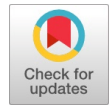


# Did Lockdown Affect Stock Returns of Airline Sector in India ?

Samrat Banerjee, Vidisha Agarwalla



**Abstract:** In this study, we will analyze the impact of lockdown on stock returns of airline industry in India. For this purpose, market model of event study methodology is used. The event window of 21 days have been taken to show the impact on stock returns due to announcement of lockdown. We will also understand how investors react at the time of fall in the stock market in terms of one industry and the impacts of lockdown in the economy of India. We will investigate into the impact of the first lockdown on returns, abnormal returns and cumulative abnormal returns for all three companies of the airline sector viz., GLOBALVECT.BO, SPICEJET.BO and INDIGO.BO. Data for this research was obtained from the official website of National Stock Exchange (NSE). Conclusions were drawn based on this data and it was found that the lockdown had a more significant impact on abnormal returns of Indigo compared to that of Spice Jet and Global Vectra. Further, it can be inferred that the impact of lockdown on the average abnormal return and the cumulative average abnormal returns of the airline sector was highly significant, which displayed more volatility in stock prices.

**Keywords:** Lockdown, Stock returns, Adverse reaction, Artificial intelligence, Airline sector

## I. INTRODUCTION

At present the world is combating with coronavirus pandemic which emerged from seafood wholesale market in Wuhan, Hubei, China. It is a respiratory syndrome, and its symptoms are dry cough, fever and fatigue. This can be transmitted through air particles, touching, sneezing, coughing, etc. Symptoms of it also include loss of taste and smell and breathing problems. Measures that can prevent coronavirus are proper masking, sanitization, cleanliness, social distancing, vaccination and quarantining an individual who is exposed to this virus. Lockdown had impact on almost every sector of the country. Huge mass of migrant workers was left unemployed as workplaces and factories were shut, so they had to go to their villages or homes in different cities. There was shortage of drugs in India due to the pandemic. Education sector was affected badly as the entrance exams got cancelled or postponed and college and school going students were promoted without giving exams at initial

stages. There was economic slowdown in the country and the Indian economy was affected badly. Transport was also suspended, flights were cancelled, trains were cancelled, so people were stuck at their respective places. As hospitality sector contributes a huge portion to India's GDP, this sector was affected in both the covid-19 waves in India due to the restrictions imposed by central and state government. Tourism sector contributes to nearly 7% to the GDP of India and this sector was affected because there were barriers to tourism from different countries and the borders were sealed to reduce the spread of virus and as a result there was almost no tourism in the countries in the pandemic. Aviation sector was also hit hard by this pandemic as there were state restrictions of quarantine and all which gave rise to people staying at home and not travelling. Real estate and construction sector was also hit by the pandemic because the labor force left their workplaces and went to their homes in the villages. The Indian Stock market was one which was highly affected by the lockdown of covid-19. In the pre lockdown time the investors were sceptical about the returns and they reacted in a negative manner and made their investments accordingly. But in the post lockdown scenario the stock market showed a positive impact in the returns and investors were willing to make their investments. As a result of this we saw that there were rise in the investors during the post pandemic period and they reacted in a positive manner. Pandemic has also affected the global financial markets, especially the developed countries which resulted in supply reduction, economic instability and demand reduction. The Indian Stock market declined by 30% and there was turmoil in global financial markets rise in oil prices, credit on non-investment debt and volatility in equities. Airline industry or Aviation sector was affected by the pandemic as there were travel restrictions and many flights had to be cancelled due to spreading virus. There was rise in the charges of air cargo as the passenger flights go cancelled and there was travel restrictions of humans. Every country had travel restrictions including India and their aviation sector also reported loss. There were high chances of people getting in contact with virus traveling in same aircraft, keeping this in mind WHO made these restrictions. When the air travel resumed with lower capacity then at the initial months everyone needed to show their Covid test proof at the airports. After this when vaccination came into circulation and was available for the public then vaccination proof was made mandatory for travelling. There were quarantine restrictions at many countries and states as well after landing in that place. Every company of airline industry rose the ticket charges when needed urgently and there are no discounts provided.

Manuscript received on 14 October 2022 | Revised Manuscript received on 26 October 2022 | Manuscript Accepted on 15 November 2022 | Manuscript published on 30 November 2022.

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The Indian airline industry has a slow recovery after different countries started their air travels. This slowdown is domestically as well as internationally. As India is facing low penetration so there is a potential growth in the country. The operating costs of airline business are high because of the aircraft fuel expenses. For Indigo airlines the total expenses accounted for 35% and for SpiceJet airlines the total expenses accounted for 37%. The increase in the fuel prices impacts the investors to invest in the airlines company because the airline companies must meet their operational costs, so they increase the price of flight tickets. The Government of India announced lockdown in the whole nation after a mini lockdown in the name of 'Janta Curfew' in March 2020 and there was a havoc panic after the announcement. People started migrating from their workplaces to their homes, manufacturing units were shut, service sector and supply chain was disturbed in a huge way. When people started to migrate, they lost their jobs and had to work in agricultural work which was there in their villages. Therefore, agriculture sector grew very much and it reflected in a huge way in the GDP of India. 6.3 million jobs were lost in India during the first wave of corona.

## II. LITERATURE REVIEW

**Sakkakom Maneenop, Suntichai Kotcharin (2020) [1]** stated that due to covid-19 pandemic, there was a huge downfall in the stock prices of airlines industry. To prevent these downfalls and give a support to the aviation industry financially, there was scope of mergers and acquisitions, government subsidiaries and tax policy. These measures were possible to back up airline industry and if not then businesses related to them and the supply chain would have faced huge problems. There was immediate reaction after the announcements made by WHO and Former President Trump, in the aviation industry all over the world.

**Monika Chaudhary, P.R. Sodani and Shankar Das (2020) [2]** stated that as travel sector contributed as a major part of GDP of India, GDP got affected by this and there was major impact in the economy. Many people lost their jobs in this sector as the companies of airlines does not have enough cash left to serve them all, due to the reduction of daily revenue.

**Ms. Deepmala Jasuja and Dr. Preeti Sharma (2020) [3]** stated that the pandemic had an impact on economic activities which lead to change in social lifestyle, stock market crash and reduction in consumer demand. Aviation industry is one such economic activities which came to a standstill without having any idea about the financial assistance that they could have. Customers whose flights got cancelled because of lockdown, have claimed for their refunds but airline companies does not have that much finance to refund them. Indian airline companies have announced reduction in salary as they do not have capacity to face economic downturns.

**Shubhi Agarwal and Archana Singh (2020) [4]** stated that the covid-19 pandemic gave rise to work from home culture, online teaching culture and online classroom culture. As schools, colleges, private firms and universities opted online mode of work, so there was no travel taking place, therefore resulting in loss of airline companies. Business trips, business events, international level events, workshops, leisure trips, internships, etc., were all cancelled or held online which was a major loss for aviation industry.

**Mahendra Dev and Rajeswari Sengupta (2020) [5]** stated that due to the lockdown the economy was in a big trouble as all the activities were closed and effected in financial crisis. Gradually as the covid-19 cases began to fall, government lifted the lockdown slowly and resumed the airline sector as well. But after the resumption of flights, there was restrictions of 30% flights, then gradually it increased, so the stock prices of these companies also increased gradually. This way aviation sector faced problems due to covid-19 pandemic.

**Sandeep Kumar M., Maheshwari V., Prabhu J., Prasanna M., Jayalakshmi P., Suganya P. and Benjula Anbu Malar M.B. (2020) [6][7]** stated that covid-19 pandemic restricted Government of India for the operation of any kind of activity because India being the second country having huge number of population could have been badly affected by this virus. So, the airline industry also had to restrict its operations as tourist visa was suspended. 600 flights were suspended from different periods to and from India and nearly 90 flights domestically got cancelled. Therefore, airline industry had to increase fares of flights to cover its cost of operation and the loss occurred during lockdown.

**Alam, M. N., Alam, M. S., & Chavali, K. (2020) [8]** stated that there was a huge impact of lockdown on Indian stock market and there was a big question that whether the market would react in the same way in both pre and post lockdown scenario. Market reacted in a positive way with significant average abnormal returns and the investors also reacted in a positive way. But the investors were sceptical in the pre lockdown scenario and had negative average abnormal returns.

**Anshu Agarwal (2021) [9]** stated that there was a threat for the survival of airlines industry during the covid-19 pandemic. During the time of lockdown, operations of airlines was suspended and they incurred a huge amount of loss. Airlines have its fixed costs which include employee's salary, lease rents and interest charges which an airline company has to bear and as operations were suspended they faced many problems in sustaining with these costs. For these costs to get fulfilled, many airline companies' cash reserves was dried out. There were some more reasons that can be considered for the survival of airlines industry like oil price fluctuation and reducing currency. These were the main factors that questioned the survival and sustainability of airlines industry.

**Sandhya H (2021) [10]** stated that as covid-19 pandemic has imposed social distancing, precaution from going out of homes, the events, weddings, gatherings and meetings were cancelled and the passengers could not travel. Many countries sealed their borders and airports were shut down completely which caused a massive loss to travel and airline industry.

**Rahul Kumar, Prince Bhatia and Deeksha Gupta (2021) [11]** stated that covid-19 pandemic had some devastating effect on every part of the country. It resulted in poverty, unemployment, existence of firms and financial crises.



It has also effected stock market of India and investors are confused on what to do after the crash of stock prices. Thus, aviation industry also got effected due to this and incurred losses.

**Dr. Geetali Tilak (2021) [12][13]** stated that hospitality and tourism is the heart of many countries. But covid-19 pandemic had a major impact on these two sectors. There was a great impact on employment as well as businesses. These are the pillars which is a mean of foreign exchange and generates revenue. There was unemployment in the airline business, many left their job with no pay and at the onset of the lockdown their was reduction in the salaries of the airline staffs. Due to the loss that airline businesses faced during the lockdown made a huge impact on the economy and the stock prices of the same industry in India.

### III. OBJECTIVES

1. To interpret the effect of lockdown on stock prices of airline industry in India.
2. To analyse the abnormal returns and average of abnormal returns of different Indian Airline companies generated after lockdown announcement.
3. To examine the significant impact of lockdown on cumulative average of abnormal return of the airline sector for the relevant event window.

### IV. RESEARCH METHODOLOGY

Research was done with the help of Secondary data and the data was analysed with the help of analytical tool and technique. The tool used to analyse the data was Event Study Methodology for impact of stock market of Airline Industry in India. The market price and stock price of three companies of Airline Industry was taken into account viz., GLOBALVECT.BO, SPICEJET.BO and INDIGO.BO. Data that was collected for research was from the official website of National Stock Exchange (NSE). Research was done by taking 21 day an event window including 10 days from pre-announcement period, 10 days from post-announcement period and the event day when the announcement was made was also considered. The estimated window was taken of 150 days including the event window.

Market model which was used for event study is:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t})$$

where  $R_{i,t}$  = raw returns on security 'i' for day 't',

$E(R_{i,t})$  = expected returns on security 'i' during 't' =  $\hat{R}_{i,t} = \alpha_i + \beta_i R_{m,t} + \epsilon_{i,t}$

Then, Average Abnormal Return and Cumulative Average Abnormal Return was calculated for each relative day which are as follows:

$AAR_t = 1/N \sum AR_{i,t}$  (N is the number of securities with abnormal return during day 't'),  $CAAR = \sum AAR_t$ .

### V. RESULTS AND DISCUSSIONS

Table 1

Period	Date	Stock Price	Market Price	Stock Return	Market Return	Normal Return	Abnormal Return	t-statistics of AR
-10	09-Mar-20	46.1	10451.45	0	-0.050195	-0.0296	0.050195	1.34803584
-9	11-Mar-20	45.25	10458.4	-0.01861	0.000665	-0.0002	-0.019275	-0.5176489
-8	12-Mar-20	40.7	9590.15	-0.10597	-0.086669	-0.0507	-0.0193056	-0.5184708
-7	13-Mar-20	42	9955.2	0.031442	0.037358	0.02098	-0.005917	-0.1589067
-6	16-Mar-20	37.1	9197.4	-0.12405	-0.079174	-0.0464	-0.0448785	-1.2052564
-5	17-Mar-20	38.45	8967.05	0.035742	-0.025364	-0.0153	0.06110589	1.64105867
-4	18-Mar-20	38.05	8468.8	-0.01046	-0.057168	-0.0336	0.04671026	1.25444987
-3	19-Mar-20	36.15	8263.45	-0.05122	-0.024547	-0.0148	-0.0266774	-0.7164479
-2	20-Mar-20	38.05	8745.45	0.051224	0.056691	0.03215	-0.0054673	-0.1468306
-1	23-Mar-20	33	7610.25	-0.14239	-0.139038	-0.081	-0.003356	-0.0901274
0	24-Mar-20	33.05	7801.05	0.001514	0.024762	0.0137	-0.0232483	-0.624357
1	25-Mar-20	34.9	8317.85	0.054465	0.064145	0.03645	-0.0096801	-0.259969
2	26-Mar-20	36.5	8641.45	0.044825	0.038167	0.02144	0.00665879	0.17882831
3	27-Mar-20	37.05	8660.25	0.014956	0.002173	0.00064	0.01278287	0.34329641
4	30-Mar-20	37.9	8281.1	0.022683	-0.044768	-0.0265	0.06745062	1.81145254
5	31-Mar-20	35.05	8597.75	-0.07818	0.037525	0.02107	-0.1157003	-3.1072453
6	01-Apr-20	36.65	8253.8	0.044638	-0.040827	-0.0242	0.08546474	2.29523933
7	03-Apr-20	37.25	8083.8	0.016238	-0.020812	-0.0126	0.0370501	0.99501684
8	07-Apr-20	37.4	8792.2	0.004019	0.084003	0.04793	-0.0799841	-2.1480512
9	08-Apr-20	44.8	8748.75	0.180537	-0.004954	-0.0035	0.18549149	4.98155581
10	09-Apr-20	44.1	9111.9	-0.01575	0.04067	0.02289	-0.0564188	-1.5151821



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Table 1 showcases the event study of **GLOBALVECT.BO** which includes returns and t-statistics. Event study day is the day when lockdown was announced i.e., 24<sup>th</sup> March 2020. The return is negative on the event day which is -0.0232483, so we can say that there is an adverse effect of the announcement of lockdown for investors. T-statistics of -0.624357 signifies that there is an insignificant effect of lockdown on the stock price.

Post announcement of lockdown on days 1, 5, 8 and 10 shows adverse effect of lockdown for investors as returns are -0.0096801, -0.1157003, -0.0799841 and -0.0564188 respectively for these days. T-statistics for day 1 which is -0.259969 shows insignificant effect of the lockdown on stock return. T-statistics for day 5 which is -3.1072453 shows significant impact of the lockdown on stock price with 1% level of significance. T-statistics for day 8 which is -2.1480512 shows significant impact of the lockdown on stock price with 1% level of significance. T-statistics for day 10 which is -1.5151821 shows insignificant impact of the lockdown on stock price.

Post announcement of lockdown on rest of the days i.e., 2, 3, 4, 6, 7 and 9 with returns 0.00665879, 0.01278287, 0.06745062, 0.08546474, 0.0370501 and 0.18549149 shows positive effect of lockdown for investors. T-statistics for days 2, 3 and 7 shows insignificant impact and t-statistics for day 4

which is 1.81145254 shows significant impact of lockdown on stock price with 10% level of significance. T-statistics for day 6 which is 2.29523933 shows significant impact of lockdown on stock price with 5% level of significance. T-statistics for day 9 which is 4.98155581 shows significant impact of lockdown on stock price with 1% level of significance.

Pre announcement of lockdown, on days -1, -2 and -3 with -0.003356, -0.0054673 and -0.0266774 returns shows adverse impact of lockdown for investors as they are sceptical regarding stock return. T-statistics for these days are expected to have an insignificant impact of lockdown on stock price.

Pre announcement of lockdown, on days -4, -5 and -10 with 0.04671026, 0.06110589 and 0.050195 returns shows positive impact of lockdown for investors as they are optimistic regarding the stock of **GLOBALVECT.BO**. T-statistics for these days is expected to have an insignificant impact of lockdown on stock price.

Pre announcement of lockdown, on days -6, -7, -8 and -9 returns shows adverse impact of lockdown for investors as they are sceptical regarding the stock return. T-statistics for these days is expected to have an insignificant impact of the lockdown on stock price.

**Table 2**

Period	Date	Stock Price	Market Price	Stock Return	Market Return	Normal Return	Abnormal Return	t-statistics of AR
-10	09-Mar-2020	63.2	10451.5	1	0.95104	0.99331	0.0066884	0.14008818
-9	11-Mar-2020	60.35	10458.4	0.9549	1.00066	0.99474	-0.039835	-0.8343486
-8	12-Mar-2020	48.55	9590.15	0.8045	0.91698	0.99233	-0.187857	-3.9346548
-7	13-Mar-2020	43.7	9955.2	0.9001	1.03807	0.99582	-0.095714	-2.0047282
-6	16-Mar-2020	42.6	9197.4	0.9748	0.92388	0.99253	-0.017701	-0.3707498
-5	17-Mar-2020	42.05	8967.05	0.9871	0.97495	0.994	-0.006911	-0.1447471
-4	18-Mar-2020	37.85	8468.8	0.9001	0.94444	0.99312	-0.093002	-1.9479321
-3	19-Mar-2020	34.1	8263.45	0.9009	0.97575	0.99402	-0.093098	-1.9499401
-2	20-Mar-2020	35.25	8745.45	1.0337	1.05833	0.9964	0.0373238	0.78174509
-1	23-Mar-2020	33.5	7610.25	0.9504	0.8702	0.99098	-0.040629	-0.8509759
0	24-Mar-2020	32.4	7801.05	0.9672	1.02507	0.99544	-0.028279	-0.5922982
1	25-Mar-2020	33.9	8317.85	1.0463	1.06625	0.99663	0.0496677	1.0402876
2	26-Mar-2020	35.55	8641.45	1.0487	1.0389	0.99584	0.0528312	1.10654615
3	27-Mar-2020	37	8660.25	1.0408	1.00218	0.99478	0.0460038	0.96354843
4	30-Mar-2020	35.15	8281.1	0.95	0.95622	0.99346	-0.043461	-0.9102796
5	31-Mar-2020	36.9	8597.75	1.0498	1.03824	0.99582	0.0539645	1.13028399
6	01-Apr-2020	38.7	8253.8	1.0488	0.96	0.99357	0.0552111	1.15639448
7	03-Apr-2020	40.6	8083.8	1.0491	0.9794	0.99413	0.0549674	1.15128943
8	07-Apr-2020	42.6	8792.2	1.0493	1.08763	0.99724	0.0520168	1.08948893
9	08-Apr-2020	44.7	8748.75	1.0493	0.99506	0.99458	0.054717	1.14604442
10	09-Apr-2020	46.9	9111.9	1.0492	1.04151	0.99592	0.0533007	1.11638103

Table 2 shows the event study of **SPICEJET.BO** which includes returns and t-statistics. Event study day is the day when lockdown was announced i.e., 24<sup>th</sup> March 2020. The return is negative on the event day which is -0.028279, so we can say that there is an adverse effect of the announcement of lockdown for investors. T-statistics of -0.5922982 signifies that there is an insignificant impact of lockdown on stock price.

Post announcement of lockdown on days 1, 2, 3, 5, 6, 7, 8, 9 and 10, returns shows a positive impact of lockdown for investors. T-statistics of these days shows an insignificant impact of lockdown on stock return.



Post announcement of lockdown on day 4 return showed an adverse effect of lockdown for investors. T-statistics of the day shows an insignificant impact of lockdown on stock return.

Pre announcement of lockdown, on days -1, -5, -6 and -9 returns shows an adverse effect of lockdown as the investors are sceptical regarding the stock return. T-statistics for these days is expected to have an insignificant impact of the lockdown on stock price.

Pre announcement of lockdown, on days -2 and -10 returns shows a positive effect of lockdown as the investors are optimistic regarding the stock return of **SPICEJET.BO**. T-statistics for these days is expected to have an insignificant impact of the lockdown on stock price.

Pre announcement of lockdown, on days -3 and -4 returns shows an adverse effect of lockdown as the investors are sceptical regarding the stock return. T-statistics for these days which is -1.9499401 and -1.9479321 respectively is expected to have a significant impact of lockdown in the stock price with 10% level of significance.

Pre announcement of lockdown, on days -7 and -8 returns shows an adverse effect of lockdown as the investors are sceptical regarding the stock return. T-statistics of day -7 which is -2.0047282 is expected to have a significant impact with 5% level of significance and -8 which is -3.9346548 is expected to have a significant impact of lockdown in the stock price with 1% level of significance.

Table 3

Period	Date	Stock Price	Market Price	Stock Return	Market Return	Normal Return	Abnormal Return	t-statistics of AR
-10	09-Mar-20	1214.4	10451	1.031	0.95104	0.982	0.048943	2.0541429
-9	11Mar20	1155.4	10458	0.951	1.00066	0.99859	-0.04717	-1.979613
-8	12Mar20	1018.5	9590.2	0.881	0.91698	0.97061	-0.08914	-3.741183
-7	13-Mar-20	999.4	9955.2	0.981	1.03807	1.01109	-0.02984	-1.252371
-6	16-Mar-20	979.25	9197.4	0.98	0.92388	0.97292	0.006918	0.2903675
-5	17-Mar-20	975.8	8967.1	0.996	0.97495	0.98999	0.006485	0.2721847
-4	18-Mar-20	952.25	8468.8	0.976	0.94444	0.97979	-0.00392	-0.164715
-3	19-Mar-20	908.85	8263.5	0.954	0.97575	0.99026	-0.03583	-1.503983
-2	20-Mar-20	871.9	8745.5	0.959	1.05833	1.01786	-0.05852	-2.45591
-1	23-Mar-20	850.05	7610.3	0.975	0.8702	0.95498	0.019964	0.8379007
0	24-Mar-20	919.1	7801.1	1.081	1.02507	1.00674	0.074487	3.1262488
1	25-Mar-20	1011.4	8317.9	1.1	1.06625	1.02051	0.079918	3.3541765
2	26-Mar-20	1009	8641.5	0.998	1.0389	1.01137	-0.01379	-0.578742
3	27-Mar-20	1028.4	8660.3	1.019	1.00218	0.99909	0.020237	0.849339
4	30-Mar-20	1017.2	8281.1	0.989	0.95622	0.98373	0.005283	0.2217414
5	31-Mar-20	1068.3	8597.8	1.05	1.03824	1.01114	0.039094	1.6407968
6	01-Apr-20	999.75	8253.8	0.936	0.96	0.98499	-0.04912	-2.06137
7	03-Apr-20	952.3	8083.8	0.953	0.9794	0.99148	-0.03894	-1.634344
8	07-Apr-20	980.15	8792.2	1.029	1.08763	1.02765	0.001591	0.0667629
9	08-Apr-20	990.1	8748.8	1.01	0.99506	0.99671	0.01344	0.5640888
10	09-Apr-20	1039.3	9111.9	1.05	1.04151	1.01224	0.037505	1.574093

Table 3 shows the event study of **INDIGO.BO** which includes returns and t-statistics. Event study day is the day when the lockdown was announced i.e., 24<sup>th</sup> March 2020. The return is positive on the event day which is 0.074487, so, we can say that there is a positive impact of the lockdown for investors on stock return. T-statistics of the event day is 3.1262488 which shows a significant impact of the lockdown on the share price with 1% level of significance. Post announcement of lockdown on day 1 with 0.079918 returns shows a positive effect of lockdown on stock return for investors. T-statistics of this day is 3.3541765 which shows a significant impact of lockdown on share price at 1% level of significance. Post announcement of lockdown on days 3, 4, 5, 8, 9 and 10 returns shows a positive effect of lockdown on stock return for investors. T-statistics of these days shows an insignificant impact of lockdown on share price. Post announcement of lockdown on days 2 and 7 with returns -0.01379 and -0.03894 shows a negative effect of lockdown on the stock returns for investors. T-statistics of these two days which are -0.578742 and -1.634344 shows an

insignificant impact of the lockdown on share price. Post announcement of the lockdown on day 6 with -0.04912 returns shows a negative impact of lockdown on stock return for investors. T-statistics for this day is -2.06137 which shows a significant impact of the lockdown on share price at 5% level of significance. Pre announcement of lockdown on days -1, -5 and -6 shows a positive impact of lockdown on stock returns for investors as investors are optimistic towards the stock of the **INDIGO.BO**. T-statistics for these days shows an insignificant impact of lockdown on share price. Pre announcement of lockdown on days -2, -8 and -9 with -0.05852, -0.08914 and -0.04717 respectively shows a negative impact of lockdown on stock returns for investors as investors are sceptical regarding the stock returns.

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T-statistics of days -2 and -9 are -2.45591 and -1.979613 respectively which shows a significant impact of lockdown on share price at 5% level of significance. T-statistics for day -8 is -3.741183 which shows a significant impact of lockdown on share price at 1% level of significance.

Pre announcement of lockdown on days -3, -4 and -7 shows a negative impact of lockdown on stock returns for investors as investors are sceptical regarding the stock returns. T-statistics

for these days shows an insignificant impact of lockdown on share price.

Pre announcement of lockdown on day -10 with 0.048943 returns shows a positive impact of lockdown on stock returns for investors as investors are optimistic towards the stock of **INDIGO.BO**. T-statistics of this day is 2.0541429 which shows a significant impact of lockdown on share price at 5% level of significance.

**Table 4**

Period	Date	AAR	t-statistics of AAR	CAAR	t-statistics of CAAR
-10	09-Mar-20	0.035275	1.628354592	0.016383	0.280978329
-9	11-Mar-20	-0.03543	-1.63529603	-0.01904	-0.32659904
-8	12-Mar-20	-0.09877	-4.55920888	-0.11781	-2.02052607
-7	13-Mar-20	-0.04382	-2.0229468	-0.16163	-2.77213108
-6	16-Mar-20	-0.01855	-0.85646323	-0.18019	-3.09034116
-5	17-Mar-20	0.020227	0.933690737	-0.15996	-2.743438
-4	18-Mar-20	-0.01674	-0.7726882	-0.1767	-3.03052233
-3	19-Mar-20	-0.05187	-2.39438447	-0.22857	-3.92013118
-2	20-Mar-20	-0.00889	-0.41020393	-0.23746	-4.07253822
-1	23-Mar-20	-0.00801	-0.36961217	-0.24546	-4.20986381
0	24-Mar-20	0.007653	0.353288186	-0.23781	-4.07860322
1	25-Mar-20	0.039968	1.844993509	-0.19784	-3.39311492
2	26-Mar-20	0.015234	0.703198194	-0.18261	-3.13184888
3	27-Mar-20	0.026341	1.215938021	-0.15627	-2.68007966
4	30-Mar-20	0.009758	0.450430945	-0.14651	-2.51272668
5	31-Mar-20	-0.00755	-0.34838698	-0.15406	-2.64216627
6	01-Apr-20	0.03052	1.408852639	-0.12354	-2.11872161
7	03-Apr-20	0.017692	0.81669874	-0.10584	-1.81528562
8	07-Apr-20	-0.00879	-0.40585851	-0.11464	-1.96607816
9	08-Apr-20	0.08455	3.902908229	-0.03009	-0.51599287
10	09-Apr-20	0.011462	0.529112912	-0.01862	-0.31940643

Table 4 shows the Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR) of all the three companies of the Airline Industry.

The AAR of the event study on the event day is 0.007653 which shows a positive impact of lockdown for investors on average abnormal returns. T-statistics of AAR of the event is 0.353288186 which shows insignificant impact of lockdown on share price of airline industry.

Post announcement of lockdown on days 1, 2, 3, 4, 6, 7, 9 and 10 shows a positive impact of lockdown for investors on average abnormal returns. T-statistics of AAR on days 1 and 9 which is 1.844993509 and 3.902908229 respectively shows a significant impact at 10% and 1% level of significance respectively on share price. T-statistics of AAR on rest days shows an insignificant impact of lockdown on share price.

Post announcement of lockdown on days 5 and 8 shows an adverse impact of lockdown for investors on average abnormal returns. T-statistics of AAR shows an insignificant impact of lockdown on share price.

Pre announcement of lockdown on days -1, -2, -3, -4, -6, -7, -8 and -9 shows an adverse impact of lockdown for investors as they are sceptical towards the average abnormal returns. T-statistics of AAR for days -1, -2, -4, -6 and -9 shows an insignificant impact of lockdown on share price. T-statistics of AAR for days -3, -7 and -8 which is -2.39438447, -2.0229468 and -4.55920888 respectively shows a significant

impact at 5%, 5% and 1% level of significance respectively on share price.

Pre announcement of lockdown on days -5 and -10 shows a positive impact of lockdown for investors as they are optimistic towards the average abnormal returns. T-statistics of AAR of these two days shows an insignificant impact of lockdown on share price. The CAAR of the event study on the event day is -0.23781 which shows an adverse impact of lockdown for investors on cumulative returns. T-statistics of CAAR on this day is -4.07860322 which shows a significant impact at 1% level of significance on share price. Post announcement of lockdown on all days they shows an adverse impact of lockdown for investors on cumulative returns. T-statistics of CAAR for days 1, 2, 3 and 5 shows a significant impact of lockdown at 1% level of significance on share price. T-statistics of CAAR for days 4, 6 and 8 shows a significant impact of lockdown at 5% level of significance on share price. T-statistics of CAAR for 7 day shows a significant impact of lockdown at 10% level of significance on share price. T-statistics of CAAR for days 9 and 10 shows an insignificant impact of lockdown on share price.

Pre announcement of lockdown on day -10 shows a positive impact of lockdown for investors as they are optimistic towards the cumulative returns. T-statistics of CAAR for that day shows an insignificant impact of lockdown on share price.

Pre announcement of lockdown on rest days shows an adverse impact of lockdown for investors as they are sceptical towards the cumulative returns. T-statistics of CAAR for day -8 which is -2.02052607 shows a significant impact at 5% level of significance on share price and day -9 which is -0.32659904 shows an insignificant impact of lockdown on share price. T-statistics of CAAR for rest of the days shows a significant impact of lockdown at 1% level of significance on share price.

## VI. CONCLUSIONS AND RECOMMENDATIONS

We have reached to a conclusion that at the time of pandemic, aviation industry was effected by the travel restrictions in a huge way. After looking at the various facets that effected the airline industry, we can see that cancellation of flights, travel restrictions, lesser rate of passenger's movement and daily costs of any airline company was effected. This paper has shown us the impact of lockdown on the stock prices of airline industry in India and how this industry is recovering their losses gradually. The first wave had a major impact wherein most of the countries had their borders sealed. Second wave had less impact as compared to the first wave because in this wave government and all the institutions were prepared on how to handle the situation, there were restrictions but at a very less rate. Third wave had almost no impact on the airline sector. We saw this research on the basis of secondary data analysis, analysing through the event study method by collecting data of the event window of lockdown period, from the official website of NSE. The impact was also shown in the data analysis and findings part wherein we saw that all the three companies viz., GLOBALVECT.BO, SPICEJET.BO and INDIGO.BO had mixed impact on returns as investors were negative about their investment, so for first two companies on the day of announcement of lockdown had a negative impact and the third company had a positive impact. T-statistics also showed insignificant impact of first two companies and significant impact of the third company. The Average abnormal returns showed a positive impact while the cumulative average abnormal returns showed an adverse impact of the lockdown announcement. Overall we can see that there was a mixed impact of lockdown on the stock returns and the stock prices of the three companies of the airline industry. Because investors were confused whether to invest in this sector or not as in the first wave it was badly hit and in second and the third wave this industry did not had severe impacts. Investors knew that this sector will go up in the due course of time but due to the restrictions by the government they were sceptical and optimistic about the results. Airline industry can recover from this pandemic in several way. There should be proper cost structure so that people choose to travel more from flights. Airline companies should focus on maintenance and workforce which help in support system of airline companies. There should be proper hygiene which would ensure that passengers are masked and the airplane is cleaned. Customer

service should be up to the mark so that customers are satisfied by travelling.

Until flights are allowed the airports also cannot pay off their rent, as their will be no revenue generated until the flights are allowed. As and when the government allows domestic and international flights at a rate which was there pre covid time, they will start generating revenues and will be able to recover their losses. Airline companies have to ensure some of the major steps to be in place. First, they should have proper hygiene, low fares, customer service and support. If there is any complaint by the customer regarding any particular thing then it should be addressed efficiently. Customers should get some benefits on their flight tickets like if they want to reschedule or cancel then their should be proper procedure for that and refunds should also be arranged in case of any emergency. Government can also support airline industry by funding the companies which are in distress. The loan repayment should be made easier by not taking collateral, no penalties for late repayments and relaxed timelines. Government should provide tax benefits as it will result in attracting customers by lower ticket prices. Government should support labour force by giving incentives to the labour and substantiating manpower costs. The functioning in the airports should be made smooth and easy by using or implementing Artificial Intelligence projects.

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