



Sustainability of airlines in India with Covid-19: Challenges ahead and possible way-outs

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Abstract

Coronavirus outbreak has been highly disruptive for aviation sector, threatening the survival and sustainability of airlines. Apart from massive losses attributed to suspended operations, industry foresee a grim recession ahead. Restrictive movements, weak tourism, curtailed income, compressed commercial activities and fear psychosis are expected to compress the passenger demand from 30 to 60%, endangering the commercial viability of airlines operation. Fragile to withstand the cyclic momentary shocks of oil price fluctuation, demand flux, declining currency, airlines in India warrants for robust structural changes in their operating strategies, business model, revenue and pricing strategies to survive the long-lasting consequences of Covid-19. Paper attempts to analyze impact of lockdown and covid crisis on airlines in India and possible challenges ahead. Study also suggests the possible way-out for mitigating the expected losses.

Keywords Airlines · Liquidity · Covid-19 impact · Altman Z-score · Cash burn rate · Cargo-cum-passenger model

Introduction

The world, at present is combating with pandemic Covid-19. Emerged from Wuhan (China) in December 2019, within few months it has taken 215 countries across the globe into its clutches. With 580 reported cases on 22 January 2020, the infected cases have crossed 10.62 million as on July 1.¹ India is no different; with 3 cases reported as on 22 February, the number has surpassed 587,092,² whilst three extended phases of lockdown.³ The magnitude of virus contagion spread in the absence of any antidote developed so far has left the countries across the world with quarantine as the only remedy, despite of its drastic consequences on the economy.

Aviation sectors is perhaps worst hit with covid impact. The preventive restrictive movements have drastically dented the airlines and allied services with huge losses. Airlines passengers' services in India remain suspended for sixty day (25 March 2020 to 24 May 2020), bringing massive loss to the industry. According to DGCA, six days suspended operations of March leads to 33% decline in passenger traffic

(from 11.5 million reported in March 2019 to 7.8 million in March 2020).⁴ As per CRISIL Infrastructure Advisory report, the expected revenue loss to the Indian aviation sector due to lockdown amounts to ₹ 240 billion; inter se, airlines account for 70% losses, followed by allied services-ground handling, etc. CAPA India estimates the industry staggering losses of ₹ 240 to 270 billion in April-June quarter, assuming operations to remain suspended till June 2020. This imply loss of ₹ 2.67 to 3 billion for per day of extended lockdown.⁵ In addition to the above losses, the industry foresees grim recession ahead. Restrictive movements and destinations, truncated consumable income, decline in tourism, and fear psychosis are expected to significantly curtail the passenger traffic for the current fiscal or perhaps longer.

¹ <https://www.worldometers.info/coronavirus/> as on 10th June 2020.

² <https://www.worldometers.info/coronavirus/country/india/> as on 1st July 2020.

³ Lockdown phase 1 begin in India from 22 March 2020- 14th April, Phase 2 begin from 15th April to 30th April and Phase 3 from 1st May to 31st May.

⁴ https://www.business-standard.com/article/companies/india-suspends-flights-till-may-17-as-losses-for-airlines-mount-in-lockdown-120050200618_1.html

⁵ <https://economictimes.indiatimes.com/industry/transportation/airlines/-aviation/indian-aviation-sector-may-incur-3-3-3-6-billion-loss-in-june-quarter-capa-india/articleshow/74813509.cms?from=mdr#:~:text=India%20has%20suspended%20operation%20of,be%20USD%201.50%2D1.75%20billion>

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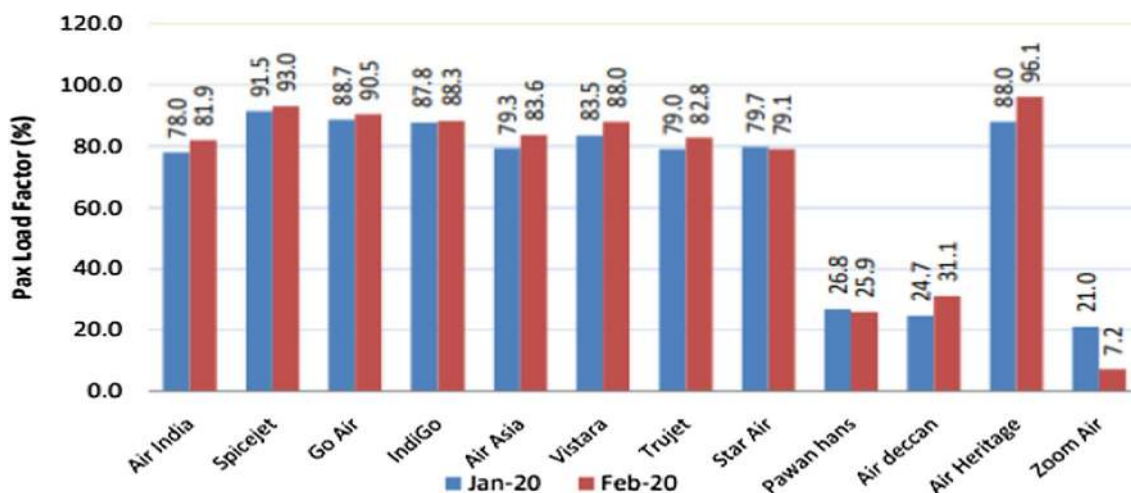


Fig. 1 PLF of airlines in India during January and February 2020. Source DGCA

India is the third largest domestic civil aviation market in the world (IBEF, Report).⁶ However, thin profit margins, high operating cost, inflated taxes and cut-throat price war make it one of the toughest aviation market (Saranga and Nagpal 2016). The cost structure of airlines in India is believed to be highly bloated with ATF taxes, landing and parking charges, which are perhaps highest in India.⁷ The industry is exposed to high operating leverage. The airlines operating cost structure consists of nearly 30 to 40% of fuel cost, 15% lease rental, nearly 25% for other operating expenses (including general administrative, operating expenses such as flight equipment, maintenance, overhaul, user charges including landing, airport charges and air navigation charges (DGCA Report). Other than fuel cost, maintenance of aircraft, selling & distribution cost, and parking & landing charges, rest other expenses are fixed and are to be honored irrespective of flight operations. Burden of fixed charges- lease rental, interest charges, and crew salaries keep the airlines on their toes for managing cashflows. The high operating cost and cut-throat competition compel the airlines to struggle with low margins. The airlines demand in India is highly price elastic (Wang et al. 2018). Entry of low-frill competitors has changed the airlines price dynamics of pricing the services that were earlier based on additional frills (Saranga and Nagpal 2016). Any hike in the expenses, *prima-facie*, is a pinch on the airlines margin as ugly fare wars restrict to surpass the uncertain hike in costs on ticket prices. Commercial of airlines revolve around Available

Seat Kilometers (ASK)-capacity, Revenue per kilometer (RPK)-income earned, Passenger load factor (PLF)-capacity utilized, Break-even load factor (BELF)-operating cost per ASK over operating revenue per RPK. Higher the distance flown, more is the opportunity for the airlines to spread the operating fixed cost over longer distance and thereby reducing their adjusted operating cost. In this backdrop, improving PLF by offering lucrative offers is prevalent trend in the industry. As provided, the airlines in India performed at decent capacity of nearly 85% in the month of January, 2020. In the month of February, irrespective of low demand, the SpiceJet, Go Air, IndiGo, Air Asia, Vistara have managed high PLF by providing attractive offers (Fig. 1).

Higher PLF, however, does not implies profitability. It only represents the successful selling of available seats. Operating viability requires the PLF to exceed BELF. The irony is that despite of heavy demand, the airlines strive hard for making break-even due to tough competition. In the dilemma of managing operating cash flows, the cash stripped airlines with overmounted fixed operating costs emphasize on selling more seats, ignoring the break-even. As provided in the Fig. 2, only five airlines operate above BELF during FY 2018–2019, with the safety margins from 3.4 to 11.5%, whilst rest all were in red.

The covid outbreak has added financial woes of the sector. With the dwindling demand anticipations, capacity utilization certainly will be a major challenge ahead for airlines sustainability. Hitherto combating for break-even, low passenger traffic possibly restrain the airlines from recovering their variable expenses, thereby obstructing the commercial viability of their operations. Present study attempts to analyze the financial impact of covid outbreak on airlines and challenges ahead. Possible suggestion for sustainable operations of airlines are suggested. Findings are expected

⁶ <https://www.ibef.org/industry/indian-aviation.aspx#:~:text=India's%20aviation%20industry%20is%20expected,aviation%20navigation%20services%20by%202026>

⁷ <https://www.dnaindia.com/business/report-the-cost-of-flying-high-2732879>



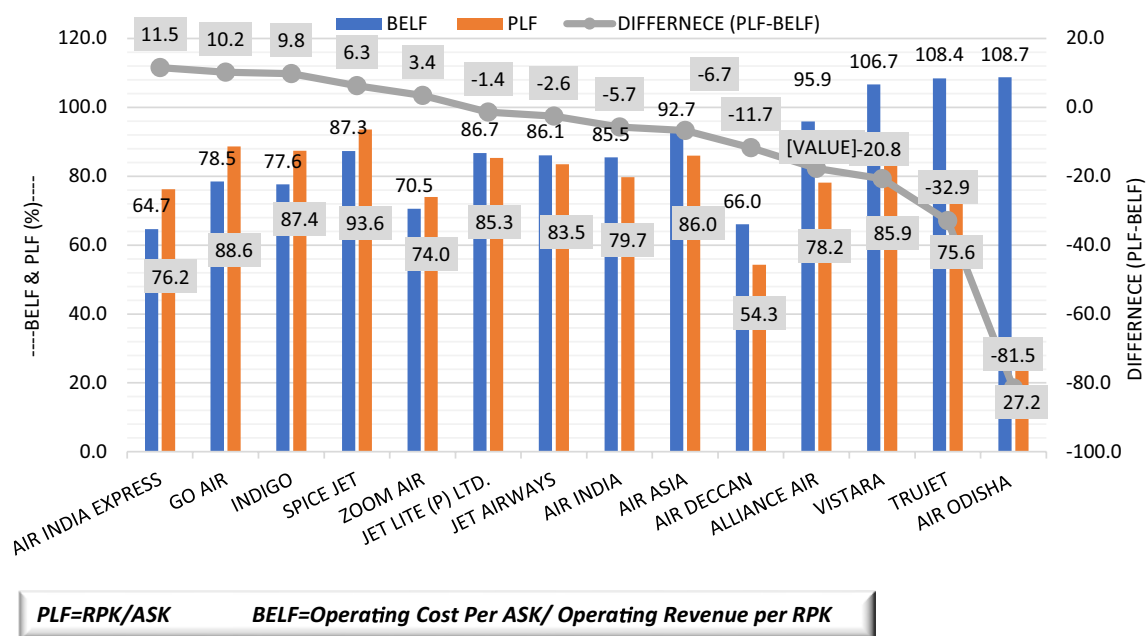


Fig. 2 PLF and BELF of Airlines in India during FY 2018–2019. Source DGCA

to contribute in the restructuring of the airlines for operating viability and sustainability.

Literature review

Airline industry has been one of the fastest growing industry globally in terms of demand as well as capacity (Lee 2019). Over the past century, commercial aviation has been observed as integral part of economic prosperity, stimulating trade, cultivating tourism development. Its relative affordability in recent years has inculcated it in people's lifestyles (O'Connell 2018). Aviation sectors economic contribution (direct, indirect, induced and tourism concomitant) in Global GDP is estimated as USD 2.7 trillion (ATAG 2018).⁸ Notwithstanding the growth in demand as well as capacity, the sectors has always been financially challenging struggling with thin margins (O'Connell 2018), vulnerable to fuel prices, foreign exchange, interest rates and high competition (Merkert and Swidan 2019; Stamolampros and Korfiatis 2019). The industry has been exposed to dynamic external environment, regulations, technology, customers preference, intense competition, labor cost, fuel prices and security measures and so forth (Riwo-Abudho et al. 2013). Airline industry performance is contingent to macro-predictability, micro-uncertainty and macro environmental factors

(Mhlanga 2019). Airlines industry has always been exposed to exogenous events. Terrorist attack of 9/11 has put the industry into depression making number of airlines bankrupt. Those who rescued from the effect have been grabbed with the oil crisis of 2002 (Yang 2007). The entry of low cost carriers (LCC) in 2006 triggered turnaround changes in the industry in terms of pricing strategies and well as competition level (Belobaba 2011). The LCCs pricing and revenue management strategies threaten the commercial viability of traditional model, compelling the changes in conventional airline revenue management practices (Michaels and Fletcher 2009). The paper examines how they differ in their approach, how airlines are responding and what constitutes an effective response in the changed airline business world. This includes consideration of all the marketing levers (product, price, promotion and distribution) in an integrated way, as well as developments needed in the core revenue management systems themselves (Michaels and Fletcher 2009). Online bookings, access to airline tickets on internet has made price competitiveness as an important parameter of airline's success (Ratliff and Vinod 2005).

India Airlines market despite of being the fastest growing market (Mahtani and Garg 2018), has been one of the toughest aviation markets in the world, due to high fuel prices, overcapacity and intense price competition (Saranga and Nagpal 2016). Notwithstanding the extensive infrastructural development supported by government, airlines in India often combat financial distress with the changing dynamics of internal and external environment (Mahtani and Garg 2018). Indian aviation industry in India has undergone

⁸ <https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx>



rapid transformation with the liberalization of Indian aviation sector (Singh 2016). India began to relax controls on its airline industry in 1986, allowing willing entrants to add system's capacity. However, financial performance of the airlines remains challenging owing to inappropriate policies, restricted capacity allocation on profitability basis (Hooper 1997). Liberalization of air travel services and the advent of low-frill airlines have changed the panorama of Indian Civil Aviation in terms of demand as well as supply (Ohri 2012; Srinidhi 2010). Reformation of regulatory policies resulted in three-fold increase in the number of scheduled airlines and a five-fold increase in the number of aircraft operated (O'Connell and Williams 2006). The increased interconnectivity within the global airline markets has altered the dynamics of external environment and internal operations (Riwo-Abudho et al. 2013; Singh 2016). Success and survival in this milieu warrants for coherent strategies adapting with market flavor (Pathak 2015).

Entry of the LCCs in India in 2003, with first 'no-frills' airlines- Air Deccan has changed the dynamics of Indian domestic aviation market (Sakariya et al. 2009). Low-cost carrier (LCC) by enhancing affordability of air travel has stimulated the demand for air travel in India (Krämer et al. 2018; Wang et al. 2018). Undoubtedly, low-frill operation has proved to be a successful business model in the industry (Alamdari and Fagan 2005). Budget airlines and small chartered airlines witnessed more efficient in the system (Dhanda and Sharma 2018; Jain and Natarajan 2015; Saranga and Nagpal 2016) and dominated the Indian airline market (Deepa and Ganapathi 2018; Wang et al. 2018). The LCC in India have managed to achieve significant operational efficiencies with the rigid cost structure, heavy taxes, high landing and parking charges, undesirable regulatory factors (Saranga and Nagpal 2016). India's low cost carriers show better scale efficiency *vis-à-vis* their full service competitors (Sakthidharan and Sivaraman 2018). Low Cost Airlines have been witnessed advantageous in utilizing their capacity compare to the full service airlines which strives hard to attain break-even capacity (Thirunavukkarasu 2015). However, the inexorable rise of LCC has made the industry more volatile (Doganis 2005). Intense competition and enhanced capacity have made cost effectiveness as the daring need for survival and sustainability.

Financial performance of airlines is vulnerable to both internal conditions of the company and as well the external environment. Operating factors, namely, operating revenue per air kilometers, capacity, cost structure, load factor dictate the operational output of the airlines and their commercial stability. From the external environment, ATF prices largely affect airlines profitability in India. Also, annual inflation and GDP growth rate in the country has a major influence on the sustainability of the airlines in India (Mahtani and Garg 2018). With uncontrollable cost behavior, tight margins

and cut-throat market, survival and subsistence of airlines largely depends on its ability to maximize their customer base (Singh 2016). Fierce competition compel the airlines to optimizes their revenues (Joseph 2005; Krämer et al. 2018). In the backdrop of covid pandemic outbreak, the globally airline industry has been adversely affected. Airlines in India which have been observed vulnerable to withstand the cyclic economic disruption (of fuel prices, inflation, devaluation of currency and demand shock), certainly be entering into a tough time with extremely low demand and ever mounting losses. Present study attempts to analyze the financial impact of covid pandemic on airlines in India and possible impact of their financial strengths and weakness. Further study suggests possible way-outs of sustaining operating viability.

Impact of Covid pandemic

Impact of suspended operation amid lockdown

The Indian aviation industry is characterized by high fixed costs of nearly 35 to 40%. These costs include lease rental, employees cost, interest charges. Per day of suspended operations has hit the industry at the rate of ₹75–90 crore loss per day.⁹ Table 1 exhibits fixed-cost information pertaining of four key airlines of India for last three years (FY 2017 to 2019). The costs mentioned signify the charges that are to be met irrespective of the business operations. The increasing pattern of expenses over years, *prima-facie*, signify the expanded operations' size over years. *Ceteris paribus*, no significant change in the operations size and cost for the FY 2019–2020, per day loss of suspended operations for Inter-globe Aviation accounts for ₹24 crores, followed ₹9.2 crores for SpiceJet, ₹5.83 crores for Go Airlines and ₹3.1 crores for Air Asia (based on the 2018–2019 estimates).

Drying cash reserves

In capital intensive industries, such as airlines, liquidity plays an important role in boosting profits (Merkert and Swidan 2019). Perhaps the cash rich airlines are in better position to negotiate with the suppliers-oil companies, lessor, bankers, employees for favorable deals and heavy discounts. Airlines in India suffers from weak liquidity. Cash burn rate of airlines in India during the years 2015 to 2019 is provided in Table 2. The cash burn rate indicates the number of days for which a company can sustain its operations with the available cash reserves. The data contained in Table 2, suggests few days of cash back-up available to most of the

⁹ <https://www.newindianexpress.com/business/2020/apr/16/lockdown-airlines-to-see-rs-75-90-cr-loss-per-day-2130758.html>



Table 1 Fixed charges of Airlines in India during the FY 2017 to 2019

Company	Years	Employee cost	Aircrafts lease	Rent	Interest	Total fixed cost	Per day cash for fixed cost ₹Crores
Air Asia Ltd	Mar-19	346.86	739.54	10.69	34.06	1131.15	3.10
	Mar-18	264.02	441.00	7.52	13.06	725.60	1.99
	Mar-17	162.74	248.79	2.83	6.45	420.82	1.15
Go Airlines (India) Ltd	Mar-19	594.86	1304.38	8.90	221.42	2129.56	5.83
	Mar-18	420.88	750.86	6.60	202.03	1380.37	3.78
	Mar-17	335.10		4.34	217.23	556.67	1.53
Interglobe Aviation Ltd	Mar-19	3137.79	4999.45	116.30	563.40	8816.95	24.16
	Mar-18	2455.02	3610.20	100.96	413.09	6579.27	18.03
	Mar-17	2048.19	3125.37	89.70	406.15	5669.42	15.53
SpiceJet Ltd	Mar-19	1057.01	2080.21	56.72	163.59	3357.53	9.20
	Mar-18	862.57	1665.24	44.71	121.84	2694.36	7.38
	Mar-17	673.54	1451.36	37.62	95.14	2257.66	6.19

airlines, excluding Interglobe Aviation which is exhibiting consistent pattern of satisfactory cushion of more than a quarter. The aggregated cash reserves of Interglobe Aviation as on December 2020 were reported to be ₹20068.7 crores¹⁰. Assuming, ₹24.16 crores of daily fixed cost (refer Table 1), the reserves of ₹1789 crores possibly have been wiped out amid seventy days of lockdown. Remaining cash balance of ₹18339.7 crores suggest the probability of 228 days of survival, based on estimated burn rate of ₹80.6 per day. However, for other airlines resuming operations with insufficient operating cash seems to be a challenge.

Deteriorating solvency

In the backdrop of tight liquidity, thin margins and high burn rate, the airlines have always been fragile to withstand the normal demand shocks, oil price fluctuation, depreciating currency, etc. Industry has vouched the devastating impact of these events ranging deep losses to airlines bankruptcy. Table 3 exhibits 2015 onwards financial performance of airlines in India in terms of profits margins, rate of returns, assets turnover ratio and interest coverage ratios. As provided, the profit margins of the airlines are highly thin and unsatisfactory to insulate the firms from sudden shocks. Median net profit margin – 0.73, *prima-face*, corroborate that net profits of all the airlines in India are occasionally positive. There appears only three airlines, Interglobe, Go Air, and Blue Dart (Cargo airline) with positive net profit margin in all the five years. In terms of magnitude, the net

profit margin 0.5 to 9% and EBIT margin of 1 to 15% does not seem satisfactory to justify the corpus invested and the risk involved there in. Oil price hike of 2018 has plunged the sector into deep losses. Interglobe Aviation that appears to be best performer of the industry has experienced deep shrinkage in its net profit margin of 2019 from 9 to 0.5% (Table 3). Unable to take the hit, loss running Jet Airways blown out of the race with its operations meeting grinding halt in April 2019.¹¹ Previously also, Industry has a history of several starts and may failures; East West Airlines and Damania Airways in 90 s, Kingfisher Airlines in 2012 are classic instances of airlines financial failure.

Table 4 exhibit the Altman Z-score of select four airlines. Altman Z-score model (Altman 1968) was developed by Edward Altman in 1968. It gauges the likelihood of bankruptcy of business concern within two years, using multiple corporate income and balance sheet values. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies. The Z-score is calculated using liquidity, profitability, leverage and turnover parameters. (Altman 1968).

$$\text{Altman Z - score} = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5,$$

here X_1 working capital/total asset, X_2 retained earnings/total asset, X_3 EBIT/total X_4 Market capitalization/ book value of debt, X_5 total sales/total assets.

¹⁰ <https://www.businesstoday.in/current/corporate/indigo-q3-profit-zooms-over-2-fold-to-rs-496-crore-revenue-spikes-25/story/394735.html>

¹¹ <https://www.bbc.com/news/business-47963536#:~:text=Taking%20the%20last%20flight%20of%20India's%20stricken%20Jet%20Airways&text=Troubled%20Indian%20airline%20Jet%20Airways,fuel%20and%20other%20critical%20services>



Table 2 Cash burn rate in days

Company name	Year	Total expenditure	Burn rate per day	Cash and cash equivalent	Cash burn rate days
AirAsia (India) Ltd.	2019	3196.57	8.76	102.50	11.70
Go Airlines (India) Ltd.		6607.87	18.10	380.42	21.01
Interglobe Aviation Ltd.		29211.18	80.03	8606.36	107.54
SpiceJet Ltd.		9254.43	25.35	77.90	3.07
AIR India Express Ltd.		3115.76	8.54	94.25	11.04
Air India Ltd.	2018	27458.45	75.23	742.88	9.87
AirAsia (India) Ltd.		1933.74	5.30	206.17	38.92
Blue Dart Aviation Ltd.		596.78	1.64	0.33	0.20
Go Airlines (India) Ltd.		4559.76	12.49	126.04	10.09
Interglobe Aviation Ltd.		20404.19	55.90	6580.60	117.72
Jet Airways (India) Ltd.		24105.42	66.04	1360.44	20.60
Jet Lite (India) Ltd.		1638.48	4.49	4.47	1.00
SpiceJet Ltd.		7090.40	19.43	145.77	7.50
TATA SIA Airlines Ltd.		2636.39	7.22	323.19	44.74
AIR India Express Ltd.	2017	2806.72	7.69	156.69	20.38
Air India Ltd.		24788.11	67.91	735.14	10.82
AirAsia (India) Ltd.		1083.61	2.97	112.69	37.96
Blue Dart Aviation Ltd.		554.55	1.52	0.84	0.55
Go Airlines (India) Ltd.		3265.58	8.95	7.32	0.82
Interglobe Aviation Ltd.		16767.98	45.94	4632.53	100.84
Jet Airways (India) Ltd.		20887.65	57.23	1537.54	26.87
Jet Lite (India) Ltd.		1538.58	4.22	4.14	0.98
SpiceJet Ltd.		5713.02	15.65	67.34	4.30
TATA SIA Airlines Ltd.		1910.39	5.23	103.25	19.73
AIR India Express Ltd.	2016	2350.24	6.44	95.09	14.77
Air India Ltd.		22646.15	62.04	805.49	12.98
Blue Dart Aviation Ltd.		526.41	1.44	0.22	0.15
Go Airlines (India) Ltd.		2716.77	7.44	5.37	0.72
Interglobe Aviation Ltd.		13326.05	36.51	3718.67	101.85
Jet Airways (India) Ltd.		19821.15	54.30	1477.65	27.21
Jet Lite (India) Ltd.		1176.19	3.22	10.48	3.25
SpiceJet Ltd.		4674.23	12.81	105.90	8.27
TATA SIA Airlines Ltd.		1105.34	3.03	144.96	47.87
AIR India Express Ltd.	2015	2473.63	6.78	89.40	13.19
Air India Ltd.		24545.44	67.25	623.11	9.27
Blue Dart Aviation Ltd.		586.13	1.61	0.97	0.60
Go Airlines (India) Ltd.		2919.55	8.00	8.57	1.07
Interglobe Aviation Ltd.		12252.00	33.57	1999.38	59.56
Jet Airways (India) Ltd.		21132.14	57.90	1985.08	34.29
Jet Lite (India) Ltd.		1723.31	4.72	90.91	19.25
SpiceJet Ltd.		6023.29	16.50	23.58	1.43

Score below 1.81 signifies high probability of bankruptcy; 1.81 to 2.99 is considered as grey zone and score of above 2.99 is considered as safe zone.

This model was applicable for manufacturing sector. For predicting the bankruptcy of service sector firms in

emerging market modified Altman score was proposed (Altman 2013). As per the model,

$$Z - \text{score} = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4,$$



Table 3 Financials of Airlines in India during the years 2010 to 2019

Company name	Year end	EBIT margin	Net profit margin	EBITDA margin	ROTA	ROE	ROCE	Asset turnover	Interest coverage
AirAsia (India) Ltd.	2019	-25.36	-26.71	-24.82	-87.14	0.00	0.00	3.26	-18.70
Go Airlines (India) Ltd.		4.22	1.97	1.43	3.26	0.00	17.47	1.66	1.19
Interglobe Aviation Ltd.		1.45	0.55	4.12	0.68	2.24	4.38	1.24	0.74
SpiceJet Ltd.		-1.67	-3.47	1.83	-7.16	0.00	-15.11	2.06	-0.93
Air India Ltd.	2018	-2.93	-23.20	4.80	-11.58	0.00	-2.33	0.50	-0.14
AirAsia (India) Ltd.		-6.17	-6.89	-5.64	-21.46	0.00	0.00	3.11	-8.50
Blue Dart Aviation Ltd.		4.13	0.38	14.56	0.61	5.31	9.36	1.60	1.23
Go Airlines (India) Ltd.		9.45	3.27	8.35	4.53	0.00	22.75	1.38	2.17
Interglobe Aviation Ltd.		15.38	9.74	17.27	11.72	41.73	44.51	1.20	8.57
Jet Airways (India) Ltd.		0.32	-3.30	2.99	-6.10	0.00	4.00	1.85	0.09
Jet Lite (India) Ltd.		0.96	-24.48	1.00	-120.94	0.00	0.00	4.94	0.04
SpiceJet Ltd.		8.88	7.31	11.86	16.14	0.00	76.24	2.21	5.65
TATA SIA Airlines Ltd.		-20.09	-20.17	-19.26	-65.09	0.00	0.00	3.23	-244.64
Air India Ltd.	2017	-8.41	-28.78	8.76	-13.83	0.00	-5.78	0.48	-0.41
AirAsia (India) Ltd.		-14.33	-15.02	-13.40	-34.79	0.00	0.00	2.32	-20.75
Blue Dart Aviation Ltd.		3.65	0.51	13.39	0.99	6.86	9.77	1.95	1.25
Go Airlines (India) Ltd.		14.40	5.65	13.27	6.66	0.00	22.99	1.18	2.41
Interglobe Aviation Ltd.		13.73	8.93	16.19	10.62	52.01	41.33	1.19	6.28
Jet Airways (India) Ltd.		10.83	6.88	13.94	9.32	0.00	46.27	1.36	2.74
Jet Lite (India) Ltd.		0.71	-24.35	0.76	-123.86	0.00	0.00	5.09	0.03
SpiceJet Ltd.		8.49	6.96	11.08	14.76	0.00	142.68	2.12	5.53
TATA SIA Airlines Ltd.		-37.25	-37.30	-36.12	-123.15	0.00	0.00	3.30	-707.17
Air India Ltd.	2016	3.58	-19.19	12.93	-8.24	0.00	2.01	0.43	0.16
Blue Dart Aviation Ltd.		4.63	0.91	15.23	1.95	12.05	12.59	2.15	1.42
Go Airlines (India) Ltd.		13.58	5.28	9.51	5.79	0.00	20.13	1.10	1.97
Interglobe Aviation Ltd.		19.66	12.31	22.80	15.40	129.29	61.54	1.25	9.06
Jet Airways (India) Ltd.		9.59	5.51	13.90	6.17	0.00	27.26	1.12	2.35
Jet Lite (India) Ltd.		4.02	-1.84	2.34	-6.35	0.00	0.00	3.45	0.69
SpiceJet Ltd.		11.32	8.84	13.60	16.50	0.00	197.86	1.87	4.56
TATA SIA Airlines Ltd.		-57.88	-57.99	-56.42	-101.88	-3058.15	-3052.65	1.76	-555.27



Table 3 (continued)

Company name	Year end	EBIT margin	Net profit margin	EBITDA margin	ROTA	ROE	ROCE	Asset turnover	Interest coverage
Air India Ltd.	2015	-8.84	-29.59	0.89	-13.01	0.00	-5.07	0.44	-0.43
Blue Dart Aviation Ltd.		4.30	0.67	14.69	1.31	10.24	10.70	1.96	1.21
Go Airlines (India) Ltd.		7.59	0.91	7.89	1.49	0.00	17.19	1.63	1.24
Interglobe Aviation Ltd.		14.33	9.37	16.51	12.25	317.71	49.28	1.31	13.34
Jet Airways (India) Ltd.		-4.62	-9.01	2.94	-9.74	0.00	-12.07	1.08	-1.05
Jet Lite (India) Ltd.		-15.92	-19.68	-16.09	-65.23	0.00	0.00	3.32	-4.24
SpiceJet Ltd.		-9.96	-13.10	-8.71	-24.74	0.00	-94.41	1.89	-3.16
Median		3.62	-0.73	6.35	-2.75	0.00	4.19	1.71	0.72
Mean		-1.52	-9.19	1.66	-21.67	-65.28	-61.77	1.93	-39.27

here X_1 Working capital/total assets, X_2 retained earnings/total assets, X_3 EBIT/total assets, X_4 Market capitalization/book value of debt.

Score above 2.6 is considered safe zone, 1.1 to 2.6 as moderate risk and score below 1.1 indicates high risk of bankruptcy.

Table 3 exhibits the Altman Z-score of Airlines in India computed using traditional Altman model and modified Altman model for emerging market. In the backdrop of unavailability of market capitalization information of all the airlines, the enterprise value *minus* book value of debt is considered as value of equity. The findings of both the models lend credence to the sustainability of Indigo Aviation and SpiceJet. Nevertheless, the decline in the scores is very likely, due to deteriorated finances amid lockdown and grim prospect of passenger demand ahead.

Post-lockdown challenges

Grim passenger traffic

Covid-19 pandemic has proven highly disruptive. It has wreaked havoc with the global economy, economically, socially and financially (Laing 2020; Wren-Lewis 2020). The aftermath of the disasters is perhaps more threatening, endangering the survival and sustainability of various businesses. Airline industry is worst hit sector, which is expected to lose USD 84.3 billion in 2020, the highest loss the sector

has ever witnessed (IATA).¹² Owing to the restricted movements and destinations, the industry expects severe decline in its passenger load (Thams et al. 2020), *perhaps*, a significant parameter of airlines profitability (Baltagi et al. 1995; Clark and Vincent 2012; Sibdari et al. 2018). As provided in Fig. 3, month of March has witnessed sharp decline in PLF of airlines all across the globe.

Other than the loss amid suspended operation, the future prospect of the industry seems more dreadful for sustainable operations of airlines. In the backdrop of aggressive multiplication in covid cases, the likelihood of normal passenger traffic seems distant. Restricted movements, fear psychosis, declined tourism, reduced commercial activities, curbed disposable income is expected to have significant impact on passenger airlines demand. Tourism sector is considered as significant driver/ stimulator of airlines business (Bieger and Wittmer 2006). An important aspect of international traffic to and from India pertains to trend in foreign tourist arrivals in India. The months from April to July are generally observed as peak season for the airlines, with the maximum Passenger load factor (PLF). In the FY 2018–2019, YoY growth in PLF is positive only in the month of April & July.¹³ As per the DGCA report, 33% of international passenger traffic during FY 2019 was attributed to tourism sector. In view of expected decline in tourism amid covid pandemic, the airline business foresees a major disruption ahead. According to ICAO united Aviation study, depending upon the duration and intensity of outbreak, control measures and economic and psychological impact, the global

¹² <https://www.ndtv.com/business/coronavirus-crisis-airlines-expected-to-lose-84-3-billion-due-to-covid-19-says-industry-body-iata-2243659>

¹³ DGCA Handbook 2018–19.



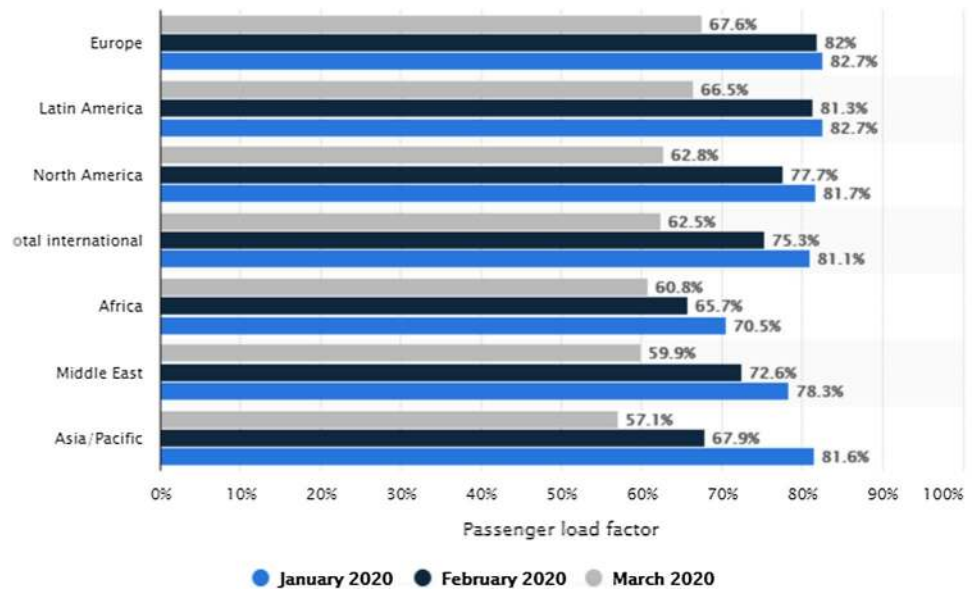
Table 4 Altman Z-score of airlines in India for the years 2015 to 2019

Company Name	Year	X1	X2	X3	X4	X5	Model A	Model B
		Net CA/T A	Retained earning s/TA	Operating profit/TA	Market cap/Debt	Sales/TA	1.2X1 + 1.4 X2 + 3.3 X3 + 0.6 X4 + 1.0 X5	3.25 + 6.56 X1 + 3.26 X2+ 6.72 X3 +1.05 X4
AirAsia (India) Ltd.	2019	-1.22	-1.63	-0.79	4.31	3.19	-0.26	-10.93
Go Airlines (India) Ltd.		-0.35	-0.12	0.02	-0.13	1.55	0.99	0.59
Interglobe Aviation Ltd.		0.40	0.26	0.05	19.04	1.14	13.52	26.87
SpiceJet Ltd.		-0.47	-0.20	0.03	5.21	1.90	4.34	5.16
AIR India Express Ltd.	2018	-0.93	-0.46	0.22	0.24	0.97	0.17	-2.64
Air India Ltd.		-0.60	-1.09	0.02	0.51	0.47	-1.18	-3.55
AirAsia (India) Ltd.		-0.35	-0.81	-0.13	0.00	2.39	0.55	-2.62
Blue Dart Aviation Ltd.		-0.20	0.05	0.21	0.08	1.42	1.99	3.62
Go Airlines (India) Ltd.		-0.40	-0.15	0.11	0.01	1.32	1.04	0.91
Interglobe Aviation Ltd.		0.40	0.31	0.19	17.48	1.09	13.06	26.36
Jet Airways (India) Ltd.		-0.57	-0.59	0.06	0.66	1.86	1.05	-1.35
Jet Lite (India) Ltd.		-0.23	-7.74	0.04	0.47	4.02	-5.13	-22.72
SpiceJet Ltd.		-0.54	-0.16	0.23	5.65	1.92	5.23	6.60
TATA SIA Airlines Ltd.		0.21	-1.78	-0.47	0.00	2.44	-0.99	-4.34
AIR India Express Ltd.	2017	-0.92	-0.53	0.23	0.22	0.89	0.04	-2.74
Air India Ltd.		-0.59	-1.12	0.04	0.53	0.51	-1.08	-3.42
AirAsia (India) Ltd.		-0.47	-1.20	-0.31	0.00	2.32	-0.71	-5.81
Blue Dart Aviation Ltd.		0.00	0.06	0.22	0.00	1.67	2.49	4.96
Go Airlines (India) Ltd.		-0.41	-0.03	0.15	0.06	1.10	1.10	1.53
Interglobe Aviation Ltd.		0.27	0.20	0.18	12.84	1.08	9.93	20.21
Jet Airways (India) Ltd.		-0.50	-0.52	0.24	0.49	1.70	1.55	0.35
Jet Lite (India) Ltd.		-0.52	-10.87	0.05	0.59	6.02	-7.14	-34.69
SpiceJet Ltd.		-0.59	-0.40	0.23	5.22	2.07	4.76	5.01
TATA SIA Airlines Ltd.		-0.17	-2.51	-1.12	0.00	3.10	-3.80	-13.54
AIR India Express Ltd.	2016	-0.85	-0.54	0.25	0.24	0.76	0.05	-2.20
Air India Ltd.		-0.37	-0.86	0.05	0.39	0.42	-0.65	-1.23
Blue Dart Aviation Ltd.		-0.23	0.08	0.34	0.15	2.22	3.25	4.44
Go Airlines (India) Ltd.		-0.69	-0.11	0.09	0.04	0.93	0.30	-0.97
Interglobe Aviation Ltd.		0.14	0.16	0.26	8.55	1.14	7.49	15.32
Jet Airways (India) Ltd.		-0.45	-0.16	0.15	0.44	1.11	1.15	1.29
Jet Lite (India) Ltd.		-0.39	-11.62	0.09	0.33	4.03	-9.88	-36.21
SpiceJet Ltd.		-0.68	-0.58	0.24	3.03	1.79	2.90	1.68
TATA SIA Airlines Ltd.		0.10	-1.54	-0.99	0.00	1.76	-3.25	-7.79
AIR India Express Ltd.	2015	-0.88	-0.63	0.15	0.27	0.68	-0.47	-3.30
Air India Ltd.		-0.50	-0.82	0.00	0.32	0.44	-0.95	-2.37
Blue Dart Aviation Ltd.		-0.10	0.07	0.34	0.12	2.33	3.50	5.29
Go Airlines (India) Ltd.		-0.69	-0.21	0.11	0.04	1.33	0.64	-1.16
Interglobe Aviation Ltd.		0.02	0.03	0.20	-0.50	1.19	1.61	4.28
Jet Airways (India) Ltd.		-0.51	-0.22	0.03	0.30	1.07	0.48	-0.27
Jet Lite (India) Ltd.		-0.39	-8.66	-0.63	0.30	3.82	-8.94	-31.46
SpiceJet Ltd.	-0.70	-0.85	-0.18	0.86	2.01	0.10	-4.37	

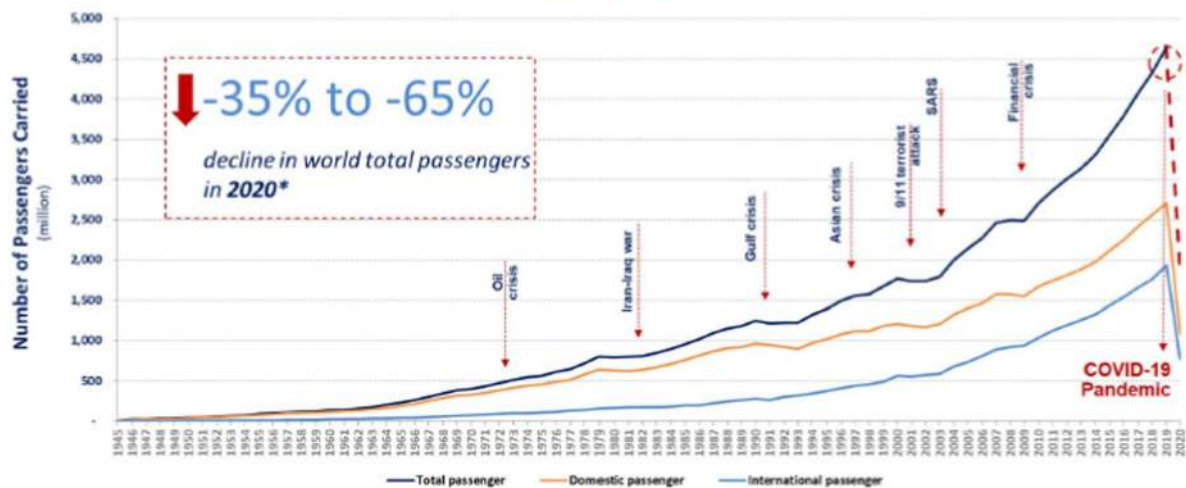
Pink cells portray risky zone and green cells represent safe zone as per Altman Z-score



Fig. 3 PLF of Airlines across world during January to March 2020. *Source* Statista 2020



World passenger traffic evolution 1945 – 2020*



Source: ICAO Air Transport Reporting Form A and A-S plus ICAO estimates.

Fig. 4 Global aviation passenger traffic trend amid different crisis (during 1945 to 2020)

airlines industry may witness decline of 33 to 60% seats offered, reduced passenger traffic from 1878 to 3227 million and gross operating revenue loss of approximately USD 244 to 420 million for the year 2020.¹⁴ As per the report, the estimated decline is the worst ever observed before during any of the crisis, economic or otherwise (Fig. 4).

Airlines in India are vulnerable to high operating leverage (Sakthidharan and Sivaraman 2018). Operating leverage signifies an ability of a firm to use its fixed operating expenses to magnify the impact of change in its sales on its operating profit. Degree of operating leverage (DOL) is calculated as Total Contribution /Total EBIT. High the degree of operating leverage, higher will be the magnifying impact of increased operations/sales on EBIT (Chen et al. 2019; García-Feijóo and Jorgensen 2010; Mandelker and Rhee 1984). For instance, 2 times of DOL implies that if sales

¹⁴ https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf



Table 5 Projected operating loss of Airlines amid Covid impact

Company name	AirAsia (India) Ltd.	Go Airlines (India) Ltd.	Interglobe Aviation Ltd.	Spicejet Ltd.
				In ₹ crores
Net sales	2511.64	6262.44	28496.77	9113.25
Other operating income	27.42	213.32	1324.94	144.78
Variable cost				
Power & fuel cost	1371.82	2264.03	11942.79	3456.18
Selling and distribution expenses	50.95	200.02	554.92	207.44
Operating fixed cost (excluding depreciation)	1739.74	3922.4	16150.06	5427.22
Total expenditure	3162.51	6386.45	28647.77	9090.84
Contribution (net sales-variable expenses)	1116.29	4011.71	17324.00	5594.41
EBITDA	-623.45	89.31	1,173.94	167.19
EBITDA margin	-0.25	0.01	0.04	0.02
Degree of operating leverage = EBITDA/contribution	-1.79	44.92	14.76	33.46
% change in EBITDA with change in operations size				
Decline in sales by 30%	-0.54	13.48	4.43	10.04
Decline in sales by 40%	-0.72	17.97	5.90	13.38
Decline in sales by 50%	-0.90	22.46	7.38	16.73
EBITDA with decline in operations size				
Decline in sales by 30%	-958.34	-1114.20	-4023.26	-1511.13
Decline in sales by 40%	-1069.97	-1515.37	-5755.66	-2070.57
Decline in sales by 50%	-1181.60	-1916.55	-7488.06	-2630.02

increase by 10% than EBIT will increase by 10×2 , i.e., 20 times. It is worth mentioning, that use of fixed operating cost signifies the risk in operations; the risk of repaying the fixed charges in case income fall short of expectations (Gahlon 1981; McDaniel 1984). Performance of high levered firms significantly reduced compared to their competitors in industry downturns due to enhanced cost of financial distress (González 2013). In the backdrop of severe downturn expected in the industry, the highly levered airlines in India are likely to suffer heavy losses. Table 5 exhibits the degree of operating leverage of four airlines in India and the consequences on the EBITDA of the airlines, with the different expectations of possible decline in sales amid covid impact. The rationale of including select airlines for analysis is the unavailability of the data for the year 2019. As provided, Air Asia (India) is in losses; Go Air, SpiceJet and Interglobe are reflecting alarming degree of operating risk. High the DOL, higher will the expected losses. With 14.76 times of DOL, EBITDA of Interglobe Aviation is expected to decline by 7.38 times with 50% dip in its revenue, i.e., from ₹1173.94 lac crores of EBITDA to negative—₹7488.06 lac crores.

Cost of social distancing

Social distancing practices initiated by regulatory authorities and airlines to prevent infection outbreak will be

financial hit on airlines pocket (IATA Economics 2020). Declined PLF coupled with cost of social distancing is expected to threaten the commercial viability of airlines operations. Measures such as leave empty seats between passengers in the aircraft will reduce the seating capacity by 30 to 50%. In India, DGCA laid down social distancing norms and sanitization norms for airlines to be followed during passengers handling, sanitizing aircrafts, checkpoints and baggage, PPE kits, medical team, etc. This cost will further dig the profitability of the airlines. The DGCA advisory of blocking middle seat, will compressed the seat offering capacity of airlines 60 to 70%. PLF is an important driver of airline financial performance. Based on a sample of 122 airlines, on average, airlines break even at a load factor of 77%. Notwithstanding the high PLF of 70 to 75%, airlines are witnessed struggling for break-even. As per IATA analysis, out of the sample of 122 airlines across globe, only 4 airlines will manage break-even below 62%. In the present scenario, where airlines PLF is expected to decline by 30 to 50%, the financial feasibility of airlines operations seems scary. Additionally, the cost of implementing other social distancing and sanitization norms will further enhance the airlines' costing. Airlines perhaps find it difficult to cover the variable cost of their operations.



Fig. 5 Average seat capacity of scheduled operating Indian fleet (2018–2019). *Source* DGCA

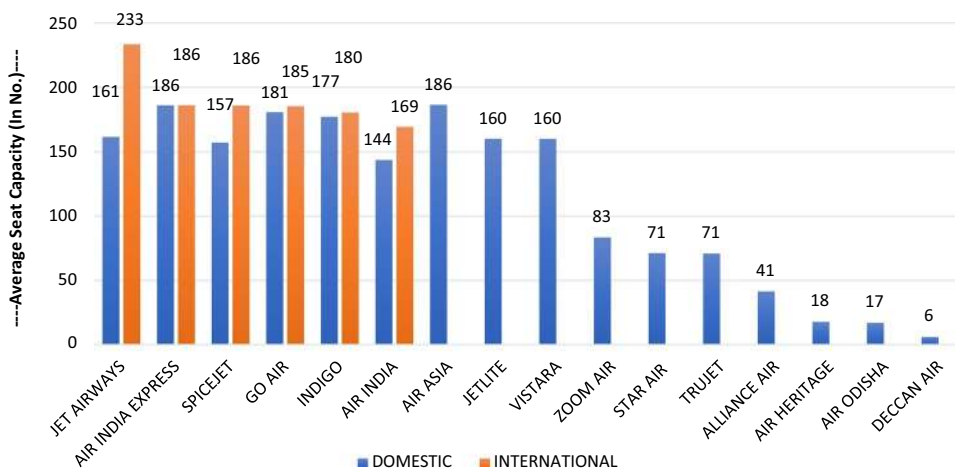
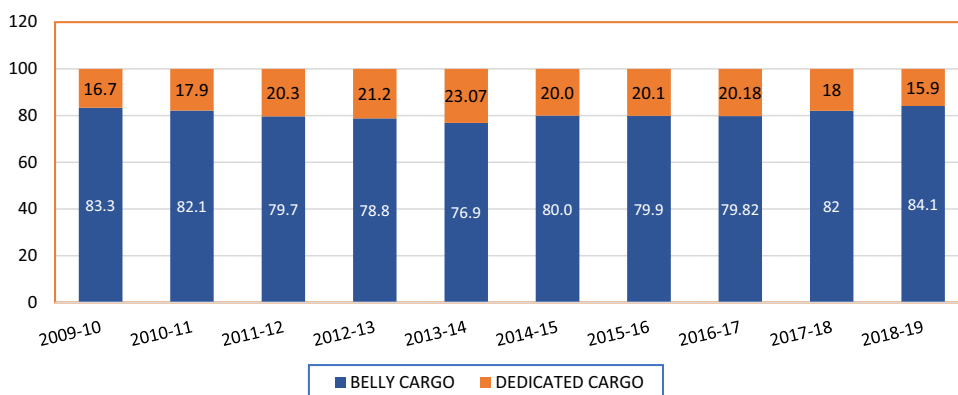


Fig. 6 Cargo carried through dedicated cargo planes and belly cargo. *Source* DGCA



The road ahead

Post-lockdown world will not be the business as usual. The airline industry combat with Covid-19 and its after effects seems taxing and perhaps long drawn-out. The sustainability and survival of airlines warrants for turn-around changes in their strategies and business model to strengthen their financial stamina. Overcapacity, intense competition and high operating cost are the major factors affecting airlines performance. To overcome the present challenge of covid crisis, optimal utilization of resources, cooperation rather than competition, and cost optimization seem to be the possible way-outs for sustaining with commercially viable take-off on rough terrain.

Cargo-cum-passenger traffic

Air cargo business despite of being a least preferred choice of airlines compared to passenger business, has an important role to play in the airline’s profitability. Threatening subsistence with the growing challenges of

the industry warrants for major structural changes in the present business model. Accommodating the cargo business in the existing business model perhaps be an effective steps towards the improved performance (Reis and Silva 2016). The globalization of the supply chain has resulted in competitive pressure on the air cargo industry. With independent and improved supply chain strategies, airlines can positioned themselves in the global supply chain market (Hong et al. 2018). High degree of cargo business is evident to improve the operational efficiency of combination as well as cargo airline (Hong et al., 2018). Airlines with a high share of cargo business in their overall operations are significantly more efficient than airlines (Hong and Zhang 2010). However, challenges for handling cargo makes it less attractive to airlines compared to passenger business. Combination airlines use the belly space of passenger aircrafts to substantiate the cargo. These airlines often experience the problem of freight orders exceeding the airline’s fixed capacity, particularly for hot selling routes (Feng et al. 2015).





Fig. 7 Cargo business using passenger flights during January to April 2020. Source ICAO

In present scenario, where a severe decline in passenger traffic as well as restricted destinations is expected amid infection paranoia, cargo business perhaps can be used a rescue boat to safeguard the airlines from expected the crash landing. It is a saying in management accounting, that in short-term if profits can't be maximized, focus should be on minimizing the losses. For optimum capacity utilization, cargo-cum-passenger model can be an effective way-out. At present nearly 8% of freight business in India is done through belly cargo.¹⁵ Only Blue Dart is fully dedicated airlines for freight cargo business (Fig. 5). In view of restricted passenger movements, from January onwards airlines across the globe have started engaging passenger aircrafts entirely for cargo (Fig. 6). Indigo followed by SpiceJet have also joined the race.

Figure 7 portray the average seat capacity of scheduled airlines in Indian during FY 2018–2019. As provided, most of the airlines have the average capacity of 160 to 180. With the expected 30–35 decline in passenger traffic in current fiscal,¹⁶ accommodating cargo load for unutilized seats can mitigate the revenue losses of the airlines. Amid low passenger traffic, dedicating small aircrafts (with less seating capacity) for passenger business relatively will be more financially viable for the airlines. Big aircrafts can be temporarily converted in cargo planes for carrying supplies. Depending upon the cargo load, large capacity planes can be fully dedicated or utilized as passenger cum cargo planes. In view of DGCA advisory to leave middle seat vacant, some temporary arrangements for accommodating cargo in

provided space can be worked out. For instance, vacant seat can be used for carrying passenger's luggage and the side carriers can be utilized for lesser weights parcels. Also, the space used for accommodating passengers' check-in luggage can be utilized for cargo business. The passenger cabin can be restructured in such a manner that its front and back seats can be used for passenger traffic and middle space can be utilized for cargo services.

Alliance for resource sharing

Airline industry is known for ugly competition and fare wars that perhaps has been the prime reason for their meagre profit margin (Eng and Vichitsarawong 2019). In the backdrop of trimmed passenger traffic expected for upcoming months, pooling of resources perhaps can be useful step in this direction. Airlines industry needs to adapt cooperation model instead of competition. Alliance in the airline industry is a widely used strategy to stimulate competition (Cobeña et al. 2019). Alliances are useful rescue for the firms with vulnerable strategic positions either because of competition or when they are attempting pioneering technical strategies (Eisenhardt and Schoonhoven 1996). They enhance value by facilitating optimal utilization of pooled resources (Das and Teng 2000). The alliance, perhaps, can be better way-out for balancing these demand and supply fluctuations. Alliance for aircraft sharing can possibly assist the airlines in optimizing their aircraft capacities and mitigating their operating losses.

Dues waiver

The covid economic impact on aviation is extreme and perhaps uncertain. Higher the reduction in PLF, more difficult will be the attainment of break-even for the airlines. The lockdown of two months with zero revenue and spiraled

¹⁵ Using passenger planes for carrying cargo in belly space

¹⁶ <https://www.hindustantimes.com/business-news/india-s-domestic-air-traffic-to-fall-to-90-mn-this-fiscal-report/story-YnObZButtdz95G7D4Sn4fM.html>



Scenarios are based on the assumption that air traffic, measured in Revenue Tonnes-Kilometres (RTKs, both international and domestic), will decrease by 50% in 2020 compared to 2019

	Scenario A Weight load factor = 70%	Scenario B Weight load factor = 60%	Scenario C Weight load factor = 50%	Scenario D Weight load factor = 45%
	Load factor remains high, rebound of demand in Q3 and Q4 with severe capacity cuts	Load factor moderate-high and rebound during Q4, with capacity cuts in all regions	Low load factor and moderate return of normal capacity in Q3 and Q4	Low load factors (social distancing) and airlines increase capacity in Q2 2020
Total capacity reduction	-51%	-42%	-31%	-23%
Fuel costs (USD, billion) <i>Oil price: 49% decrease compared to 2019 levels</i>	46	54	65	72
Break-even weight load factor <i>(excluding depreciation and amortization costs)</i>	70.5%	63.1%	55.8%	52.1%

Fig. 8 Possible scenarios of Covid impact on airlines commercials. *Source* ICAO

fixed charges, particularly, loan instalments and lease rental, perhaps has drained out the liquidity of airlines. With the trimmed air traffic estimated in the coming months, there seems meagre probability of recovering the past losses. With the reduced PLF the recovery of variable cost of operating a flight will be challenging, threatening the operation viability of airlines. Figure 8 portray projection done by ICAO regarding commercials of aviation sector. As provided, in all the situations the operating losses are confirmed, with the only difference in the magnitude of losses from high to low. In the given situation, bailout package, particularly, waivers of interest charges pertaining to lockdown period, reduced landing and parking charges, ATF taxes, seems essential for the stability of the sector. The cost waivers by reducing operating cost of airlines will enhance the airlines probability of attaining break-even. In fact, in view of dipped consumable income, the reduced cost possibly be a relief for passengers in terms of affordable flying. Air travelers rate assurance (Singh, 2016) and financial conditions of airlines significantly affect the quality of air travel. Product quality decreases when airlines are in financial distress (Phillips and Sertsios 2013). Given the deteriorating finances and demand crunch ahead, airlines service quality and safe operations may be compromised. Further, the reasonable ticket cap as a safeguard to airlines as well as passengers' interest may be implemented.

Concluding observations

Present paper attempts to analyze the vulnerability of airlines in India to withstand Covid-19 after effects. Lockdown of two months has been drastic for the fragile airlines business distressed with thin margins, liquidity crisis, over

mounting fixed cost and debt. Zero revenue, albeit spiraling fixed expenses has been a drain on the cash reserves of airlines dragging them towards insolvency. Above all, the sector is viewing grim recession ahead. In this backdrop, the operation viability of airlines seems conditional on the recovery of variable expenses. Sustainability of airlines warrants of turnaround changes in their revenue strategies and operating models. Focus on minimizing losses rather than profit maximization possibly can help the airlines to combat current situation.

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