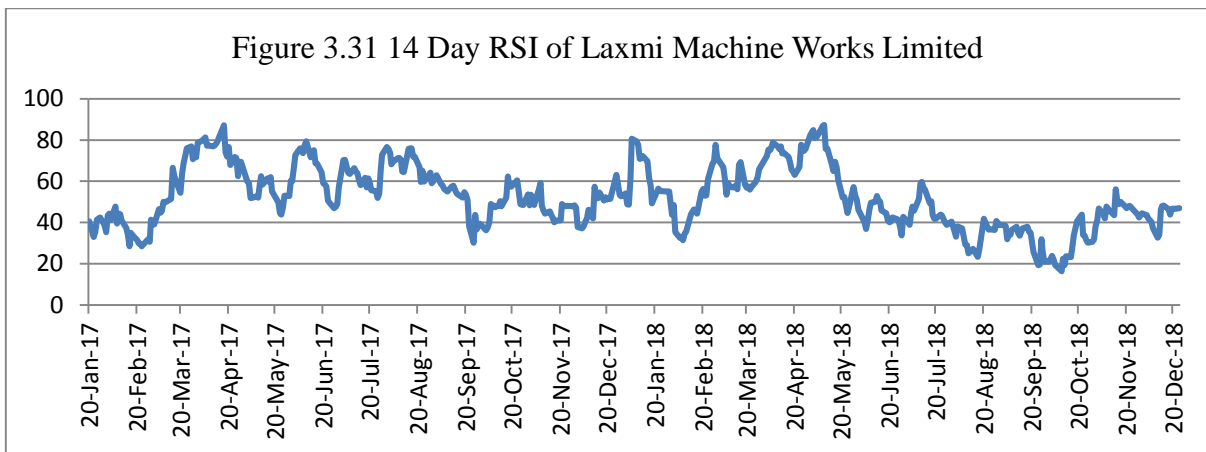
downward momentum exists but it looks likely be very positive and sustained till it reaches the overbought position, so it is advisable in invest in TATA Elxsi for short term.



The graph of TATA Elaxsi shows that its performance has been consistent. it was only twice during considered period of time that the graph dropped below 40. The current trend of

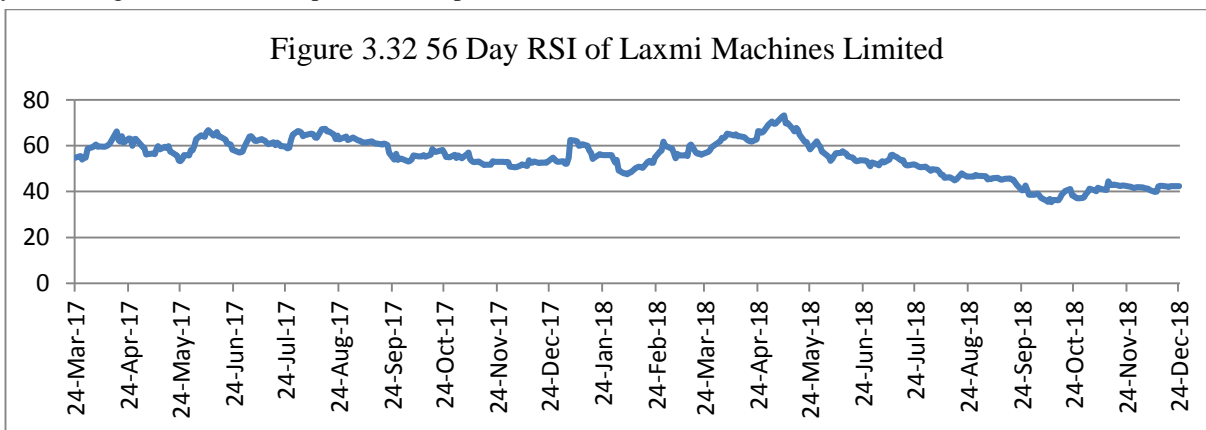
TATA Elaxsi is very positive and hopefully it can generate fruitful results for long term investment.

Laxmi Machine Works Limited



In case of laxmi machines we can see that few wide ups and downs, it means the TATA Elaxsi has taken considerable time for every overbought and oversold position. At present the

RSI value is around 46 and up trend momentum is likely to be sustained till it reaches 70. It is safe to invest for short term investment.



A Laxmi machine is one of the stock, which shown very consistent performance throughout the considered period of time. Only once it breaks above 70 mark and thereafter it has been sustained around the 50. Since its performance is quiet consistent and risk being acceptable, so it is better go for laxmi machines for the long term investment.

FINDINGS

RSI is most appropriate tool helps to predict the stock movements accurately. It helps investors to choose the right stocks while making investment in both short and long term. We cannot find significant research done on RSI in Indian stock market. Now in our research, the results of short term indicate that the RSI can also be successfully used in Indian stock market. The study has also listed the following signals for the fifteen stocks for short term and long term investment.

COMAPNY NAME	SIGNAL	
	SHORT TERM	LONG TERM
BOMBAY DYEING	SELL	BUY
GNA AXLES	BUY	HOLD
FIRST SOURCE SOLUTIONS	BUY	BUY
TRIDENT	HOLD	HOLD
KEI INDUSTRIES	SELL	HOLD
PERSISTENT	SELL	BUY
KNR CONSTRUCTION	SELL	HOLD
IRB INFRA	SELL	HOLD
CEAT	SELL	HOLD
HIMATSINGKA SEI	HOLD	HOLD
COX & KINGS	HOLD	BUY
NCL INDUSTRIES	SELL	HOLD
GODFREY PHILIP	BUY	HOLD
TATA ELXSI	HOLD	BUY
LAXMI MACHINES	HOLD	BUY

CONCLUSION

Based on results obtained, the RSI is identified as one of most influential tool which helps to predict the buy and sell signals of the stock. It effectively performs in Indian stock market; it also works well in other stocks markets in around the world. The results will more better if we use fundamental analysis and other technical indicators along with RSI.

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