

A STUDY ON TECHNICAL ANALYSIS OF LISTED SECURITIES WITH REFERENCE TO POWER INDUSTRY

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Abstract

Power is one of the most important infrastructure elements, essential to national wellbeing and commercial development. For the Indian economy to expand steadily, sufficient power infrastructure must exist and be developed. Universal access to cheap electricity in a sustainable manner has been the guiding principle of India's power sector. The Ministry of Power has been working hard over the past few years to create a single national system, strengthen the distribution network, and achieve ubiquitous home electricity in order to transform the nation from one with a power deficit to one with an excess. This paper focuses on the performance of some of the major firms in the Indian Power Sector and what are their results during a 10 day time frame. Stock is one of the investment instruments on the capital markets which provide high returns. This paper focuses on a detailed discussion on the technical analysis of power industries in India with various tools like moving average, relative strength index, and resistance and support.

Keywords: Technical Analysis, Moving Average, Relative Strength Index, Resistance and Support, Indian Power Industry.

Introduction

One of the most diverse power sectors in the globe is found in India. The sources of energy used to generate electricity vary from reliable non-conventional sources like wind, sun, farm waste, and household waste to conventional sources like coal, lignite, natural gas, oil, hydropower, and nuclear power. The demand for electricity in the nation has risen quickly and is anticipated to do so in the years to come. Massive additions to the installed generating capability are necessary to keep up with the nation's rising demand for energy. As of 2020, India's installed capability for green energy was fourth, followed by solar power in fifth place and wind power in fourth. Only India is on pace to meet the goals set forth in the Paris Agreement among the G20 countries. India, with an installed power output of 408.71 GW as of October 31, 2022, is the third-largest producer and user of energy globally. India had 165.94 GW of fixed renewable energy capacity (including water) as of October 31, 2022, making up 40.6% of the nation's total installed power capacity. Estimated contributions from various sources include solar energy (61.62 GW), wind energy (41.84 GW), biofuel (10.70 GW), minor hydropower (4.92 GW), and hydropower (46.85 GW). In comparison to the first three months of FY22, when non-hydro renewable energy capacity increase was 2.6 GW, it was 4.2 GW in the first three months of FY23. India saw an increase of 10.67% YoY with energy production (including green sources) of 846.18 BU between April and September 2022. The Ministry of electricity's

statistics shows that India's electricity usage rose 1.64% YoY to 114.64 BU in October 2022. On June 9, 2022, the country's highest electricity consumption was 210.79 GW. In June 2022, the real PLF for thermal power facilities across all of India was 68.24 percent, up from 67.92 percent in May 2022.

Objectives

- To understand the variation in stocks of power industries.
- To use various tools in analysing the stock market.

Review of Literature

1. (*Andrew W. Lo, et.al., 2000*) Technical analysis, also known as "charting," has been used in finance for many decades, but it has not received the same level of academic scrutiny and acceptance as more traditional approaches like fundamental analysis. One of the most significant impediments is the highly subjective nature of technical analysis—the presence of geometric shapes in historical price charts is frequently in the eye of the beholder. In this paper, we propose a systematic and automatic approach to technical pattern recognition using nonparametric kernel regression, and we test its effectiveness on a large number of US stocks from 1962 to 1996.

2. (*Sunita Saini , 2018*) This paper provides a brief overview of India's electricity industry. It includes the generation, transmission, and distribution segments of the electricity industry. Industry has undergone significant change in all three areas, first moving from the private to the public and then back again. As per the current situation, it appears that the power sector requires more development and advancement to flourish and support the nation's economic growth.

3. (*Yulius Hari,Lily Puspa Dewi,2018*) This study is anticipated to assist the public in stock analysis and in determining when to purchase and sell. The relative strength index and moving average are two signs that this forecasting system will advise stock investors and stock traders to pay attention to. In conclusion, the findings of this study can aid investors in choosing when to purchase and sell.

4. (*Mukherjee, 2017*) This paper states that there is a sizable information vacuum, according to a literature analysis of the Electricity Act of 2003's effects on the Indian electricity sector. The majority of studies only consider potential effects or effects on a particular industry, demonstrating the need for in-depth investigation into how well the Act promotes efficiency and competitiveness. The issues the Indian electricity sector is facing should be better understood with the help of future study, which could also advise policymakers about the Act's revisions that are required.

5. (*Ghosh & Kathuria, 2016*) In this study, the effectiveness of thermal power plants in India is compared to institutional quality or regulatory governance. The study indicates that more effective state regulation is related to more efficient electric generation utilities using a translog stochastic frontier model. The findings, which are based on a sample of 77 thermal power plants using coal during the reform period, indicate that additional reforms to strengthen independent regulators might have a major impact on the performance of the Indian power sector. The industry has a sizable amount of potential for development, as indicated by the mean technical efficiency of 76.7%.

6. (*Sharma, 2015*) The potential for solar thermal power generation in India is examined in this article, taking into consideration elements including the availability of wastelands, direct normal irradiance (DNI), and wind power adaptability. In order to evaluate the potential for solar thermal power generation in India, the study creates a thorough framework that divides wastelands between thermal and photovoltaic pathways. The findings could help policymakers in India choose the optimum locations for solar thermal power generation by indicating a potential of 756 GW for a threshold DNI value of 1800 kW h/m² and 229 GW for a threshold DNI value of 2000 kW h/m².

7. (*Irfan, 2015*) The development and competitiveness of the Indian wind sector are examined in this research using the Diamond model approach to identify and analyze key drivers. According to the study, the competitiveness of an industry is affected by a variety of elements, including demand conditions, factor conditions, related and supporting industries, company strategies, structures, rivalries, and the government. In order to help government officials and other stakeholders understand the complex interrelationships between these variables and create procurement strategies that take into account those links, the paper makes policy recommendations for the sustainable growth of

the wind power industry. Given that India has the fourth-highest installed wind capacity worldwide, the report emphasizes the necessity of bolstering these elements for the sustained growth of the sector.

Research Methodology

This research focuses on the study of Secondary data collected from different Journals, research paper publications from different websites related to power industry and technical analyses of five industries under power sector.

Analysis and Interpretation

Tata Power Ltd

1. a. Moving Average: Classic

Indicator	Simple	Signal
5-SMA	205.36	Bullish
10-SMA	206.11	Bearish
20-SMA	206.85	Bearish
50-SMA	214.09	Bearish
100-SMA	221.01	Bearish

b. Moving Average: Exponential

Indicator	Simple	Signal
5-EMA	204.81	Bullish
10-EMA	205.77	Bullish
20-EMA	207.37	Bearish
50-EMA	212.55	Bearish
100-EMA	217.58	Bearish

A moving average (MA) is a stock indicator commonly used in technical analysis, used to help smooth out price data by creating a constantly updated average price. A rising moving average indicates that the security is in an uptrend, while a declining moving average indicates a downtrend. Here, the stock is in a bearish trend.

2. Resistance and Support

Date	R3	R2	R1	Pivot	S1	S2	S3
20-01-2023	212.17	210.33	208.77	206.93	205.37	203.53	201.97
19-01-2023	209.30	208.40	206.85	205.95	204.40	203.50	201.95
18-01-2023	209.19	208.77	208.14	207.72	207.09	206.67	206.04
17-01-2023	211.3	209.9	208.8	207.4	206.3	204.9	203.8
16-01-2023	210.19	209.22	208.09	207.12	205.99	205.02	203.89
13-01-2023	210.1	208.45	207.45	205.8	204.8	203.15	202.15
12-01-2023	210.06	208.43	207.06	205.43	204.06	202.43	201.06
11-01-2023	209.2	208.25	207.05	206.1	204.9	203.95	202.75
10-01-2023	210.76	209.28	207.66	206.18	204.56	203.08	201.46
09-01-2023	209.11	208.13	207.16	206.18	205.21	204.23	203.26

3. RSI

Date	Period	RSI
20-01-2023	14	44.5212
19-01-2023	14	39.8329
18-01-2023	14	43.8138
17-01-2023	14	44.1865
16-01-2023	14	42.4825
13-01-2023	14	41.3744
12-01-2023	14	39.7579
11-01-2023	14	39.9626
10-01-2023	14	40.2189
09-01-2023	14	40.3993

It is an indicator used to identify overbought or oversold condition in the stock. As per Wilder when RSI value is above 70 it is considered as overbought and when RSI is below 30 it is considered as oversold. **Since RSI is between 30 & 70 it is neutral.**

4. Technical Analysis

Title	Sell	Neutral	Buy	Action
Moving Averages	42%	-	58%	Buy
Momentum Oscillators	80%	-	20%	Sell
Trend Oscillators	67%	-	33%	Sell
Volatility	100%	-		Strong Sell

Tata Power Technical Analysis provides a summary of Technical Indicators, Classic Moving Average, Exponential Moving Average, and other technical indicators. It aids in the analysis of market trends, patterns, and trading indications. Tata Power has a 20-day moving average of 206.85, a 50-day moving average of 214.09, and a 100-day moving average of 221.01. Tata Power has a 20-day moving average of 207.37, a 50-day moving average of 212.55, and a 100-day moving average of 217.58. While knowing and analyzing a company's Technicals is critical, it is also critical to consider the Share Price, Stock Performance, Fundamental Analysis, Financial Statements, and Similar Stocks Comparison. It indicates whether the business is expanding, stable, or declining.

Reliance Power Limited:

1. a. Moving Average: Classic

<u>Indicator</u>	<u>Simple</u>	<u>Signal</u>
5 SMA	14.12	Bullish
10 SMA	14.38	Bearish
20 SMA	14.46	Bearish
50 SMA	15.33	Bearish
100 SMA	16.33	Bearish

b. Moving Average: Exponential

<u>Indicator</u>	<u>Simple</u>	<u>Signal</u>
5 EMA	14.22	Bullish
10 EMA	14.33	Bearish

20 EMA	14.58	Bearish
50 EMA	15.14	Bearish
100 EMA	15.29	Bearish

2. Resistance and Support

Sr. No.	Date	Open	High	Low	Close	R1	R2	R3	S1	S2	S3
1	10-01-2023	14.58	14.64	13.9	14.26	14.64	15.01	15.38	13.9	13.53	13.16
2	11-01-2023	14.3	14.45	14.25	14.32	14.43	14.54	14.63	14.23	14.14	14.03
3	12-01-2023	14.34	14.4	13.8	13.92	14.28	14.64	14.88	13.68	13.44	13.08
4	13-01-2023	13.95	14.27	13.85	14.17	14.35	14.52	14.77	13.93	13.68	13.51
5	16-01-2023	14.17	14.65	14.1	14.25	14.56	14.88	15.11	14.01	13.78	13.46
6	17-01-2023	14.25	14.4	14.06	14.13	14.34	14.54	14.68	14	13.86	13.66
7	18-01-2023	14.2	14.3	14	14	14.2	14.4	14.5	13.9	13.8	13.6

3. RSI

Date	Period	RSI
20/01/2023	14	37.32692
19/01/2023	14	39.28975
18/01/2023	14	39.28975
17/01/2023	14	41.15579
16/01/2023	14	42.40249
13/01/2023	14	40.73547
12/01/2023	14	37.36906
11/01/2023	14	40.57968
10/01/2023	14	41.12652

$$RSI = 40.40$$

The volume of Reliance Power stock has increased rapidly from 10th January to 16th January indicating asset is overbought (4.97M - 10.77M), whereas 17th and 18th volume reduced continuously to 7.54M indicating an oversold of stock.

4. Technical Analysis

Title	Sell	Neutral	Buy	Action
Moving Averages	50%	-	50%	Neutral
Momentum Oscillators	-	-	100%	Strong Buy
Trend Oscillators	33%	-	67%	Buy
Volatility	-	-	100%	Strong Buy

Reliance Power Technical Analysis offers an overview of the Technical Indicators, Classic Moving Average, Exponential Moving Average and more. It helps to analyse the price trends, patterns and trading signals. On Classic Moving Average Scale Reliance Power shows a 14.46 for 20 - DMA, 15.33 for 50-DMA and 16.33 for 100-DMA. On Exponential Moving Average Scale Reliance Power shows a 14.58 for 20 - DMA, 15.14 for 50-DMA and 15.29 for 100-DMA. While understanding and analysing Technicals of a company is crucial, it is equally important to look at the Share Price, Stock Performance, Fundamental Analysis, Financial Statements and Similar Stocks Comparison. It gives a sense of whether the company is growing, stable or deteriorating.

JSW -Energy:

1. a. Moving Average: Classic

<u>Indicator</u>	<u>Simple</u>	<u>Signal</u>
5 EMA	252.8	Bearish
10 EMA	260.4	Bearish
20 EMA	272.6	Bearish
50 EMA	285.8	Bearish
100 EMA	306.2	Bearish

b. Moving Average: Exponential

<u>Indicator</u>	<u>Simple</u>	<u>Signal</u>
5 EMA	250.9	Bearish
10 EMA	258.6	Bearish
20 EMA	267.5	Bearish
50 EMA	282.5	Bearish
100 EMA	291.1	Bearish

Each trader must decide which MA is better for his or her particular strategy. Many shorter-term traders use EMAs because they want to be alerted as soon as the price is moving the other way. Longer-term traders tend to rely on SMAs since these investors aren't rushing to act and prefer to be less actively engaged in their trades.

2. Resistance and Support

DATE	OPEN	HIGH	LOW	CLOSE	R1	R2	R3	S1	S2	S3
18-01-2023	264.05	269.55	263.3	264.85	268.5	272.15	274.75	262.25	259.65	256
17-01-2023	268.6	270.25	265.15	265.8	268.99	272.17	274.09	263.89	261.97	258.97
16-01-2023	268.05	278.5	265.6	268.6	276.2	283.8	289.1	263.3	258	250.4
13-01-2023	273.5	275.95	266	267.6	273.7	279.8	273.7	263.75	259.9	253.8
12-01-2023	278.05	279	271.45	273.4	277.79	282.17	285.34	270.24	267.07	262.69
11-01-2023	280	282	269.7	271.8	279.3	286.8	291.6	267	262.2	254.7
10-01-2023	286.4	286.4	277.3	282.55	286.86	291.18	295.96	277.76	272.98	268.66
09-01-2023	284.95	286.5	279.25	283.95	287.21	290.42	294.46	279.96	275.98	272.71

3. RSI

Date	Period	RSI
20/01/2023	14	33.82691
19/01/2023	14	36.08498
18/01/2023	14	35.01878
17/01/2023	14	35.60086
16/01/2023	14	37.04543
13/01/2023	14	36.74751
12/01/2023	14	39.96715
11/01/2023	14	43.82429
10/01/2023	14	46.59638

Generally, when the RSI indicator crosses 30 on the RSI chart, it is a bullish sign and when it crosses 70, it is a bearish sign. Put another way, one can interpret that RSI values of 70 or above indicate that a security is becoming overbought or overvalued. It may be primed for a trend reversal or corrective price pullback. An RSI reading of 30 or below indicates an oversold or undervalued condition.

4. Technical Analysis

Title	Sell	Neutral	Buy	Action
Moving Averages	42%	-	58%	Buy
Momentum Oscillators	-	25%	75%	Buy
Trend Oscillators	33%	-	67%	Buy
Volatility	-	-	100%	Strong Buy

JSW Energy Technical Analysis offers an overview of the Technical Indicators, Classic Moving Average, Exponential Moving Average and more. It helps to analyse the price trends, patterns and trading signals. On Classic Moving Average Scale JSW Energy shows a 272.66 for 20 - DMA, 285.80 for 50-DMA and 306.18 for 100-DMA. On Exponential Moving Average Scale JSW Energy shows a 267.50 for 20 - DMA, 282.55 for 50-DMA and 291.12 for 100-DMA. While understanding and analysing Technicals of a company are crucial, it is equally important to look at the Share Price, Stock Performance, Fundamental Analysis, Financial Statements and Similar Stocks Comparison. It gives a sense of whether the company is growing, stable or deteriorating.

Adani Power:

1. Moving Average:

Period	Simple	Signal	Exponential	Signal
MA(5)	274.64	Buy	274.67	Buy
MA(10)	275.03	Sell	275.12	Sell
MA(20)	276.12	Sell	275.64	Sell

A moving average is a technical indicator that investors and traders use to determine the trend direction of securities. Moving averages help technical traders to generate trading signals. An increasing MA will point towards an overall price increase, while a decreasing MA will recognise a decrease in the overall price level. Since the price of Adani power is increasing the stock is moving towards an upwards trend.

2. Resistance and Support:

Type	R1	R2	R3	Pivot Point	S1	S2	S3
Classic	280.93	284.32	288.18	277.07	273.68	269.82	266.43
Fibonacci	279.84	281.55	284.32	277.07	274.30	272.59	269.82
Camarilla	278.21	278.88	279.54	277.07	276.89	276.22	275.56

Support represents a low level a stock price reaches over time, while resistance represents a high level a stock price reaches over time.

3. Relative Strength Index:

Date	Period	RSI
20/01/2023	14	39.26165
19/01/2023	14	40.6342
18/01/2023	14	41.25018
17/01/2023	14	42.9591
16/01/2023	14	36.15804
13/01/2023	14	38.91034
12/01/2023	14	34.86708
11/01/2023	14	35.98378
10/01/2023	14	37.28841

RSI = 41.93

It is a momentum indicator used to identify overbought or oversold condition in the stock. Time period generally considered is 14 days. RSI reading below 25 is interpreted as oversold. RSI between 25 & 45 is interpreted as a bearish condition. Here RSI is in the mid-range. Hence it is neither overbought nor oversold. It stays neutral.

4. Technical Analysis:

Title	Sell	Neutral	Buy
Moving Averages	67%	-	33%
Momentum Oscillators	100%	-	-

Trend Oscillators	100%	-	-
Volatility	100%	-	-

Adani Power Technical Analysis offers an overview of the Technical Indicators, Classic Moving Average, Exponential Moving Average and more. It helps to analyse the price trends, patterns and trading signals. Technicals of a company are crucial, it is equally important to look at the Share Price, Stock Performance, Fundamental Analysis, Financial Statements and Similar Stocks Comparison. It gives a sense of whether the company is growing, stable or deteriorating.

Torrent Power:

Price Volatility Analysis

•1M - H516.40 ,L476.38

•3M - H547.47 ,L474.35

•6M - H587.50 ,L479.55

•1YR -H587.98 ,L419.80

1. Moving Average:

Period	Simple	Indicators	Exponential	Indicators	Strength
EMA(5)	452.17	Sell	453.16	Sell	Strong bearish
EMA(10)	469.12	Sell	459.14	Sell	Strong bearish
EMA(20)	474.17	Buy	476.14	Buy	Bearish

Moving averages help technical traders to generate trading signals. An increasing MA will point towards an overall price increase, while a decreasing MA will recognise a decrease in the overall price level. The company distributes power to over 38.5 lakh customers annually in its distribution areas and also the exponential average will have its indicators in a bearish market with price crossing 460.45

2. Resistance and Support:

Date	R1	R2	R3	Pivot	S3	S2	S1
18-01-2023	453.11	448.67	458.12	407.56	478.09	455.7	438.27
17-01-2023	454.3	449.9	458.7	407.4	434.3	478.9	444.8
16-01-2023	434.19	459.25	458.4	407.62	433.1	434.02	457.66
13-01-2023	450.1	448.48	447.4	405.7	465.8	434.38	411.15
12-01-2023	460.06	448.43	457.4	405.54	445.45	413.43	427.06
11-01-2023	469.2	458.28	467.3	406.1	439.9	424.44	489.45
10-01-2023	450.76	459.77	467.45	406.56	449.56	424.08	439.26
09-01-2023	459.11	458.83	467.4	406.98	465.28	466.13	419.26

3. Relative Strength Index:

Date	Period	RSI
18/01/2023	14	45.5568
17/01/2023	14	48.3426
16/01/2023	14	41.2343
13/01/2023	14	46.7584
12/01/2023	14	44.3434
11/01/2023	14	53.7659
10/01/2023	14	51.4678

RSI 47.6646

RSI reading below 45 is interpreted as oversold. RSI between 40 & 55 is interpreted as a bearish condition. Here RSI is in the mid-range. Hence it is neither excess purchase nor oversold, it remained neutral.

4. Technical Analysis:

Title	Sell	Neutral	Buy	Action
Moving Averages	37%	-	63%	Buy
Momentum Oscillators	-	55%	45%	Buy
Trend Oscillators	28%	-	72%	Buy
Volatility	-	oh-	100%	Strong Buy

Torrent Power had an overview on the Classic Moving averages and exponential moving averages. It helps to analyse in understanding the movements and past patterns which helped the company in major decisions of having a buy option than sell while understanding and analysing. Technical analysis of a company is significant in identifying the volatility and price stability of a stock

Suggestions

Despite the risks associated with any investment, power stocks tend to be relatively safe bets, particularly if individuals diversify their portfolio across a few different companies. Coal is the largest contributor, with 202.67GW installed capacity, followed by petrol and lignite (31.54GW), and diesel (0.51GW). Some of the top stocks in the thermal power sector are Tata Power and Adani Power.

Conclusion

The Indian electricity industry is expected to undergo significant transformations in terms of consumption development, energy mix, and market processes over the next decade (2020-2029). India wishes to ensure that everyone has consistent access to adequate power at all times, while also accelerating the clean energy transformation by shifting away from dirty fossil fuels and towards more ecologically favorable, renewable energy sources. Future investments will profit from solid market factors, policy backing, and the government's increased emphasis on infrastructure.

The Indian government is developing a "rent a roof" strategy to help it meet its goal of generating 40 GW of electricity through solar rooftop initiatives by 2022. It also intends to build 21 additional nuclear power reactors by 2031, with a total operating capacity of 15,700 MW. According to the Central Electricity Authority (CEA), India's electricity demand will increase to 817 GW by 2030. Furthermore, CEA predicts that by 2029-30, renewable energy generation will rise from 18% to 44%, while thermal energy generation will decrease from 78% to 52%. The government intends to build 500 GW of green energy potential by 2030.

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