
Changes in the Revenue Maximization techniques through Price Dynamics by Indian Airline Industry after the Covid Pandemic

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ABSTRACT

KEY WORDS:

Price Dynamics,
Dynamic Pricing,
Civil Aviation, Covid
Pandemic, Price
Dispersion,
Airlines, Trime Trend,
Price movements

Price dynamics is a common technique adopted by the airline industry to maximize revenue. ‘Price increases as the departure date approaches’ is a well-known rule in the civil aviation segment everywhere. However, the covid pandemic slowed the aviation industry, as in the case of many other sectors. This paper examines changes in the pattern of price movement and changes in dispersion after the covid pandemic. The study also analyses the changes in the price dispersion within the brands. The airlines’ price behavior on the route Delhi and Kolkata, the two metropolitan hub cities in India, are taken for this analysis. The study reveals changes in the price movement behavior after the covid pandemic, irrespective of airline companies.

1 Introduction

The covid pandemic has significantly declined the performance of the travel industry. Civil Aviation was not an exception. Indian domestic civil aviation industry also showed a decline of 47% in aircraft movements resulting in a 56% reduction in passenger traffic in the year 2020 (MCA, 2020) (MCA, 2022). Even though relaxations were relieved, the industry has not yet recouped traffic status in 2018. A June-to-June traffic comparison of 2018 and 2022 shows a reduction of nearly 7% in passenger traffic (DGCA, 2022). The Passenger Load Factor of the market leader Indigo in June 2018 was 88.3%, whereas it was 78.6% in June 2022, irrespective of an increase in market share by 16% (DGCA, 2022b). Airline companies seem to undergo a crisis, as in the case of any travel industry. Price dynamics is the typical strategy adopted globally in the civil aviation segment. This strategy has a triple function to perform: revenue maximisation, demand penetration, and facing competition. Charging high prices to time-sensitive business travellers and less to leisure travellers was a common strategy used for revenue maximisation (Lazarev, 2013). This study examines the changes in this policy after covid pandemic on the Delhi Kolkata route.

2 Literature Review

The route, airport dominance on a route, and at the endpoint airports significantly influence an airline’s ability to charge more prices. Hub formation also increases the fares on the route (Borenstein, 1989). Price discrimination is a method used to exploit customer heterogeneity in terms of willingness to pay (Gale, 1993). ‘Price increases monotonically as the booking date was close to the departure date’ was the established rule of civil aviation pricing globally. This observation was made in the European market during the initial periods of booking started (Xie & Shugan, 2001). While studying the price volatility in the U.S.

market, Gillen observed more or less stable prices till two weeks before the flight and a sudden increase after these two weeks (Gillen & Mantin, 2009). Fares are jointly affected by in-flight seat availability and purchasing date (Alderighi et al., 2012). Prices for airlines are responsive to rival prices, rival seat availability, and load factors (Clark & Vincent, 2012). In the nonstop travel from New York to London route, the Bilotkach observed an accelerated increase in price as the departure date approached (Bilotkach et al., 2010). The same effect of an increase in price as the departure date approaches was admitted in future research also (Siegert & Ulbricht, 2015) (Siegert & Ulbricht, 2020). The entry of big airline companies influences the prices of current airlines on that route with lowered prices (Sweeting et al., 2020). But to the contrary, a study in the Russian market revealed that prices on domestic airline tickets decreased as the departure dates approached (Lantseva et al., 2015).

3 Selection of Route and Airlines

Delhi, Bengaluru, Mumbai, Hyderabad, Chennai, and Kolkata are the main hub airports in India, having more than 75 direct flight routes. Delhi stood first among the major hubs in 2018 and 2022, and Kolkata was the last. This study chose Delhi to Kolkata route, and the data was collected 30 days before the departure date in both years. Air Asia, Air India, Indigo, Go Air, Jet Airways, Spicejet, and Vistara were operating direct flights on these routes in 2018, with a total number of 30 flights. In 2022, Air India, Indigo, Go First (Go Air), Spicejet, and Vistara were operating direct flights with a total of 24 flights. All the flights are considered for the evaluation of dispersion on the route. Air Asia and Jet Airways are excluded from evaluating the price dispersion of flights. The study evaluates the price dispersion caused by price dynamics on the route before and after the covid pandemic

4 Fare Dispersion in the route

The Gini coefficient is a standard tool used to analyze the dispersion in the airline industry. In 2018, prices were collected 31 days before the departure for all seven direct flights resulting in 929 price points. In 2022, prices were collected 31 days before departure for all five direct flights resulting in 806 price points. The mean price of all the flights from 31 days departure of each year was calculated as the mean price of the route. Similarly, airline company-wise mean fare was also calculated to assess the brand-wise mean price. Comparison has been made for all airlines except Jet Airways and Air Asia. The summary statistics are given in the Table:

Table: Summary Statistics

	Mean	Minimum	Maximum	Std. Dev.	C.V.	Mean Difference
D-K Route:2018	5432	4150.1	7024.7	923.93	0.17009	39.80
D-K Route:2022	7593.7	5856.7	12483	1864	0.24547	
Air India: 2018	6751.1	3652.5	11134	1887.3	0.27956	25.91
Air India: 2022	8500	5953.3	13608	2182.4	0.25675	
Indigo: 2018	5211.1	3766.9	7061.1	971.08	0.18635	40.03
Indigo: 2022	7296.9	5939	11487	1508.5	0.20673	

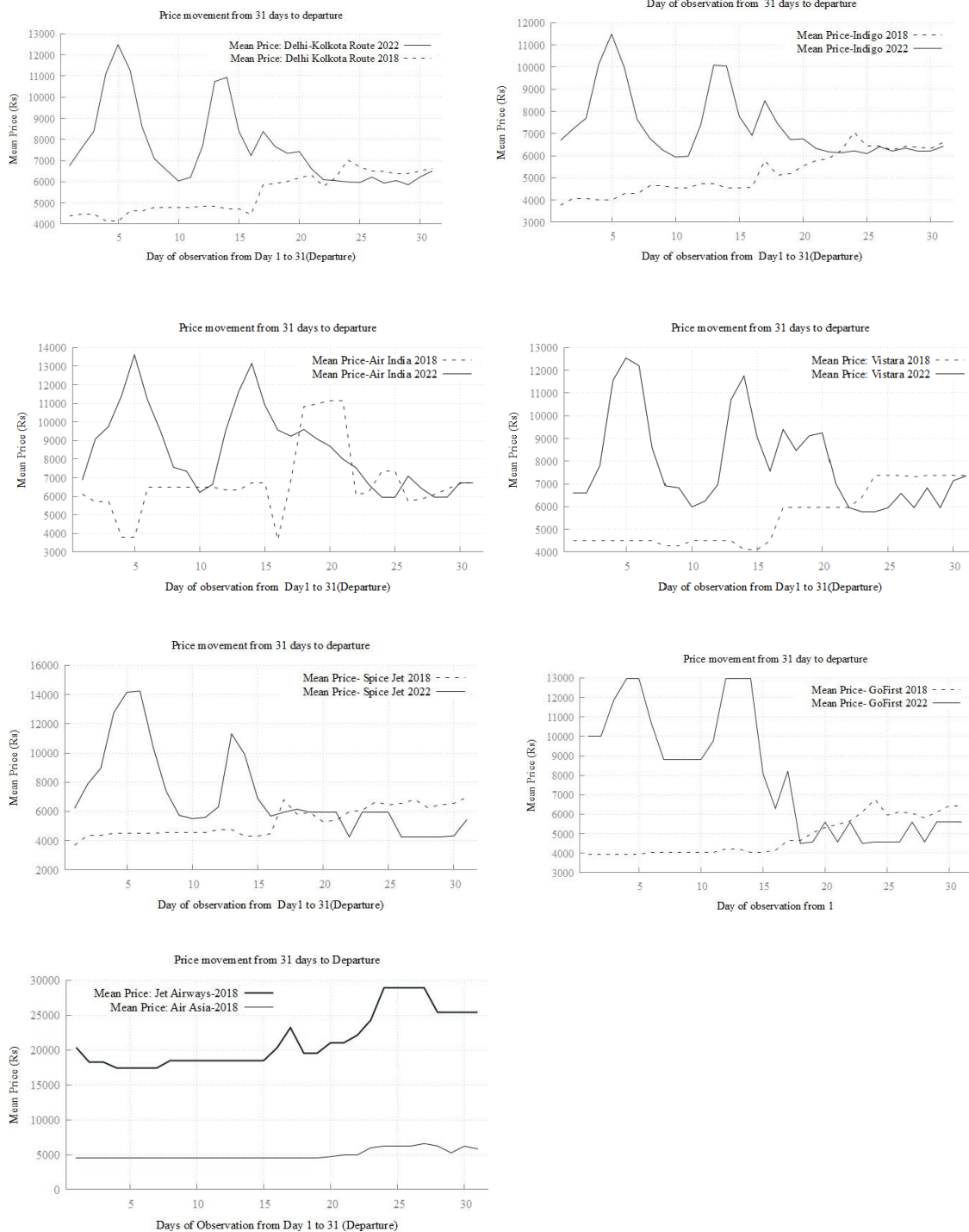
GoFirst: 2018	4877.2	3939	6763.7	983.75	0.2017	62.02
GoFirst: 2022	7901.9	4499	12945	3111.6	0.39378	
Spicejet: 2018	5332.2	3684.3	6979	996.46	0.18688	31.71
Spicejet: 2022	7022.8	4257.7	14233	2854.8	0.40651	
Vistara: 2018	5542.8	4107	7379	1279.1	0.23076	42.25
Vistara: 2022	7884.8	5776	12546	2045.2	0.25938	
JetAirways: 2018	21393	17440	28908	3924.5	0.18345	NA
AirAsia: 2018	4992.4	4504	6577	738.05	0.14783	

	Skewnes	Kurtosis	I.Q. range	Gini coefficient	Gini Difference	Mkt Share Dif
D-K Route:2018	0.1562	-1.5894	1744.1	0.09353	+	NA
D-K Route:2022	1.2388	0.42718	2290.8	0.12521		
Air India: 2018	1.137	1.2817	682.5	0.13226	+	1.49
Air India: 2022	0.6793	-0.448	2953	0.14048		
Indigo: 2018	0.2747	-1.3346	1719.4	0.10362	-	8.60
Indigo: 2022	1.3847	0.76557	1474.3	0.10241		
GoFirst: 2018	0.5153	-1.3776	1918.3	0.10776	+	-2.88
GoFirst: 2022	0.4237	-1.2462	5420	0.21608		
Spicejet: 2018	0.268	-1.4617	1933.3	0.10237	+	5.77
Spicejet: 2022	1.3483	0.78903	2352	0.20202		
Vistara: 2018	0.4226	-1.4783	2817	0.12231	+	7.82
Vistara: 2022	0.9931	-0.1844	2874.8	0.13699		
Jet Airways: 2018	0.82811	-0.7242	6953	0.097	NA	NA
Air Asia: 2018	1.05	-0.6687	1291.5	0.06999		

Source: Primary Data

The mean fare of the route has increased by 39.8% after the Covid Pandemic. The minimum fare was also increased by 41.1%, and the maximum fare by 77.8%. Dispersion reflected by the Gini coefficient and interquartile range is also increased. The trends of tailedness also changed as per the value of Kurtosis. The time Trend of the price movements of both years is given to get a better inference.

Figure: Price movement Trends



Source: Primary Data

All the flights on the route in 2018 showed an upward trend from the 1st day of observation to the 31st day, the day of departure. However, in 2022 the movement was downward for all the flights.

5 Airline Company Fare Dispersion

Excluding Air Asia and Jet Airways, a comparison has been made for the airlines. As per the records published by DGCA, Indigo has the highest overall market share in the Indian Civil Aviation market with 39.7% in the first quarter of 2018 (DGCA, 2022b). Their share increased to 56.3% in the first quarter of the year 2022. Indigo was the market leader of the route with a 39.9% share in 2018 and a 48.5% share in 2022, leading to the highest increase in the share during the period.

5.1 Indigo

The mean fare of Indigo has increased by 40.03% after the Covid Pandemic. Minimum fare and maximum fare were increased by 57.66% and 62.68%, respectively. Dispersion reflected by the Gini coefficient and interquartile range shows price dispersion has also increased. The trend of tailedness also changed. The direction was upward before covid pandemic, but the trend seems to be down after the covid pandemic. This change is reflected in the value of Kurtosis. The market share of the route increased during the period.

5.2 Air India

Air India had the label of National Carrier in 2018, whereas, in 2022, it became a private carrier. They had 12.1% and 13.6% of the market share, respectively, for the years 2018 and 2022. The mean fare has been increased by 25.9% in 2022. The minimum fare increased by 63%, and the maximum by 22.2%. Dispersion reflected by the Gini coefficient and interquartile range also increased. The trend of tailedness also changed. Market share for the route increased during this period.

5.3 Vistara

Vistara has increased its overall market share from 3.7% to 8.9% in 2022. Their share in the route also increased from 9% to 16.8% during the period. The mean fare of Vistara airlines has increased by 42.25% in 2022. The minimum fare and the maximum fare were increased by 40.64% and 70.02%, respectively. Dispersion reflected by the Gini coefficient and interquartile range shows dispersion has also increased. The trend of tailedness also changed.

5.4 SpiceJet

Their overall market share in the domestic segment has decreased from 12.6% to 9.7% from 2018 to 2022. But their market share in the route has increased from 11.6% in 2018 to 17.4% in 2022. The mean fare of SpiceJet has increased by 31.7% in 2022. The minimum fare and the maximum fare were increased by 15.56% and 103.3%, respectively. Dispersion reflected by the Gini coefficient and interquartile range shows price dispersion has also increased. The trend of tailedness also changed.

5.5 GoFirst

GoAir renamed GoFirst has increased its overall market share from 9.3% to 10.4%. But their market share in the route has reduced from 6.6% to 3.7 % during the period of observation. The mean fare of GoFirst has increased by 62.02% in 2022 compared to the mean fare in 2018. The minimum and the maximum fares were increased by 26.2% and 86.7%, respectively. The Gini coefficient and interquartile range show that price dispersion has increased.

6 Conclusion

The time trend of all the flights on the route has changed its direction between the two periods of analysis. This is contrary to the established rule of price increases monotonically as the booking date was close to the departure date. Price dispersion indicated by the Gini coefficient and interquartile range increased, except for the market leader after the covid pandemic. During the period mean price increased by 26% to 62%, the minimum price by 14% to 63%, and the maximum price by 22% to 103%. It would be interesting to see whether the change is there in other routes and international flights in future research. Whether this increase is justifiable on the ground of inflation or passenger load factor is also suggested for future research.

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