

# Impact of Covid-19 outbreak on Real Estate using Trend analysis & Statistical analysis

Sheetal Raut

Ashwini Kawade

## **Abstract :**

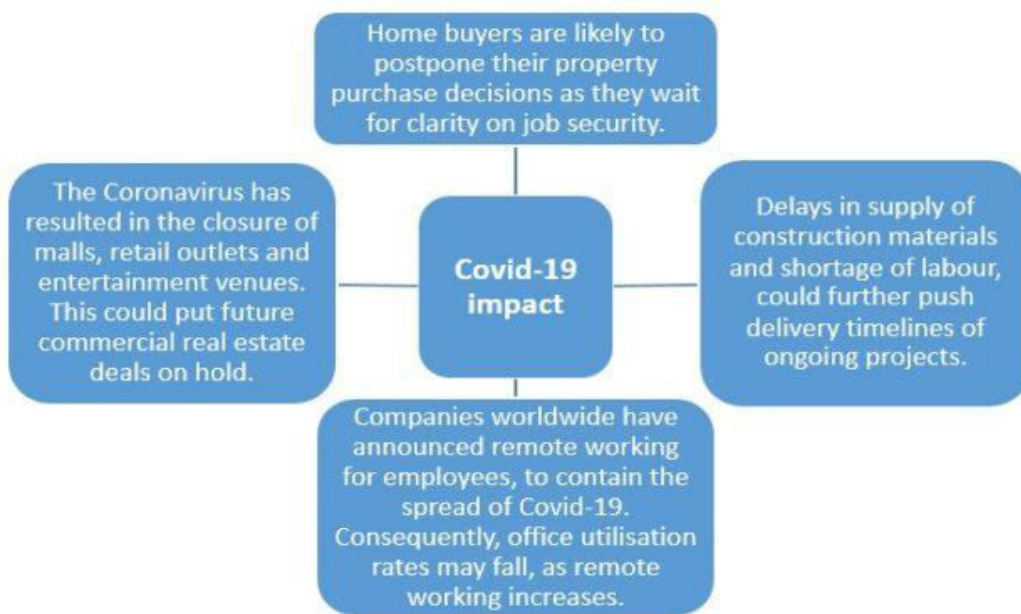
The **coronavirus** outbreak, which was first detected in China, has infected people in 185 countries. In just weeks, the Coronavirus pandemic has shaved off nearly a one third of the global market cap. . The spread of the virus has triggered panic across the world and shaken the confidence of investors. Markets across the world are crashing, and ripple effects are being felt across the globe. Indian stock markets are no different. Bombay Stock Exchange (BSE) tanked 1,836 points while National Stock Exchange (NSE) plunged 494 points in a single day on March 16, 2020. It amounts to wiping out hundreds of crores from the market. While Corona-induced crash hit almost every class of assets, stocks of Indian real estate companies also faced the brunt. In this article we are studying the impact of the pandemic disease Covid-19 on real estate properties using trend percentage analysis and using graphs.

The trend percentage analysis which plays significant role in analysing the financial stature of the enterprise through base years. For this study we have taken data of the trend of Stock Prices of some real estate companies from Month Feb 2020 to the month April 2020. Also, we have used Paired t-test which gives us the before lockdown and after lockdown effects on prices of real estate by making the hypothesis that the mean prices of real estate in lockdown are less than the mean prices before lockdown .

**Keywords:** Ms-Excel, Trend Percentage analysis, Charts, Paired t-test.

## **Introduction :**

The real estate sector is one of the most globally recognized sectors. The construction industry stood 3<sup>rd</sup> among the 14 important sectors in term in terms of direct, indirect and induced effects in all sectors of the economy. Real estate sector include four sub sectors – housing, retail, hospitality, and commercial. This sector also has NRI investment. Real estate sector in India is expected to reach a market size of US\$ 1 trillion by 2030 from US\$ 120 billion in 2017 and contribute 13 per cent of the country's GDP by 2025. If the corona Pandemic, not contained soon, It would not only the economy get impacted but also the adversely hit developers' cash flows and project delivery capabilities, giving rise to wider credit negative implications. Which at the end impact the stock Price. The real estate developers in Mumbai, the state capital and India's financial nerve centre, also have the highest unsold stock among the top nine markets. We can see the impact of Covid-19 on real estate from the following diagram:



### Stock price chart of selected companies

Sr.No	Company Name	Price On 28 <sup>th</sup> Feb 2020	Price On 31 <sup>st</sup> Mar 2020	Price On 28 Apr 2020
1	Mahindra Lifespace Developer Ltd.	356.40	192.40	184.95
2	Kolte Patil Developers Ltd.	211.80	120.20	159.10
3	Dlf Ltd.	201.70	137.45	138.00
4	Prestige Estate Project Ltd.	290.35	168.20	168.20
5	Sobha Developers Ltd.	297.00	133.85	212.20
6	Godrej Properties	1003.05	603.25	663.00
7	Housing Development And Infrastructure Ltd	2.30	1.40	1.75
8	Indiabulls Real Estate Ltd	75.20	40.85	60.20
9	Oberio Realty Ltd	509.95	331.75	327.80
10	Housing & Urban Development Corporation Ltd.	29.75	20.00	21.50
	<b>Total</b>	<b>2977.5</b>	<b>1749.35</b>	<b>1936.7</b>

Source:moneycontrol.com

Above table shows the trend of stock price of selected real estate companies of India from the end of the month feb 2020 to the end of the month April 2020. It shows the rapidly decrease in stock price in the month march and then slightly increase in the month April 2020. The trend percentages has been calculated by using feb 2020 as the base year. Further taking total of prices of stock in the month feb 2020 is Rs.2977.5 in the month Rs. 1749.35 and in the month April 2020 is Rs.1936.7 .

### Methodology:

In this paper we are trying to find out the impact of corona outbreak on Real estate stock Rate. Secondary data has been use for the same. 10 Real Estate companies has selected for trend percentage analysis. Trend percentage analysis has been used to find the trend of stock rate from the month Feb 2020 to April 2020. Trend analysis is a technique used in technical analysis that attempts to predict the future stock price movements based on recently observed trend data. Trend analysis is based on the idea that what has happened in the past gives traders an idea of what will happen in the future .

The trend percentage analysis would look like as follows:

### **Trend Percentage Analysis of above chart:**

Sr.No	Company Name	Price On 28 <sup>th</sup> Feb 2020	Price On 31 <sup>st</sup> Mar 2020	Price On 28 Apr 2020
1	Mahindra Lifespace Developer Ltd.	100 %	54 %	52%
2	Kolte Patil Developers Ltd.	100 %	57%	75%
3	Dlf Ltd.	100 %	68 %	68.4%
4	Prestige Estate Project Ltd.	100 %	58%	58%
5	Sobha Developers Ltd.	100 %	45%	71.4%
6	Godrej Properties	100 %	60%	66%
7	Housing Development And Infrastructure Ltd	100 %	61%	76%
8	Indiabulls Real Estate Ltd	100 %	54.32%	80%
9	Oberio Realty Ltd	100 %	65%	64.2%
10	Housing & Urban Development Corporation Ltd.	100 %	67.2%	72.2%
	<b>Total</b>	<b>100%</b>	<b>59%</b>	<b>65%</b>

These trend percentages indicate the changes taking place in the Stock Price and highlight the direction of these changes. The trend percentages has been calculated by taking feb 2020 as a 100%. Trend Percentage Analysis shows the percentage stock rate is decreasing in The month March 2020 of all selected Real Estate companies. Each year compared to the base year. In the month March it decrease to 59 % and in April to 65 % . As comparing with the month Feb 2020 it increase by 6 % . The ongoing Covid19 outbreak has impact on economy have pushed the real estate to its all-time lowest level in the quarter ended March. Both residential and commercial real estate sectors are effected in term of launches, sales and prices. which ultimately had effect on stock Prises. We are not sure how long the corona outbreak will last. But the current situation investment in real estate will give better long term return. In the month April 2020 stock trend shows slightly increase as compare to month Feb 2020, but still it is less than the base year Feb 2020 by 35 %.

- **Paired t- test:**

The paired sample *t*-test, sometimes called the dependent sample *t*-test, is a statistical procedure used to determine whether the mean difference between two sets of observations is zero. In a paired sample *t*-test, each subject or entity is measured twice, resulting in *pairs* of observations.

Common applications of the paired sample *t*-test include case-control studies or repeated-measures designs

To test the null hypothesis that the true mean difference is zero, the procedure is as follows:

1. Calculate the difference ( $d_i = y_i - x_i$ ) between the two observations on each pair, making sure you distinguish between positive and negative differences.
2. Calculate the mean difference,  $\bar{d}$ .
3. Calculate the standard deviation of the differences,  $s_d$ , and use this to calculate the standard error of the mean difference,  $SE(\bar{d}) = \frac{s_d}{\sqrt{n}}$
4. Calculate the *t*-statistic, which is given by  $T = \bar{d} / SE(\bar{d})$ . Under the null hypothesis, this statistic follows a *t*-distribution with  $n - 1$  degrees of freedom.
5. Use tables of the *t*-distribution to compare your value for *T* to the  $t_{n-1}$  distribution.

Now, in this case our hypothesis will be Considering *X* as stock price of real estate on 28<sup>th</sup> Feb, 2020 and *Y* as stock price of real estate on 28<sup>th</sup> April, 2020.

$$H_0: \mu_x = \mu_y \quad H_1: \mu_x > \mu_y$$

Here we are proving that the mean of price of real estate before lockdown is greater than after lockdown.

Sr.No	Company Name	Price On 28 <sup>th</sup> Feb 2020 (X)	Price On 28 <sup>th</sup> Apr 2020 (Y)
1	Mahindra Lifespace Developer Ltd.	356.40	184.95
2	Kolte Patil Developers Ltd.	211.80	159.10
3	Dlf Ltd.	201.70	138.00
4	Prestige Estate Project Ltd.	290.35	168.20
5	Sobha Developers Ltd.	297.00	212.20
6	Godrej Properties	1003.05	663.00
7	Housing Development And Infrastructure Ltd	2.30	1.75
8	Indiabulls Real Estate Ltd	75.20	60.20
9	Oberio Realty Ltd	509.95	327.80
10	Housing & Urban Development Corporation Ltd.	29.75	21.50
	<b>Total</b>	<b>2977.5</b>	<b>1936.7</b>

t-Test: Paired Two Sample for  
Means

	356.4	184.95
Mean	291.2333	194.6389
Variance	95925.78	40978.68
Observations	10	10

Pearson Correlation	0.998012
Hypothesized Mean Difference	0
df	9
t Stat	2.67223
P(T<=t) one-tail	0.014132
t Critical one-tail	1.859548
P(T<=t) two-tail	0.028264
t Critical two-tail	2.306004

Since  $t_{cal} > t_{tab}$ , we reject  $H_0$

That means we accept  $H_1$  i.e.  $\mu_x > \mu_y$

Hence, the stock prices of real estate are affected during lockdown. The mean prices are less since affected by lockdown.

### Graphical Presentation:



From the above graph we can see how the stock rate is declining with effect of Covid-19 due to lockdown.

**Conclusion:**

1) With the help of trend percentage analyses we can conclude at the beginning of corona outbreak Real estate stock rate has dropped by nearly 50 % in the month of March 2020. After that it starts increasing in the month April 2020 it dropped by 35 % as compare to base year Feb 2020 and increases by 6 % compare to march 2020.

2) Using Paired t-test we can observe that the stock prices of real estate are less in the period of lockdown.

**References :**

1. <https://www.fundoodata.com/>
2. <https://economictimes.indiatimes.com/>
3. <https://housing.com/>
4. <https://www.ibef.org/>
5. <https://www.moneycontrol.com/>