

Pre and Post Lockdown Impacts On Sectors Indices with Reference to Bombay Stock Exchange

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Abstract

Lockdown was the primary measure taken by various countries to prevent spread of Covid-19 pandemic rapidly. It had also effect on global economy. Lockdown was announced in India on 24th March 2020 and implemented on 25th March 2020. This study is an attempt to analyse the impact of Covid-19 pandemic on stock indices in India. Due to lockdown restrictions were imposed on all commercial activities and the people have to remain in their houses which caused several kind of financial problem in market. In this study data of stock indices from 24th January to 24th March 2020 and from 25th March to 31st May 2020 have been taken as the indicator of Pre and Post lockdown period. For the purpose of analysis Relative Strength Index has been calculated for the market data of indices and Paired Sample t-test has been applied as statistical tool to measure significance level. Our results indicated that there is significant impact of lockdown on stock indices. This study is also useful to understand the effect of emergencies on stock indices.

Introduction

A bold step of implementing lock down in India was taken by the government of India on 24th of March 2020. Lock down caused strict restriction over all of the commercial activities and people were restricted to their home. Covid-19 was identified in China and was declared pandemic by WHO in March 2020. Lock down was the primary measure which was implemented by many of the countries around the world. In India lock down was also implemented to prevent the spread and to create time for the preparation of health facilities. Our study aims to analyse the impact of lock down on stock indices of BSE (Bombay Stock Exchange). Covid-19 transmitted from human to human and hence it is very dangerous for human and world economy. It is the reason for enforcing the movement control over all kind of human activities. To break the chain of transmission China was the first who implemented lock down in Wuhan city on 23rd January 2020 (Crossley, 2020). Indian government banned all the intercity and international travel till further notice after 24th March 2020. Governments around the world declared the public servant must do the work from home and private enterprises must encourage the employee for work from home as result universities, schools were closed, productivity of various sectors reduced. 33% population around the world faced lockdown in any form (Hoof, 2020). Covid-19 break out domestic and international business and also significantly influenced the stock market in world negatively (He et al., 2020; Zhang et al., 2020). This study focused to examine the impact of lock down on BSE of India.

Remainder of the study includes review of literature, methodology used, fourth part will be of analysis and interpretation & last part will conclude the study.

Literature Review

Our study is based upon pre and post lock down analysis of stock market in India specially for BSE. It has been seen in global economy that due to lock down economies of all the countries declined and stock market also have effect of lock down. Various research has been conducted to analyse the impact of different pandemic in the past and it has been observed that stock market fluctuates due to the investor's perception regarding the stock market and their worries about expected return on their investment. Covid-19 caused economic loss to the investor (Jiang et al., 2017). Studies of Chen et al.

(2007) concluded that some industries may have negative relationship with pandemic while industries related to health facilities may have positive relationship. Ichev and Marinc (2018) found that Ebola virus outbreaks also affected the stock market of USA and specially of those companies which are located in South Africa. Alfaro et al. (2020) concluded that Covid-19 negatively affected stock market of USA.

Methodology

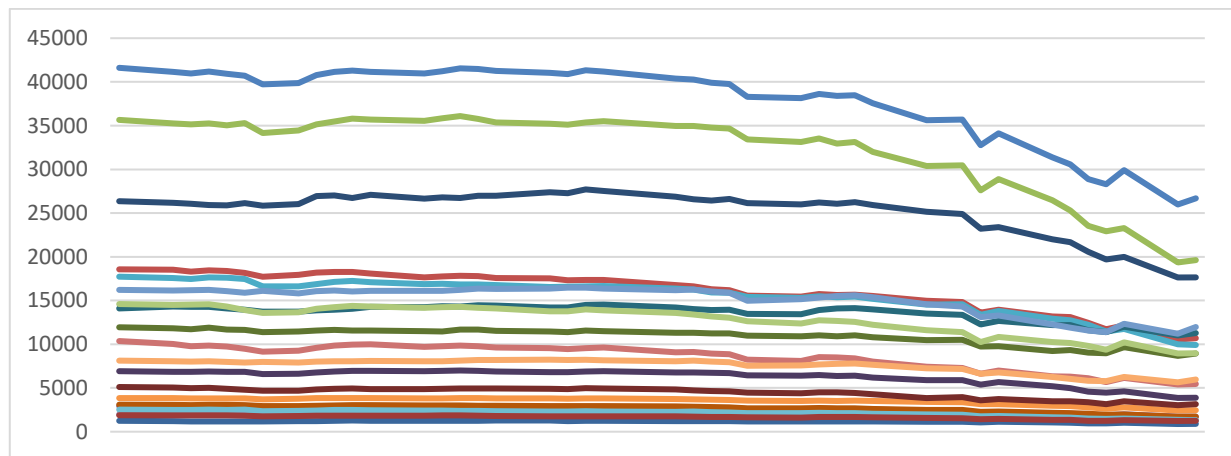
To conduct the study analytical and technical analysis has been done. This study was conducted post duration of lockdown started from 25th March. Pre duration for this study was taken from 24th January to 24th March 2020 and Post lockdown period taken from 25th March to 31st May 2020. For this study secondary data has been collected by using the BSE India website and different press release, books, magazines used for the reference materials. To find out the impact of pre and post Lockdown duration paired sample t-test has been used and for technical analysis of the data Line chart, Bar Chart and Relative strength index (RSI) chart are used by using the different statistical package SPSS and MS-Excel.

Data analysis and interpretation

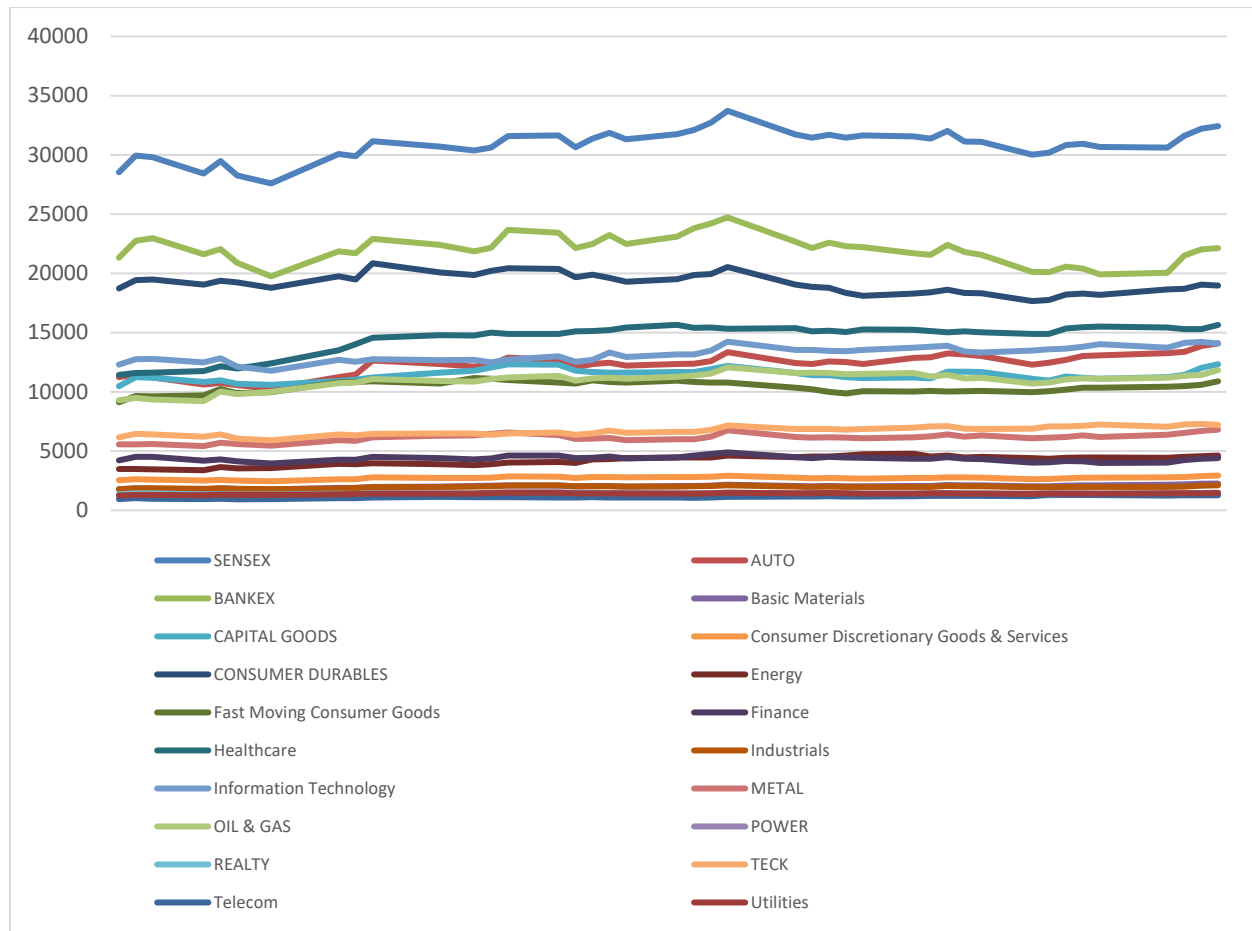
Trend Analysis

All the collected data classified in to two part i.e. pre lockdown and during lockdown. During Lockdown stock market was open in 42 days, so according to the working days before lockdown 42 days was taken in to consideration and all the closing prices of pre and during lockdown present graphically as trend chart of sectorial indices.

Graph: 1 Shows the Trend chart of sector index on Pre Lockdown period



Graph: 2 Shows the Trend chart of sector index on Post Lockdown period



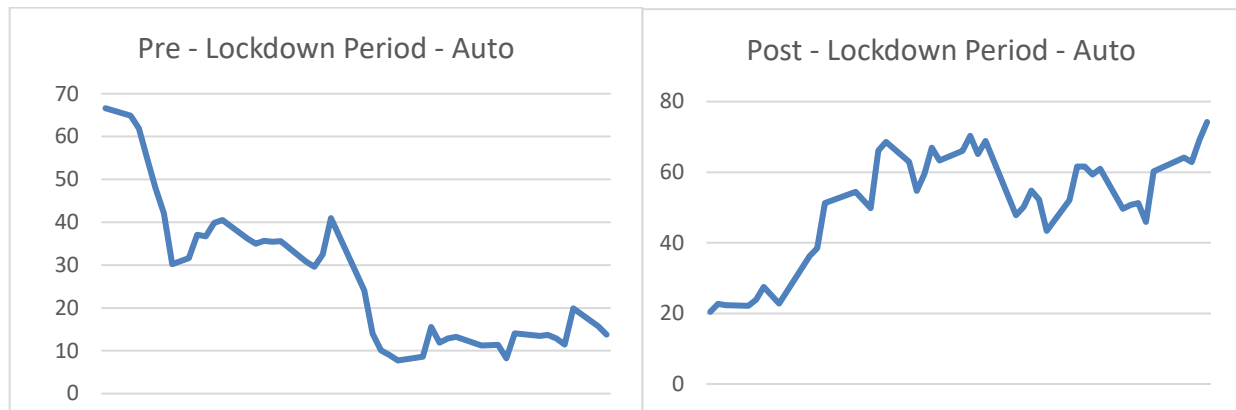
(Source: Secondary Data)

Above Graph 1 and 2 shows the pre and post trend chart of closing price of all the indices. Trend shows that the SENSEX started from 41613.19 and the min value before the lockdown starts was 25981.24. Decreasing trend shows that as the COVID-19 worldwide news come in to the market as the market starts declining and during the lockdown time the highest price of index was 33717.62 and lowest price was 27590.95 that represent the price stability during lockdown. Trend shows that the BANKEX is decreased by 16738.47 points before the lockdown which is highest among the other indices and Telecom sector shows the minimum changes in the prices and Post Lockdown Period Realty sector prices are fluctuate less in comparison of other sectors.

Relative strength index (RSI)

Stock market fluctuate frequently and the prices are changing in nature, so a momentum indicator tools i.e. RSI has been used to measure the magnitude of changes in the closing prices of the indices, so that the evaluation of overbought or oversold conditions related to the commodity can be graphically identified. This analysis shows the graph as an oscillator and convert data from 0 to 100 series where 0-30 lines shows the oversold situation and vice versa 70-100 shows the overbought situation.

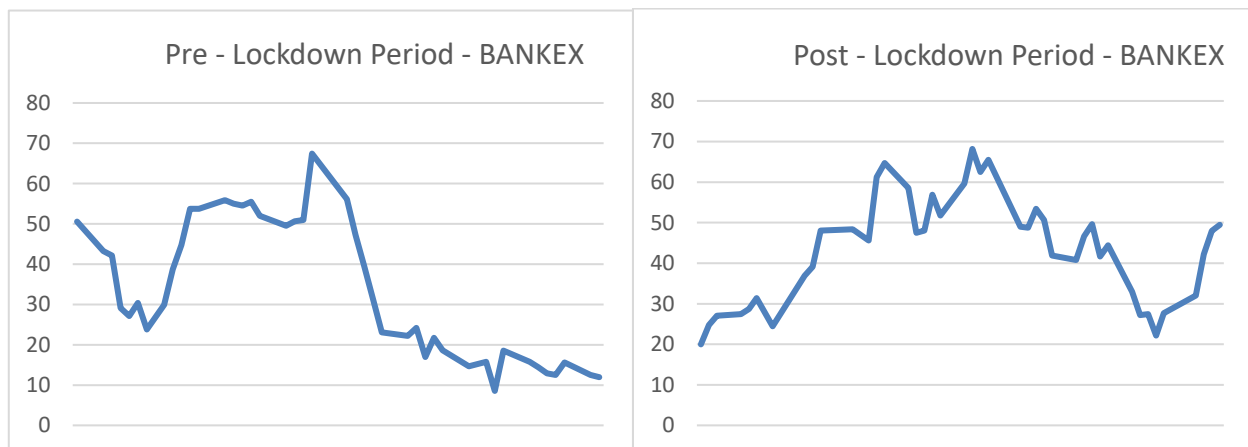
Graph: 3 Shows the Auto RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 3 represents pre and post lockdown RSI of auto sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Auto sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature.

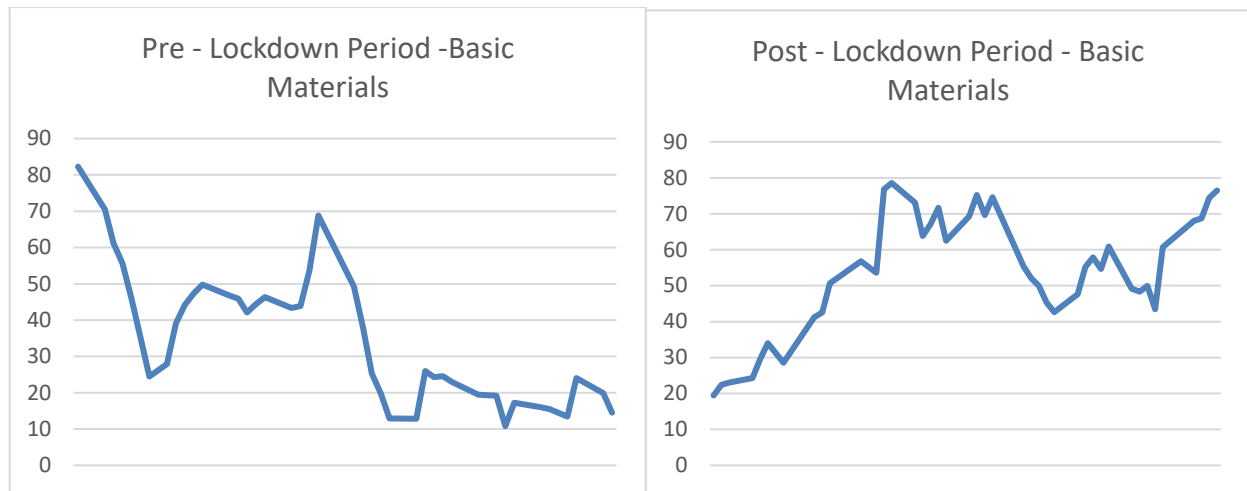
Graph: 4 Shows the BANKEX RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 4 represents pre and post lockdown RSI of BANKEX sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of BANKEX sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature.

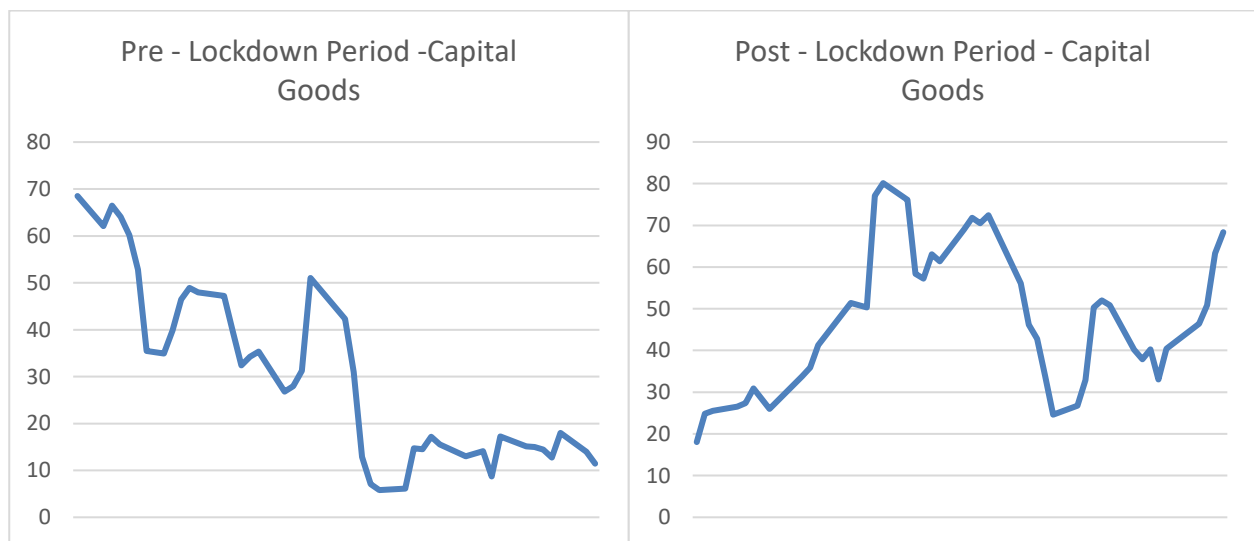
Graph: 5 Shows the Basic Materials RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 5 represents pre and post lockdown RSI of Basic Material sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Basic material sector after April 15 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature.

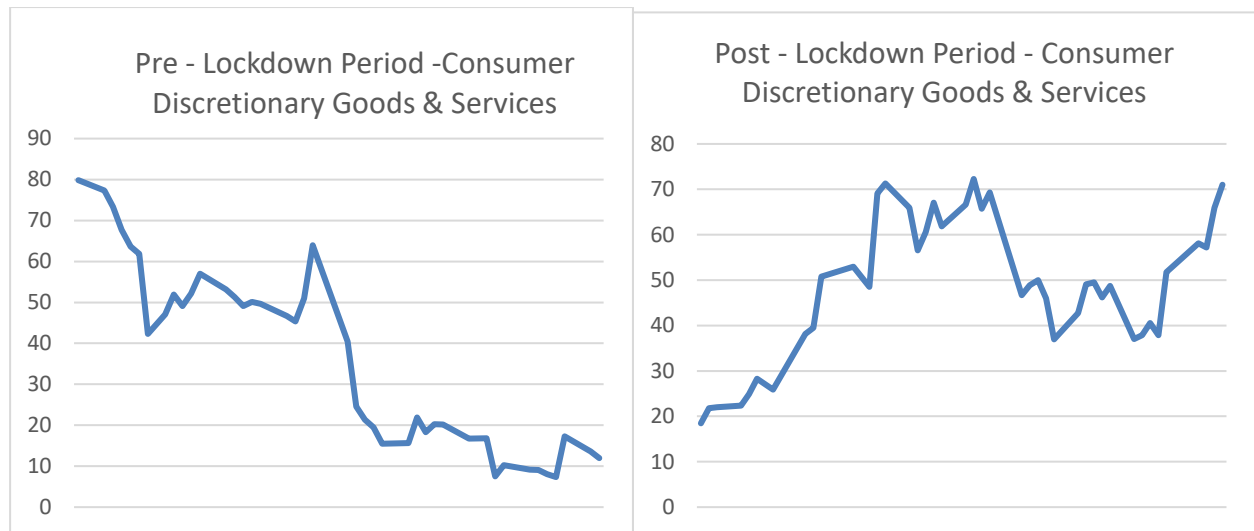
Graph: 6 Shows the Capital Goods RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 6 represents pre and post lockdown RSI of Capital Goods sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Capital Goods sector after April 15 to April 20 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

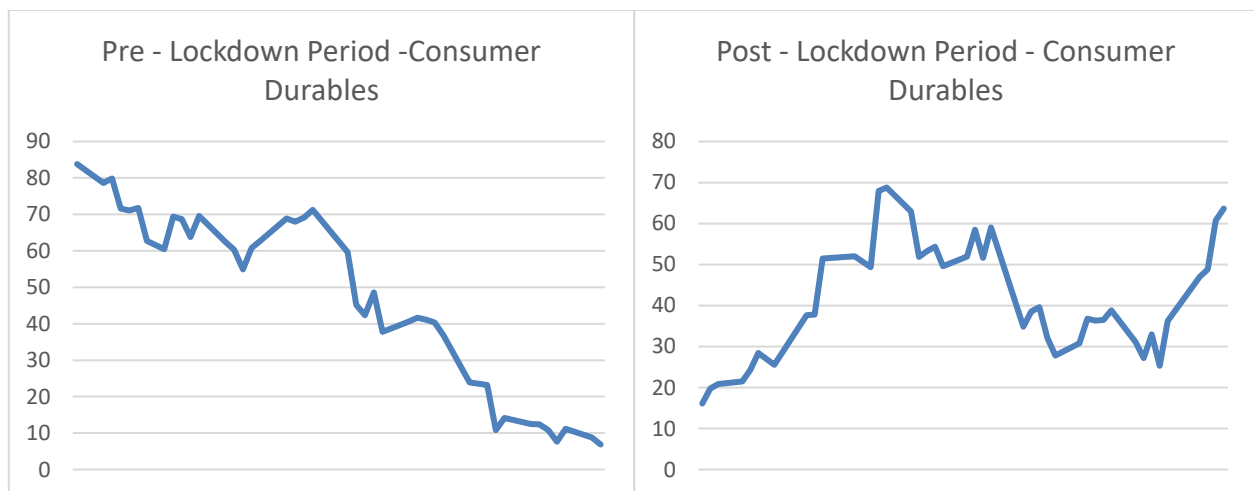
Graph: 7 Shows the Consumer Discretionary Goods & Services RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 7 represents pre and post lockdown RSI of Consumer Discretionary Goods & Services sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Consumer Discretionary Goods & Services sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature.

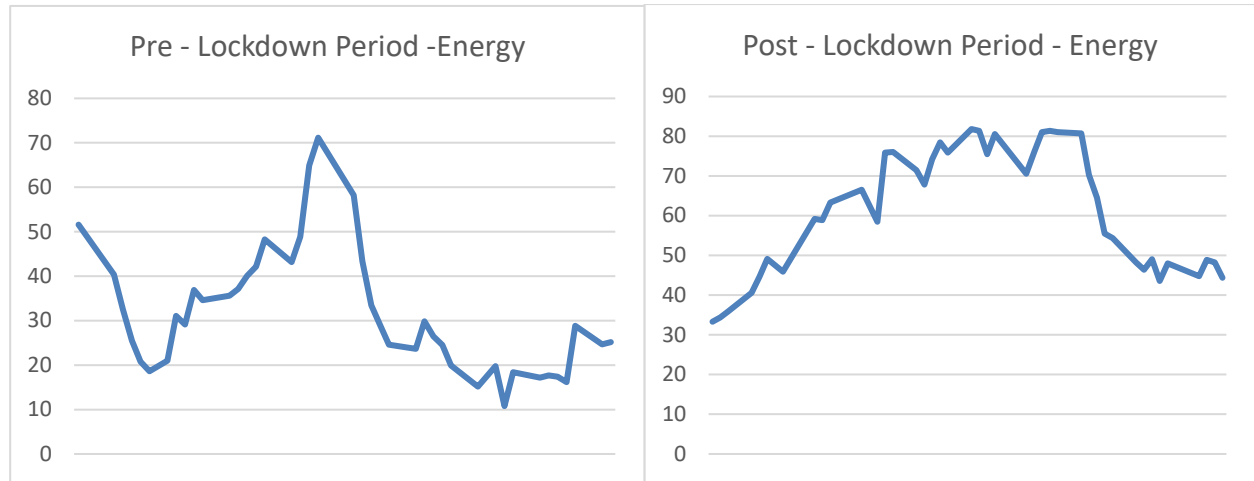
Graph: 8 Shows the Consumer Durables RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 8 represents pre and post lockdown RSI of Consumer Durables sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Consumer Durables sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature.

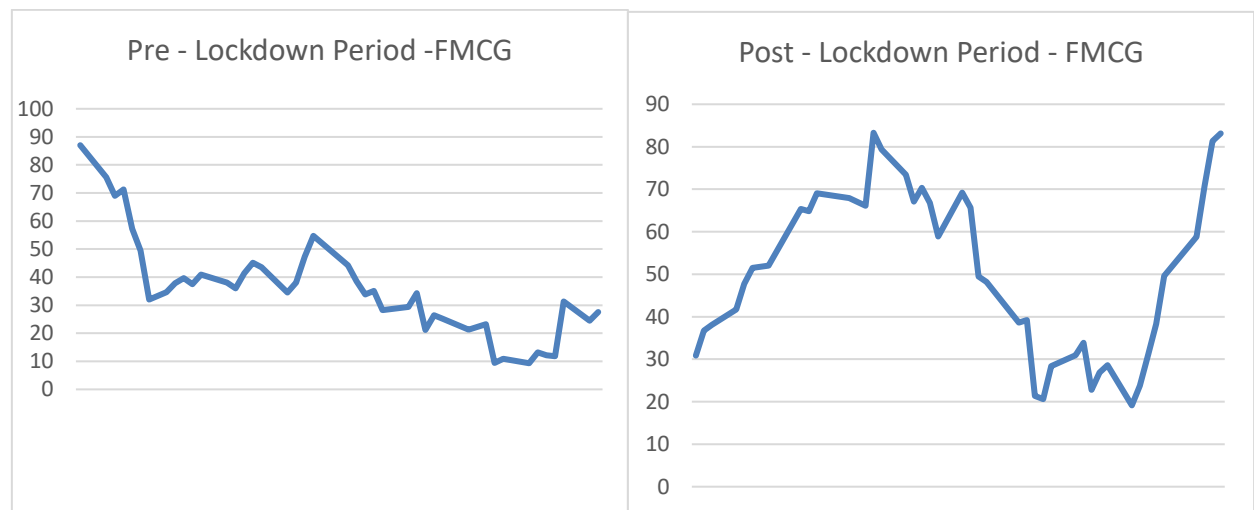
Graph: 9 Shows the Energy RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 9 represents pre and post lockdown RSI of Energy sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Energy sector after April 17 to May 12 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

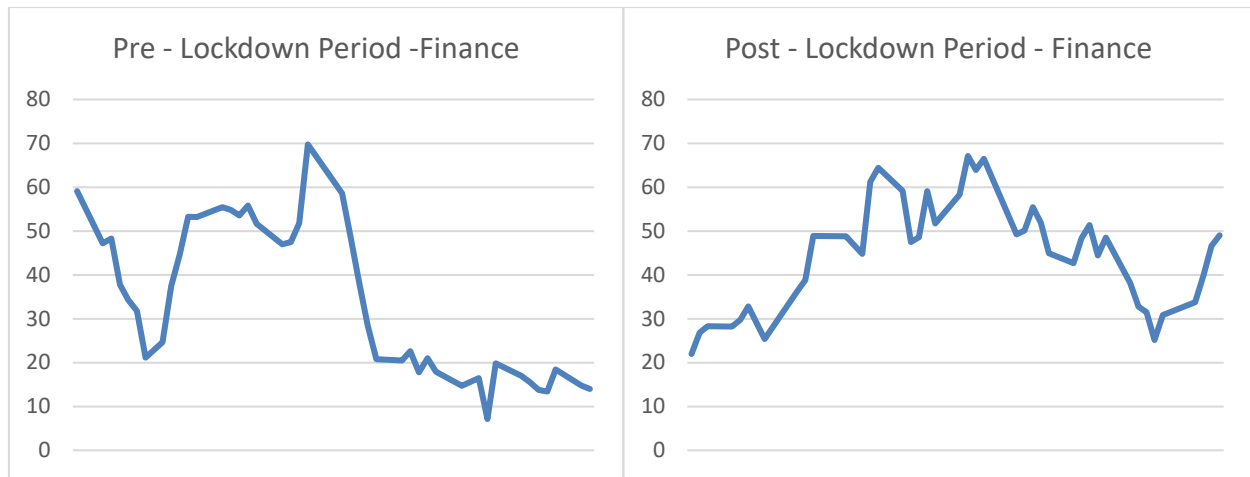
Graph: 10 Shows the FMCG RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 10 represents pre and post lockdown RSI of FMCG sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of FMCG sector after April 16 to April 20 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

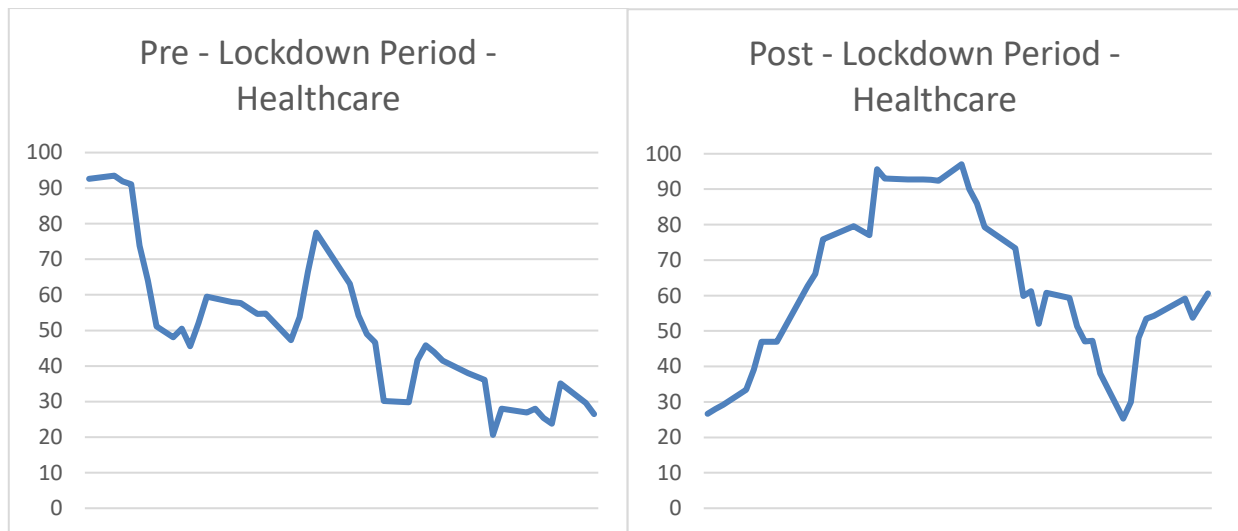
Graph: 11 Shows the Finance RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 11 represents pre and post lockdown RSI of Finance sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Finance sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature

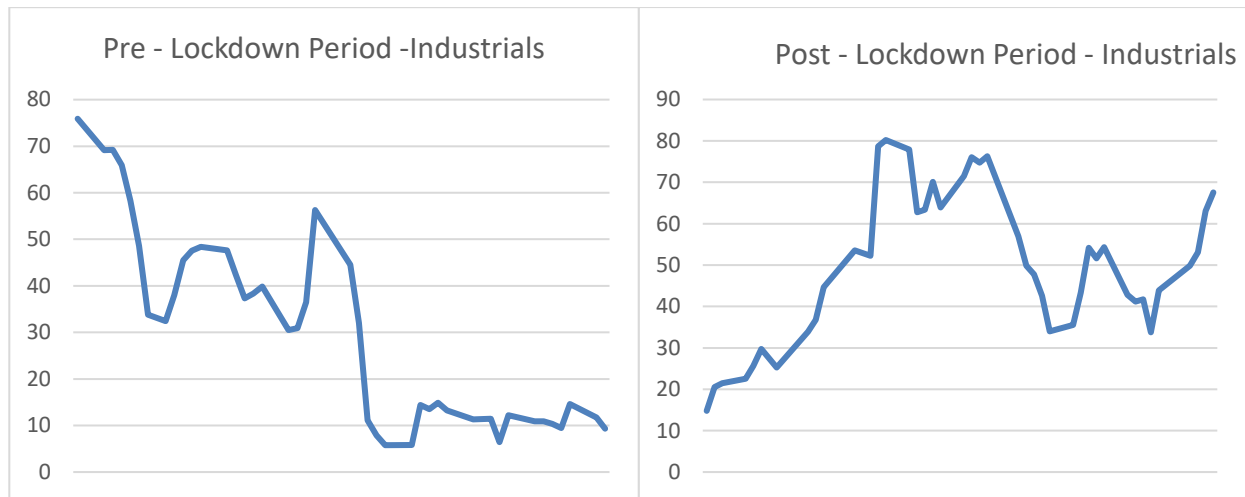
Graph: 12 Shows the Healthcare RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 12 represents pre and post lockdown RSI of Healthcare sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Healthcare sector 30-70 range only in the duration from April 9 to May 4. And in other days RSI indicator was above 70 which mean that market was in over bought zone and bullish in nature.

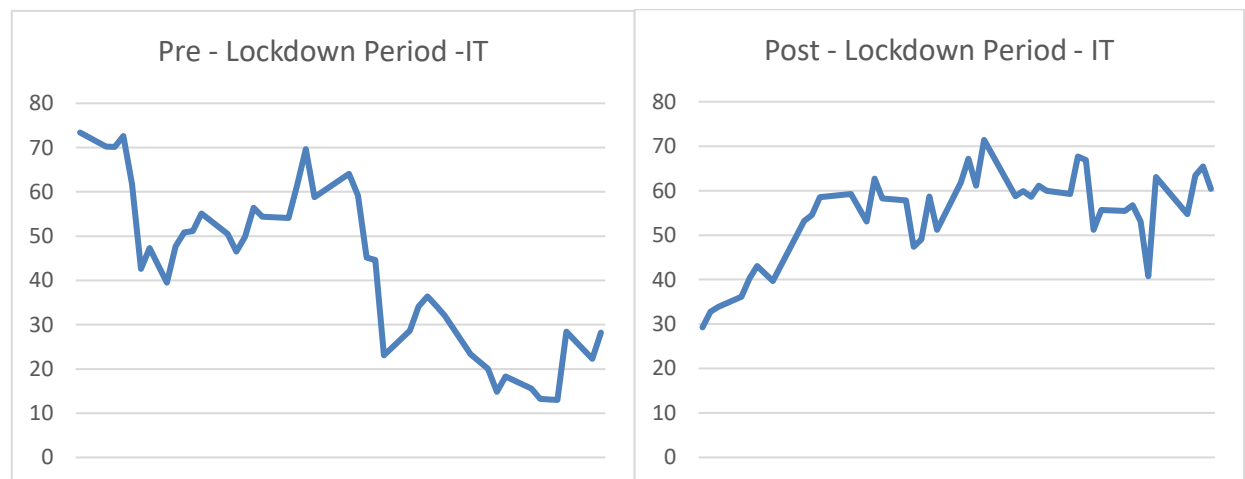
Graph: 13 Shows the Industrials RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 13 represents pre and post lockdown RSI of Industrials sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Industrials sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature

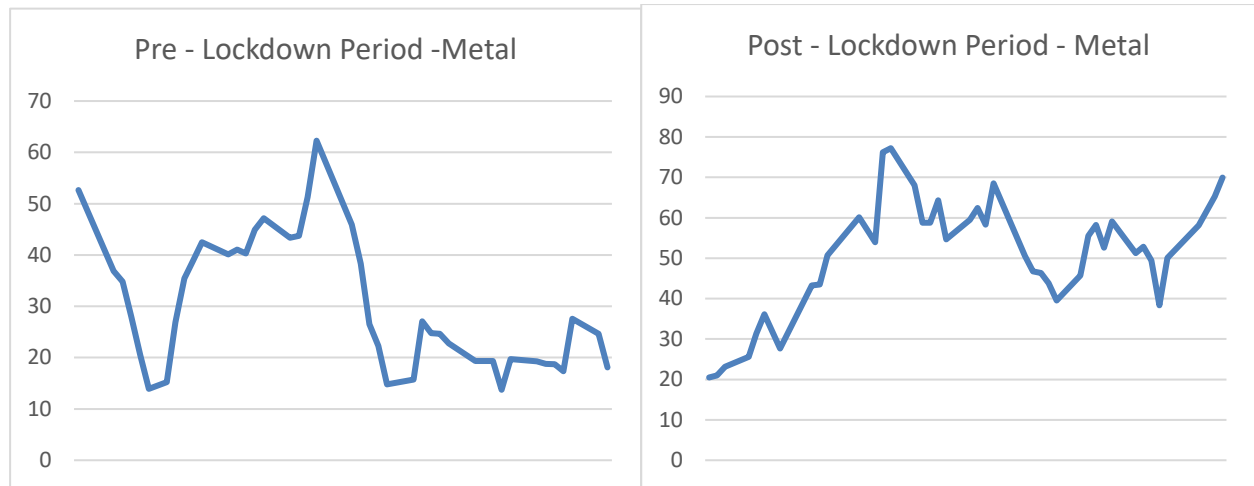
Graph: 14 Shows the Information Technology RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 14 represents pre and post lockdown RSI of IT sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of IT sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature

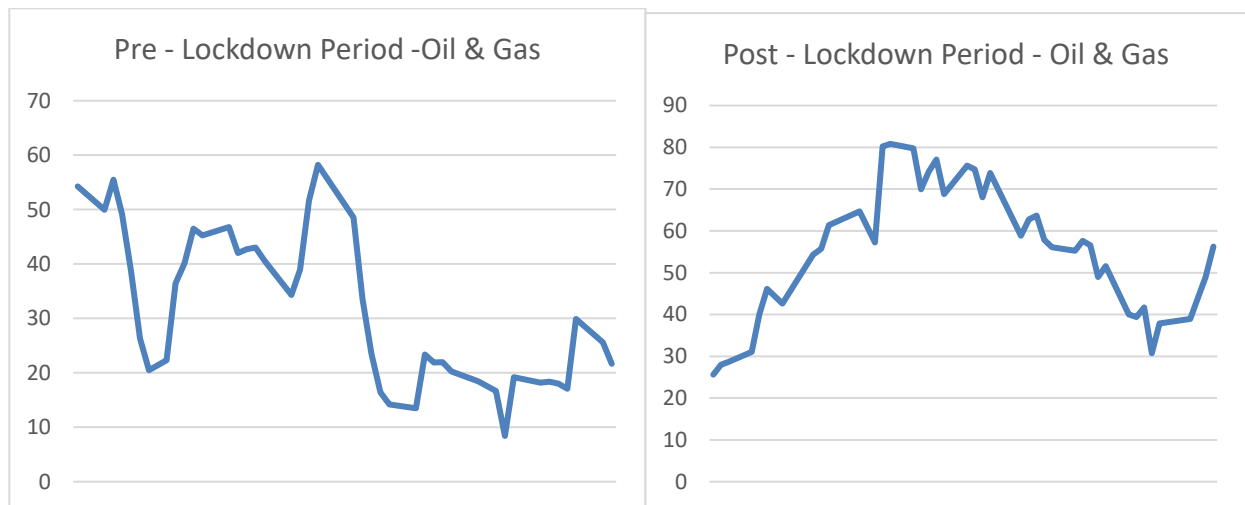
Graph: 15 Shows the Metal RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 15 represents pre and post lockdown RSI of Metal sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Metal sector after April 16 to April 17 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

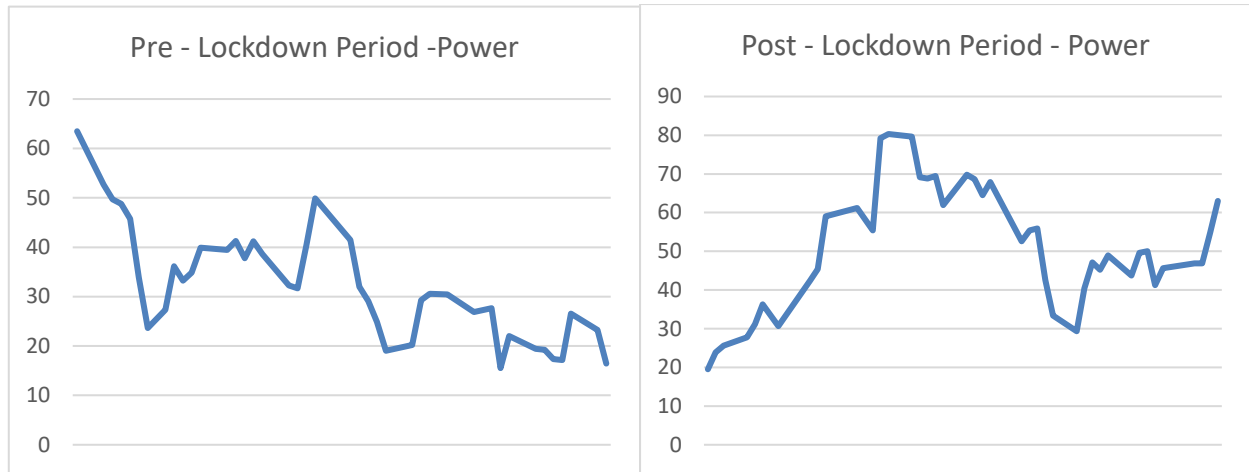
Graph: 16 Shows the Oil & Gas RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 16 represents pre and post lockdown RSI of Oil & Gas sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Oil & Gas sector after April 16 to April 30 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

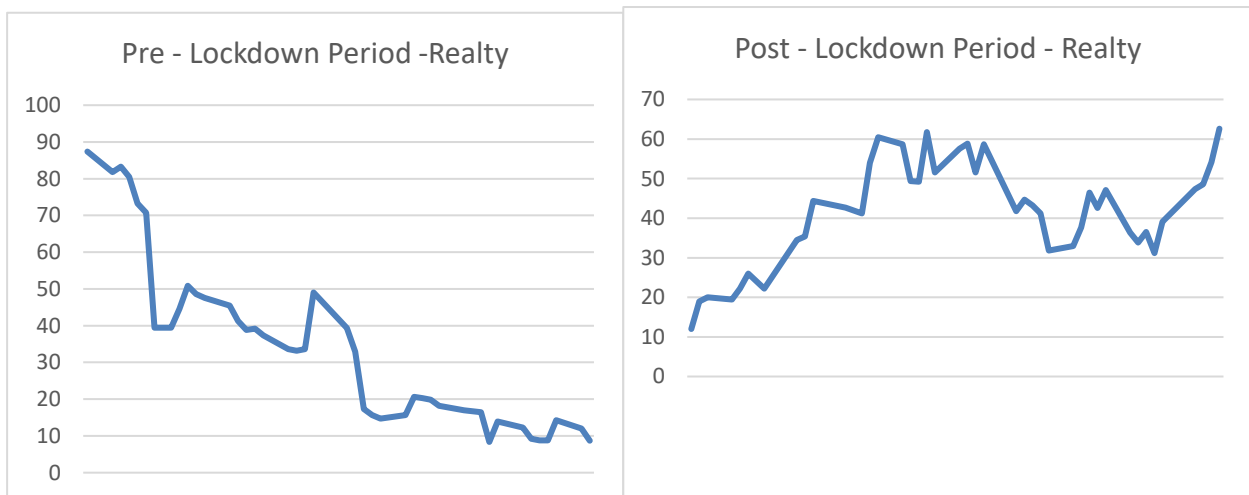
Graph: 17 Shows the Power RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 17 represents pre and post lockdown RSI of Power sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Power sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature

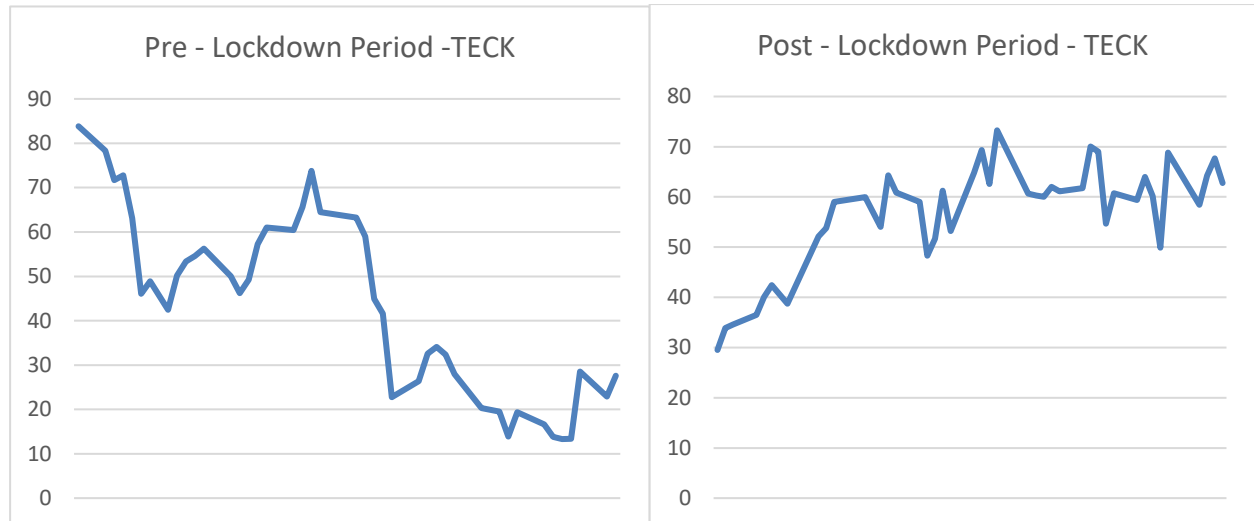
Graph: 18 Shows the Realty RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 18 represents pre and post lockdown RSI of Realty sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of Realty sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature

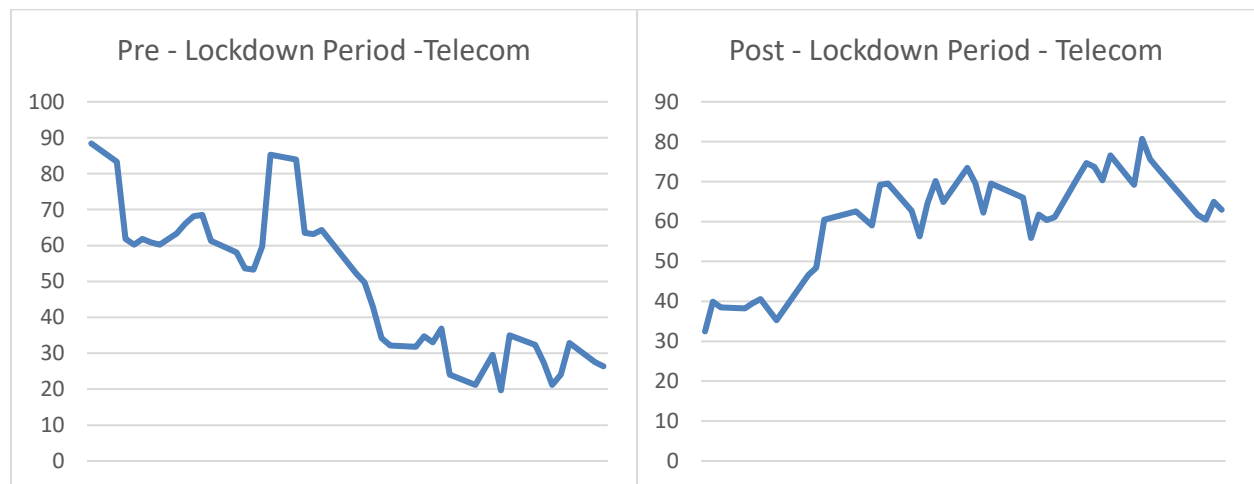
Graph: 19 Shows the TECK RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 19 represents pre and post lockdown RSI of TECK sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period most of the RSI of TECK sector was in 30-70 range which mean that market was not in over bought zone and bullish in nature

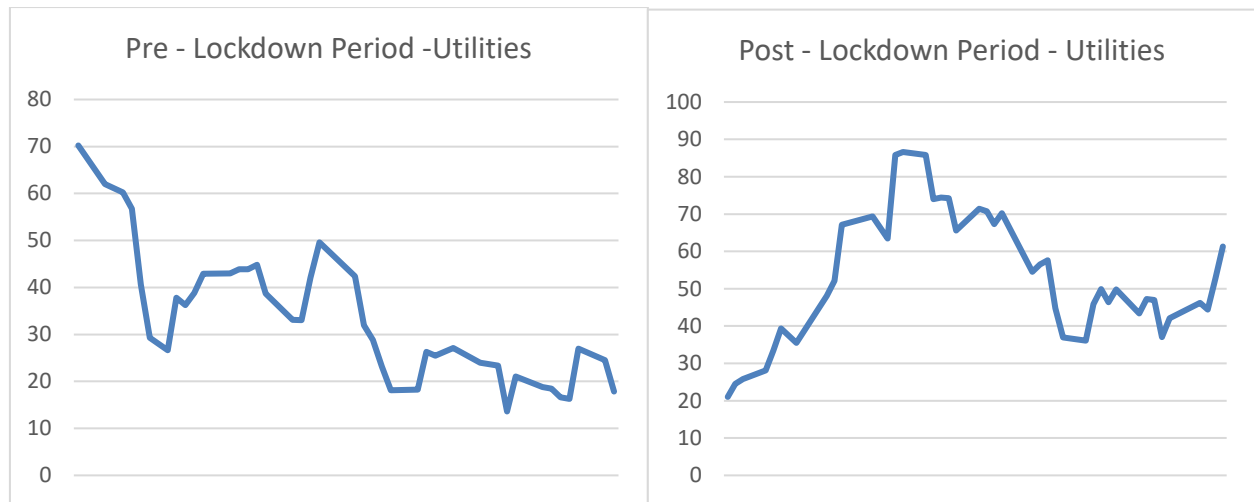
Graph: 20 Shows the Telecom RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 20 represents pre and post lockdown RSI of Telecom sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Telecom sector during May 11 to May 22 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

Graph: 21 Shows the Utilities RSI of Pre and Post Lockdown period



(Author Compilation)

Graph no. 21 represents pre and post lockdown RSI of Utilities sector. During pre-lockdown period most of the RSI (Relative Strength index) is in 0-30 which is an indicator of oversold Zone and market was bearish in nature. During post lock down period RSI of Utilities sector during April 16 to April 30 was cross the indicator to 70 which mean that market was in over bought zone and bullish in nature after that was market RSI indicates in 30-70 range.

Table: 1 Shows the Paired Samples Test of Pre and Post Lockdown period

Paired Samples Test

		Paired Differences			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	Pre -SENSEX - Post - SENSEX	6976.31	5013.12	773.541	9.019	0.000
Pair 2	Pre -Auto - Post -Auto	3772.69	2987.85	461.035	8.183	0.000
Pair 3	Pre -BANKEX - Post -BANKEX	10288.98	4281.486	660.648	15.574	0.000
Pair 4	Pre -Basic Materials - Post -Basic Materials	557	441.103	68.064	8.184	0.000
Pair 5	Pre -Capital Goods - Post -Capital Goods	4079.095	2223.594	343.108	11.889	0.000
Pair 6	Pre -Consumer Discretionary Goods Services - Post -Consumer Discretionary Goods Services	791.048	465.514	71.83	11.013	0.000
Pair 7	Pre -Consumer Durables - Post -Consumer Durables	6073.214	2383.834	367.834	16.511	0.000
Pair 8	Pre -Energy - Post -Energy	220.69	913.532	140.961	1.566	0.125
Pair 9	Pre -Fast Moving Consumer Goods - Post -Fast Moving Consumer Goods	533.976	1051.799	162.296	3.29	0.002
Pair 10	Pre -Finance - Post -Finance	1912.833	829.017	127.92	14.953	0.000
Pair 11	Pre -Healthcare - Post -Healthcare	-973.762	1854.571	286.167	-3.403	0.002

Pair 12	Pre -Industrials - Post -Industrials	721.048	436.65	67.377	10.702	0.000
Pair 13	Pre -Information Technology - Post - Information Technology	1893.286	2119.153	326.992	5.79	0.000
Pair 14	Pre -Metal - Post -Metal	2430.881	1676.73	258.725	9.396	0.000
Pair 15	Pre -OIL & GAS - Post -OIL GAS	1812.119	2124.254	327.779	5.528	0.000
Pair 16	Pre -Power - Post -Power	312.381	218.087	33.652	9.283	0.000
Pair 17	Pre -Realty - Post -Realty	787.143	333.363	51.439	15.302	0.000
Pair 18	Pre -Teck - Post -Teck	841.762	1090.742	168.305	5.001	0.000
Pair 19	Pre -Telecom - Post -Telecom	30.905	188.644	29.108	1.062	0.295
Pair 20	Pre -Utilities - Post -Utilities	263.714	227.634	35.125	7.508	0.000

(Author Compilation)

In the above table 1 that shows the paired sample t test results of pre and post duration of the COVID – 19 in India. The above table shows that The Sig. (2-Tailed) value is less than 0.005 in all the sectorial market indices except Energy and Telecom Sector. Because of this, we can say that there is a statistically significant difference between the mean value of the indices in pre and post condition of Lockdown.

Conclusion

This study investigates the relationship among different sector index prices with the SENSEX during this pandemic situation of COVID-19. The empirical results of trend analysis show the changes of prices graphically and BANKEX sector was fluctuate more during or pre time of lockdown in India and Telecom sector in comparison of other indices fluctuate less in the above time period. Analysis with RSI shoes that the Basic Material, Capital Goods, Energy, FMCG, Healthcare, Metal, Oil & Gas, Telecom and Utilities sectors show the value indicators more than 70 during the lockdown periods, which means that market was in over bought zone and bullish in nature during some dates. Paired sample t test was applied to know the effect of pre and post (after announcing) lockdown in India. This results that the Energy and telecom sector are not significantly impact more during this time period and other indices shows the significant effect of this lockdown.

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