

Evaluating the Share Prices of IRCTC on the National Stock Exchange (NSE) with Reference to Lockdown in India

¹Dr. Arvind Kumar Saxena, ²Ms. Ankita Nihlani, ³Ms. Ruchi Gupta

^{1, 2, 3}Assistant Professor, Faculty of Commerce & Management, Kalinga University Raipur, Chhattisgarh, India

²ankita.nihlani@kalingauniversity.ac.in, ³ruchi.gupta@kalingauniversity.ac.in

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ABSTRACT

PURPOSE: The purpose of this paper is to examine and assess the performance of IRCTC's share price since its initial public offering (IPO) on the National Stock Exchange of India (NSE). The article also looks at the share price performance before and after India's shutdown declaration.

METHODOLOGY: The Research Design is mostly descriptive. Data were obtained for the daily share prices of IRCTC on the NSE in India from 14th October 2019 to 15th January 2021. To investigate the pricing, descriptive statistics and one-variable analysis were used. The t-test and the Kolmogorov-Smirnov test were used to compare the pre- and post-performance of pricing.

FINDINGS: The IRCTC Share, which is backed by excellent fundamentals, had a substantial increase in value when it was listed on the NSE. The surge also persisted as a result of investors' bullish mood. With the rising threat of a worldwide epidemic, India's government declared a state of emergency, bringing the whole country, including the trains, to a halt. The analysis concluded that IRCTC share prices began to decline one month before the country's lockdown was announced and that this trend continued until the lockdown began. The post-lockdown era saw a V-shaped rebound in IRCTC share prices, and the company was able to reclaim its previous position.

KEYWORDS: IRCTC, LOCKDOWN, NSE

BACKGROUND:

Indian Railway Catering and Tourism Corporation Limited (IRCTC) is the only firm permitted by Indian Railways to offer catering services and online railway ticket purchasing to railway passengers in India. It has the president of India as a promoter. IRCTC is also the exclusive provider of bottled drinking water at Indian railway stations. IRCTC's commercial activities are divided into four categories: online railway ticketing, catering, packaged drinking water known as "Rail Neer," and travel and tourism. With such an edge, investors reacted positively to IRCTC's first public offering (IPO) in September 2019. An initial public offering (IPO) of 635.04 crores was oversubscribed almost 111 times (source: moneycontrol.com), indicating a robust listing.

Table 1: IPO details of IRCTC

Issue opens	30-Sep-19				
Issue closes	03-Oct-19				
Listing on	BSE, NSE				
Issue size (Rscr)	635.04				
Issue price / Floor Price (Rs)	315.00-320				
number of times issue is subscribed (BSE + NSE)	QIB 108.79	NII 354.52	RII 14.94	EM P 5.82	TOTAL 111.95
Finalization of	9 October 2019				

Basis of Allotment :	
Transfer of shares to demat accounts:	11 October 2019
Listing Date:	14 October 2019
Opening Price on NSE:	Rs. 626 per share
Listing Date Closing Price on NSE	Rs. 727.75 per share

(Source: moneycontrol.com, epicentral.in)

THE STUDY'S OBJECTIVE.

1. To investigate the performance of IRCTC's stock on the National Stock Exchange of India (NSE).
2. The purpose of this research is to see how a lockout affects the share prices of IRCTC on the NSE in India.

DATA THAT WAS USED IN THE STUDY.

- The research is based on IRCTC's daily closing prices on the NSE from October 14, 2019, to January 15, 2021.
- The closing prices for the aforesaid period were obtained from www.nseindia.com.

The RESEARCH METHODOLOGY used in this research is descriptive.

DATA ANALYSIS AND DISCUSSION

One variable analysis was used to investigate the closing prices of IRCTC on the National Stock Exchange of India. There are 317 values in the variable "Close," ranging from 700.65 to 1951.95 (daily closing prices).

ONE ANALYSIS WITH VARIABLES

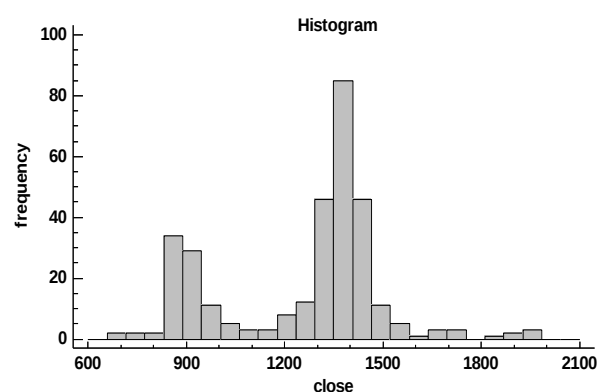
near data variable

Table: 2 Summary Statistics for close

Count	317
Average	1260.71
Standard deviation	245.161
Coeff. of variation	19.4463%
Minimum	700.65
Maximum	1951.95
Range	1251.3
Std. skewness	-2.21491
Std. kurtosis	-0.561619

The mean of closing prices is 1260.71, with a standard deviation of 245.161, according to descriptive statistics. The standard skewness was determined to be -2.21491, while the standard kurtosis was calculated to be -0.561619. Both of these numbers are noteworthy. Outside the range of -2 to +2, these statistics suggest large deviations from normalcy, which would likely to reject any statistical test including the standard deviation. The standardized skewness value is not within the predicted range for data from a normal distribution in this example, although the divergence is minor. The standardized kurtosis value is within the normal distribution's predicted range.

Figure: 1 Histogram chart of Closing prices of IRCTC on NSE, India.



Statistical tolerance limits were developed to assess the normality of the variable 'Close'.

Close Statistical Tolerance Limits

near data variable

Size = 317 mean = 1260.71 std. dev. = 245.161
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 245.161 std. dev. = 245.161 std. dev. = 245.161
 std. dev. = 245.161 std. dev. = 245.161 std. dev
 Xbar +/- 2.7617 sigma 95.0 percent tolerance
 interval for 99.0 percent of the population
 Lower: 583.646 Upper: 1937.77

Assuming the closest number is 583.646 or
 1937.77. This interval is calculated by multiplying
 the data mean +/-2.7617 by the standard deviation.

Figure 2: fitted normal distribution for closing prices of IRCTC on NSE

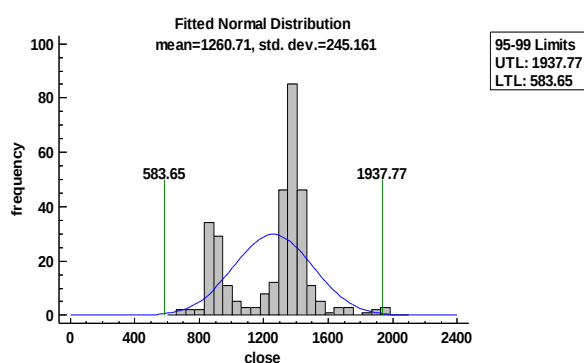


Table: 3 Tests for Normality for close

Test	Statistic	P-Value
Shapiro-Wilk W	0.88346	8.43769E-15

We can reject the assumption that near originates from a normal distribution with 95 percent confidence since the P-Value is less than 0.05. We can also test for any outliers in the variable 'Close'. Close examination of outliers

Close 317 values ranging from 700.65 to 1951.95 were found in the data variable.

Currently, there are no values that have been excluded.

Table: 4 Location estimates

Sample mean	1260.71
Sample median	1351.35
Trimmed mean	1281.15
Winsorized mean	1246.37

Trimming: 15.0%

Table: 5 Scale estimates

Sample std. deviation	245.161
MAD/0.6745	108.377
Sbi	207.206
Winsorized sigma	291.546

Table: 6 Sorted Values

		Studentized Values	Studentized Values	Modified
Row	Value	Without Deletion	With Deletion	MAD Z-Score
3	700.65	-2.28444	-2.30723	-6.00406
2	713.15	-2.23345	-2.2549	-5.88873
4	724.3	-2.18797	-2.20827	-5.78584
1	727.75	-2.1739	-2.19385	-5.75401
5	779.15	-1.96424	-1.9795	-5.27974
...				
96	1909.4	2.64599	2.68011	5.14918
93	1923.5	2.7035	2.73974	5.27928
92	1930.05	2.73022	2.76746	5.33971
95	1951.65	2.81833	2.85905	5.53902
94	1951.95	2.81955	2.86032	5.54179

The Grubbs Test (assumes normality)

P-Value = 1.0 Test statistic = 2.81955

The Grubbs test presumes that the most extreme values are drawn from the same normal distribution as the rest of the data (Ho). The sample mean and standard deviation (sigma) are 1260.71 and 245.16, respectively, as shown in Tables 4 and 5. Table 6 reveals that row no. 94, with a value of 1951.95, was the most extreme value, with a standard deviation of 2.81955 from the mean, out of 317 observations. We fail to reject the Ho because the p-value of the Grubbs test is substantially over 0.05, suggesting that all of the observations seem to have originated from the same population.

**Figure 4: Variable 'near' time series plot
(closing prices of IRCTC since listing)**

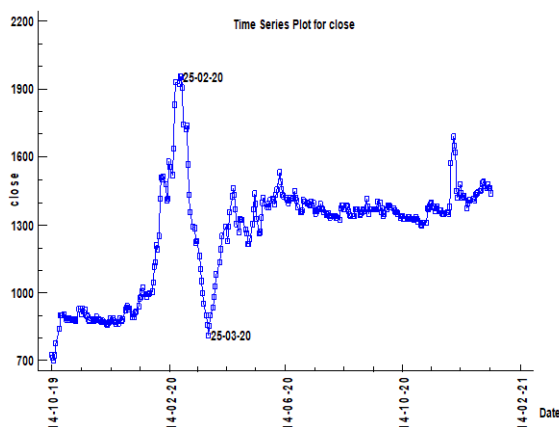


Figure 4 depicts the performance of the IRCTC stock on the National Stock Exchange (NSE) of India from its first public offering. On the 14th of October 2019, IRCTC was listed on the NSE at a price of Rs. 626 per share, which was 195 percent more than the cut-off price. On the same day, it finished at 727.75 per share, a gain of more than 227 percent above the cut-off price in only one day. As predicted, IRCTC performed well on the NSE. Due to excellent fundamentals and significant demand, it continued to rise even after the listing.

According to the IRCTC, share prices peaked on February 25, 2020, precisely one month before the nation was placed under lockdown. Up to the commencement of the shutdown in India, the IRCTC share prices saw a steady decline in closing prices throughout this time. However, since March 25, 2020, the IRCTC share price has been on the rise, despite the fact that the whole nation has been ground to a halt.

Figure: 5 Time series plot for variable 'Pre-lockdown close' (closing prices of IRCTC since listing)

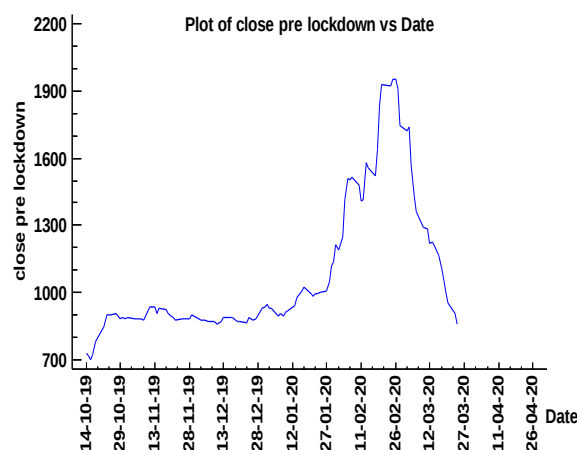
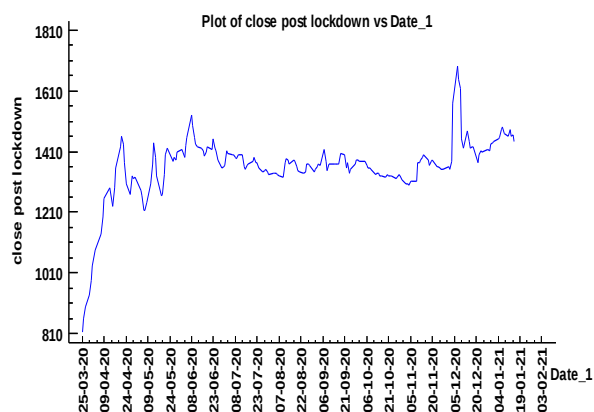


Figure: 6 Time series plot for variable 'post-lockdown close' (closing prices of IRCTC since listing)



The following statistical methodologies were used to examine the movement of IRCTC's closing share prices before and after the announcement of the lockdown.

Close pre-lockdown and close post-lockdown sample comparisons

1st example: close the pre-lockdown

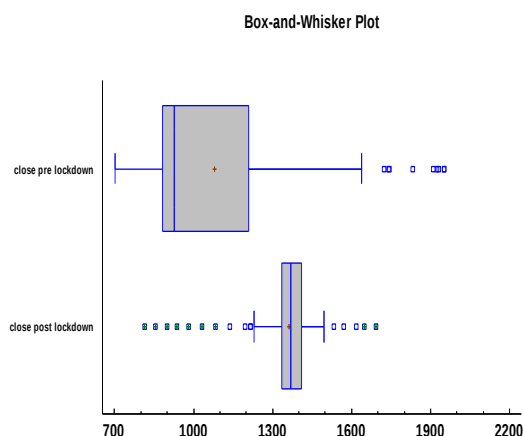
Sample 2: post-lockdown closure

Sample 1: 113 values between 700.65 and 1951.95

204 values ranging from 815.4 to 1691.55 in Sample 2

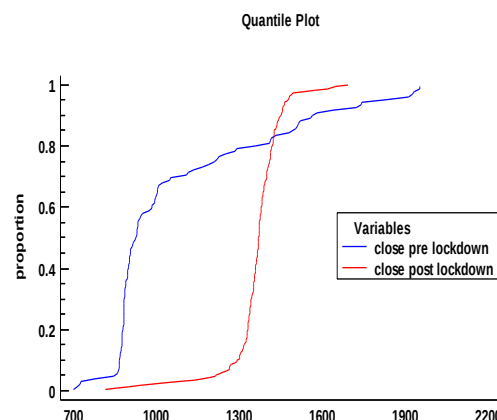
Table: 7 Summary Statistics

	<i>close lockdown</i>	<i>pre close post lockdown</i>
Count	113	204
Average	1079.64	1361.0
Standard deviation	313.668	104.496
Coeff. of variation	29.053%	7.67785%
Minimum	700.65	815.4
Maximum	1951.95	1691.55
Range	1251.3	876.15
Std. skewness	6.21932	-12.5075
Std. kurtosis	2.16635	28.8525

Figure: 7 Box and Whisker Plot for pre and post closing prices.

Pre and post-lockdown average closing prices were determined at 1079.64 and 1361, respectively, which is 26 percent more than the pre-lockdown average. In comparison to pre-lockdown pricing, the standard deviation was lower in post-lockdown closing prices, and the range was substantially smaller. There are also aberrations in the post-lockdown closing pricing. Standardized skewness and kurtosis readings, which suggest that pre-and post-closing prices are not normal, are of special interest. Furthermore, there is a variation in variances between the two times. The standard deviations for closing prices of IRCTC shares before and after the lockdown

period were compared to statistically confirm this finding.

Figure: 8 Quantile Plot of Pre and post lockdown close prices of IRCTC.

The fact that the quantile plots for the pre and post-lockdown closing prices are not close together implies that there is a divergence between the means of the two variables. In addition, the slope of the curve differs, implying that the standard deviations of the two variables are also different.

Table: 8 Comparisons of Standard Deviations

	<i>close lockdown</i>	<i>pre close post lockdown</i>
Standard deviation	313.668	104.496
Variance	98387.7	10919.3
Df	112	203

Variance Ratio = 9.0104

Intervals of 95.0 percent Confidence

Close pre-lockdown standard deviation: [277.418, 360] .91]

Close post lockdown standard deviation: [95.2439, 115] .754]

[6.54432, 12] Ratio of Variances .602]

To compare standard deviations, use the F-test.

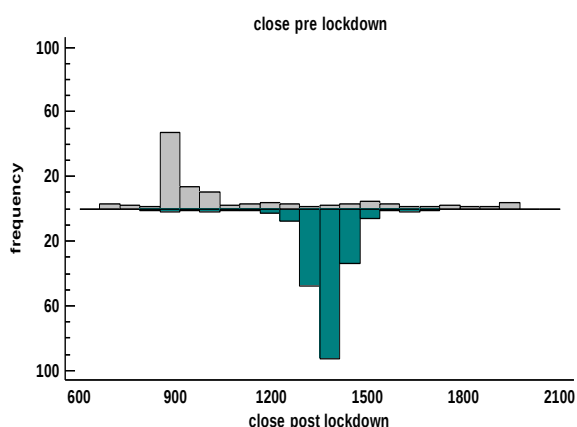
sigma1 = sigma2 is the null hypothesis. (Ho: The standard deviations of IRCTC closing prices before and after the shutdown are not significantly different.)

sigma1 NE sigma2 is an alternative theory (H1: There is a significant difference between the standard deviations of pre and post lockdown closing prices of IRCTC)

P-value = 0 F = 9.0104

We reject the null hypothesis since the computed value of p is less than 0.05, implying that there is a substantial difference between the standard deviations of IRCTC pre and post-lockdown closing prices.

Figure: 9 Comparative histograms for pre and post lockdown closing prices of IRCTC



On the premise that the variables are normally distributed and the variances of two variables are substantially equal, the T-test determines if the two variables are significantly different from one another.

As a result, two approaches may be used to compare these variables:

- 1) Perform a t-test without assuming that the sigmas are identical. (non-parametric) (non-parametric) (non-parametric)
- 2) a test that is not parametric Comparison of Means with the Kolmogorov-Smirnov Test (t-test, without assuming equal sigma) (the technique that is not parametric)

Calculation of Means

The mean of close before lockdown is 1079.64 +/- 58.4653, with a 95.0 percent confidence interval of 1079.64 +/- 58.4653. [1138, 1021.17] .11]

The mean of close after lockdown is 1361.0 +/- 14.4254, with a 95.0 percent confidence interval of 1361.0 +/- 14.4254. [1346.58, 1375] [1346.58, 1375] [1346.58, 13.43]

The difference between the means has a 95.0 percent confidence interval when not assuming equal variances: +/- 60.1629 -281.362 [-341.525, -221] [-341.525, -221] [-341.525 .199]

To compare means, use the t test.

Mean1 = mean2 is the null hypothesis. (Ho: There is no substantial variation in IRCTC closing pricing before and after the shutdown.)

Mean1 NE mean2 is an alternative theory. (H1: There is a considerable variation in IRCTC closing prices before and after the shutdown.)

without assuming that variances are equal: P-value = 1.36351E-7 for t = -9.25506

Because the t statistic yields a p value smaller than 0.05, we reject the null hypothesis and conclude that there are significant changes between IRCTC closing prices before and after the lockout at the 95 percent confidence level.

The Kolmogorov-Smirnov Test was used to verify the results.

Test of Kolmogorov-Smirnov

Overall statistic estimated DN = 0.71599 DN = 0.71599 DN = 0.71599

Large two-sided sample 6.10565 is the K-S statistic.

P-value (approximate) = 0

The p value = 0 indicates that there is a significant difference between the pre and post-lockdown closing prices of IRCTC at the 95 percent confidence level, according to the Kolmogorov-Smirnov Test.

CONCLUSION:

Looking at its basic characteristics and operational coverage throughout the nation, the share prices of IRCTC have long been regarded a secure and lucrative investment vehicle for investors. The IPO was a big success, and the markets had always been kind to IRCTC, until the worldwide pandemic broke out, posing a significant danger to

the firm. However, an intriguing topic was raised when analyzing the Draft Red Hearing Prospectus filed by IRCTC to SEBI before to the offering. IRCTC has mentioned the external risk that the firm could encounter in the future in Point No. 40 of the DRHP document. (annexture:1) The pandemic had an impact on the IRCTC's operations and, consequently, its stock values, although it occurred a month before the nation was put on lockdown. Since the news, the stock has returned to a near-high position on the NSE in India. The statistical investigations also show the following, implying that there was a difference in the before and post lockdown closing prices of IRCTC on the NSE in India.

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