



STUDY ON THE GROWTH OF INDIAN CIVIL AVIATION SECTOR: ERA FROM POST-LIBERALIZATION PERIOD

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Abstract: The Indian government has taken major steps towards privatization and liberalization of the Civil Aviation sector since 1991. As a result, this sector has made tremendous progress by adopting advanced technology and allowing the participation of private Civil Aviation operators. The present study highlights the current scenario of Indian Civil Aviation sector and examines its growth in the last two decades from 2010-11 to 2021-22. For the study, secondary data is used from various sources and descriptive statistical tools are used for the analysis- annual growth rates, compound annual growth rates and percentage shares. The study concludes that the growth and structure of Civil Aviation in India on various aspects such as Scheduled , public & private service providers in both domestic and International areas, number of passenger , cargo. The share of the public sector has come down, while the share of the private sector has increased remarkably. It is recommended that the Indian government should make the regulatory and policy framework more adaptable to the fast-changing needs of the Civil Aviation sector.

Introduction

LPG reforms of 1991 is a strategic shift in Indian economy which changed the very Nature of Indian reality today. The policy of liberalization, privatization and globalization of the Government has made a significant impact on the working of enterprises in business and industry. As a result of changes in the rules of industrial licensing and entry of foreign firms, competition for Indian firms has increased especially in service industries like telecommunications, airlines, banking, insurance, etc. which were earlier in the public sector. The Indian Civil Aviation industry is called as “sunrise industry”. India has become the third-largest domestic aviation market in the world and is expected to overtake the UK to become the third-largest air passenger market by 2024. It has contributed 5% of India’s GDP and creating a total of 4 million jobs. In addition to it, there is a US\$ 72 billion gross value-added contribution to GDP by this industry. The aviation industry not only transports passengers from place to place but also greatly contributes to the transportation of all types of cargo around the world. The aviation sector offers global connection, which is crucial for advancing international trade and business. Further, it greatly influences how a nation's economy is shaped by linking it to other nations and continents. In today’s global economy, connectivity is essential since it delivers people to work, visitors to locations, and products to markets. All of these are crucial to the progress of India. India’s aviation sector is failing, and recovery is hampered by high taxes, inadequate infrastructure, escalating expenses, and restrictive investment laws that make it difficult for the business to thrive.

India has a vast history in the field of aviation. During the initial years of the Indian aviation industry, the operations of air transport were entrusted to three public undertakings, namely: Air India for international services, Indian Airlines for domestic services, service to neighboring countries Vayudoot . Since independence, the Indian Civil Aviation sector was a regulated sector and until 2000, the government first permitted foreign direct investment up to 40% in the domestic airline sector. However, no foreign airline was allowed to invest either directly or indirectly in the domestic airlines industry. Non Resident Indians were permitted to invest up to 100%. Furthermore, the foreign investor was required to take prior approval of the government before making the



investment. Subsequently, the central government eased the foreign investment norms in this sector. On September 14, 2012, the central government announced that foreign airlines would now be allowed to invest up to 49% in domestic airlines. Under the policy announced by the government, the ceiling of 49% foreign investment includes foreign direct investment and foreign institutional investment. Up to 100% FDI in civil aviation in India is permitted in Non-scheduled air transport services under the automatic route, helicopter services and seaplanes under the automatic route, MRO for maintenance and repair organizations; flying training institutes; and technical training institutes under the automatic route, permitted in Ground Handling Services subject to sectoral regulations & security clearance under the automatic route. Thus, liberalization and privatization of the Indian Civil Aviation market have resulted in huge inflows of FDI and increased competition with the participation of international Civil Aviation operators. The present study investigates the impact of liberalization and privatization on the growth and structure of the Indian Civil Aviation sector.

Review of Literature

Vedant Singh, et al (2014), Evolving base for the fuel consumption optimization in Indian air transport: application of structural equation model objective of this paper is to design the methodology and to develop five facet model of fuel consumption optimization (FCO). Limited researches have been conducted to explore influencing factors for FCO in air transport industry. Madhavan Meena, et al (2020)- Short-term forecasting for airline industry: the case of Indian air passenger and air cargo. This study aims to forecast air passenger and cargo demand of the Indian aviation industry using the autoregressive integrated moving average (ARIMA) and Bayesian structural time series (BSTS) models. This study utilized 10 years' (2009-2018) air passenger and cargo data obtained from the Directorate General of Civil Aviation (DGCA-India) website. The study assessed both ARIMA and BSTS models' ability to incorporate uncertainty under dynamic settings. Findings inferred that, along with ARIMA, BSTS is also suitable for short-term forecasting of all four (international passenger, domestic passenger, international air cargo, and domestic air cargo) commercial aviation sectors. Sujan K Saraswati (2001), Operating environment for a civil aviation industry in India this paper gives a brief history of civil aviation in India and analyses the operating environment in which civil aviation industry in the country is operating. Civil Aviation has slowly transformed itself from a mode of transportation for the elite to an essential infrastructure necessity for the society. How this important infrastructure develops and prospers in a country, depends totally on the kind of support it gets from the operating environment. Majra hurfrish, et al (2016) -Structuring technology applications for enhanced customer experience: Evidence from Indian air travelers the objective of the study influence of self-service technology on customer experience and the attributes that constitute customer experience. The results of the study show that there is a significant positive relationship between self-service technology and customer experience. Devi Prasad Dash, et al (2021) - The main objectives of this study are threefold: First, to measure the impact of hotel sector upon the aviation market outcome of India post 2005: Second, to measure the impact of human fatality from the communicable diseases upon the Indian aviation market: Third, is to test the impact of economic uncertainty and pandemic uncertainty upon the Indian aviation market. Xiaowen Fu, et al (2015), this study investigates the links between domestic market regulation, dominant airline performance, and international market liberalization in Northeast Asia (NEA). The study focuses on China, where substantial regulations are still present in the aviation market, particularly in areas such as route entry, airport slot allocation, input supply, and aviation support services. Rico Merkert, et al (2011) -The impact of strategic management and fleet planning on airline efficiency-A random effects Tobit model based on DEA efficiency scores As a result of the liberalization of airline markets; the strong growth of low cost carriers; the high volatility in fuel prices; and the recent global financial crisis, the cost pressure that airlines face is very substantial. Eunice A Dobby(2021) - the study sought to determine the underlying factors influencing implementation of the Yamoussoukro Decision. It establishes policy challenges confronting Kenya's civil aviation in the realization of the Yamoussoukro Decision. It also determines



factors influencing full implementation of the safer skies policy in Kenya given benefits of air transport to the economy and international trade. The study utilized international trade and liberalization theory to assess the levels of perceived impact of liberalization of air transport services on international trade in Brajesh Mishra, et al (2021) -Impact of Regional Air connectivity on Regional Economic Growth in India In this study used the panel data of 15 federal states to evaluate the empirical linkages between regional economic growth, air transport traffic, and surface transport indicators. There is a dearth of academic articles focusing on inter-dependence between these factors in the context of India. Pedroni panel cointegration, FMOLS, panel VECM causality techniques, and variance decomposition analysis have been used to evaluate dynamics between the three variables. Pukar KC(2012) - The models make use of Nash non cooperative, Stackelberg and Cournot game models to illustrate how the airline industry is impacted when liberalization in the form of granting air traffic rights and antitrust immunity to airlines is implemented. Beginning with the discussion of regulation in the airline industry, the thesis goes on to study the spread of air transport liberalization in several parts of the world. Margaret N Munene(2012) - The project sought to determine and assess the challenges to the full implementation of liberalization of air transport in Kenya. The study was descriptive in nature involving the administration of a self-administered survey questionnaire. forces such as tariffs, costs of operations, customer preferences and characteristics, fuel prices and focus on security influence liberalization. The study also revealed the existence of political interference when it comes to market access. Bhagabata Behera(2016) -Indian aviation industry: issues and challenges in post-reform era Aviation industry plays a vital role in the economic development of any nation. It is a very well known fact that aviation sector not only brings immense benefits to communities and economies around the globe, but also is a key catalyst of economic growth, social development and tourism .It facilitates connectivity and access to international markets. S. Chandrachud, et al (2018) ,The current study focuses on the economic impact of FDI on Indian Aviation Sector. concludes the current status of Aviation sector along with the discussion for future studies. Priyanka Saharia, et al (2021) -Indian Civil Aviation Industry: Analyzing the Trend and Impact of FDI Inflow FDI is the major source of external financing to developing countries and it plays a major role in economic growth. In this study examine the trend and pattern of FDI inflow to the Indian civil aviation industry. The period of the study is from 2008 to 2017. Data is taken from secondary sources for all the selected variables. The findings of our study are that FDI alone cannot work as a game changer for the Indian civil aviation industry. Relaxing the norms of FDI policy is not always helping to bring more inflow to the industry. Indian policymakers should focus more on the financial health of the industry.

Objectives of the Study

This study has the following objectives:

- To study the current status of Indian Civil Aviation sector .
- To examine the growth and structure of Scheduled Civil Aviation in India .
- To examine the growth of Public & Private service providers in India on various aspects domestic and international service .

Research Methodology

Data Source

For the study, secondary data is collected from the annual reports of Directorate General of Civil Aviation (DGCA-India), Ministry of Civil Aviation India (DGCA-India) website

Methodology

To study the specified objectives, tabular analysis is done and descriptive statistical tools have been used such as year-wise Annual Growth Rates (AGR),Compound Annual Growth Rates(CAGR) and percentage shares. The Annual Growth Rate is computed by using the following formula:



$$AGR = [(X2 - X1) / X1] * 100$$

X1 = first value of variable X and X 2 = second value of variable X

Compound Annual Growth Rate is computed by using the following formula:

$$CAGR = [{(Vn/V0)^{1/n}} - 1] * 100$$

V0: start value; Vn: end value; n: number of years.

Limitation of study

- 1 In study only Scheduled Civil Aviation in India has been taken .
- 2 In study Civil aviation includes Commercial air transport,(including scheduled passenger and cargo flights),Aerial work,General aviation (GA).
- 3 In study both domestic and international service of all Scheduled Public & Private service providers has been taken.
- 4 The Period of study was from 2010-11 to 2021-22 .

Data Analysis and Interpretation

This research study gives an insight into the present status of the Civil Aviation industry and examines its growth in the last 12 years on following aspects-

Table 1: Year- on- year Growth and CAGR in Aircraft Flown And Passengers Nos. by All Scheduled Indian Airlines (Domestic and International Services) over the Last 12 years

YEAR	AIRCRAFT FLOWN			PASSENGERS		VAILABLE SEAT KM.(MILLION)	PAX. LOAD FACTOR(%)
	DEPARTURES(NOS.)	HOURS (NOS.)	KMS.(THOUSANDS)	CARRIED (NOS.)	MS.PERFORMED(MILLION)		
2010-11	6,32,758	1374,728	7,61,774	6,70,00,819	1,03,171	1,37,491	75.0
Growth	-	-	-	-	-	-	-
CAGR	-	-	-	-	-	-	-
2011-12	7,04,554	14,60,502	8,30,289	7,52,16,631	1,12,794	1,50,150	75.1
Growth	11.3%	7.8%	9.0%	12.3%	9.3%	9.2%	0.1%
CAGR	11.3%	7.8%	9.0%	12.3%	9.3%	9.2%	0.1%
2012-13	6,53,181	13,12,388	7,57,192	7,15,94,505	1,05,208	1,37,937	76.3
Growth	-7.3%	-10.1%	-8.8%	-4.8%	-6.7%	-8.1%	1.5%
CAGR	1.6%	-1.6%	-0.3%	3.4%	1.0%	0.2%	0.8%
2013-14	7,00,076	14,33,016	8,19,621	7,64,33,474	1,14,036	1,50,899	75.6
Growth	7.2%	9.2%	8.2%	6.8%	8.4%	9.4%	-0.9%
CAGR	3.4%	1.9%	2.5%	4.5%	3.4%	3.2%	0.2%
2014-15	7,34,736	15,00,005	8,97,884	8,74,12,197	1,26,903	1,60,953	76.3
Growth	5.0%	4.7%	9.5%	14.4%	11.3%	6.7%	4.3%
CAGR	3.8%	2.6%	4.2%	6.9%	5.3%	4.0%	1.2%
2015-16	8,23,732	16,85,787	10,77,173	10,38,22,908	1,45,787	1,79,449	
Growth	12.1%	12.4%	20.0%	18.8%	14.9%	11.5%	3.0%



CAGR	5.4%	4.5%	7.2%	9.2%	7.2%	5.5%	1.6%
2016-17	9,46,379	19,46,015	12,14,419	12,45,62,836	1,70,085	2,08,190	81.7
Growth	14.9%	15.4%	12.7%	20.0%	16.7%	16.0%	0.6%
CAGR	6.9%	6.2%	8.1%	10.9%	8.7%	7.2%	1.4%
2017-18	10,73,127	22,15,496	13,66,675	14,71,20,152	1,99,409	2,36,211	84.4
Growth	13.4%	13.8%	12.5%	18.1%	17.2%	13.5%	3.3%
CAGR	7.8%	7.3%	8.7%	11.9%	9.9%	8.0%	1.7%
2018-19	12,18,108	25,65,278	15,49,747	16,62,33,287	2,25,341	2,68,504	83.9
Growth	13.5%	15.8%	13.4%	13.0%	13.0%	13.7%	-0.6%
CAGR	8.5%	8.3%	9.3%	12.0%	10.3%	8.7%	1.4%
2019-20	12,02,222	24,26,254	14,85,265	16,39,25,024	2,11,485	2,50,932	84.3
Growth	-1.3%	-5.4%	-4.2%	-1.4%	-6.1%	-6.5%	0.4%
CAGR	7.4%	6.7%	7.7%	10.5%	8.3%	6.9%	1.3%
2020-21*	5,37,753	10,67,111	6,30,226	5,87,57,505	74,190	1,08,206	68.6
Growth	-55.3%	-56.0%	-57.6%	-64.2%	-64.9%	-56.9%	-18.6%
CAGR	-1.6%	-2.4%	-1.9%	-1.3%	-3.2%	-2.4%	-0.9%
2021-22	7,30,526	12,38,804	6,90,185	8,42,98,830	82,065	1,11,804	73.4
Growth	35.8%	16.1%	9.5%	43.5%	10.6%	3.3%	7.0%
CAGR	1.31%	-0.81%	-0.9%	2.11%	-2.1%	-1.9%	-0.2%

Source: Authors' Own Compilation.

The all scheduled Indian Airlines total aircraft flown departures (nos.) in domestic and international services in India grew from 6,32,758 in 2010-11 to 12,18,108 in 2018-19 but thereafter started declining and reached 730526 in 2021-22, registering a Compound Annual Growth Rate (CAGR) of 1.31% . The annual growth rate of total aircraft flown departures (nos.) over previous years is always positive, except for the year 2019-20 and 2020-21, when the growth rate was -1.3% and -55.3% due to the covid pandemic . The highest growth rate has been observed as 35.8% in 2021-22 and the lowest growth rate as -55.3% in 2020-21 due to the reasons already cited earlier .

The all scheduled Indian Airlines total aircraft flown hours (nos.) in domestic and international services in India grew from 13,54,728 in 2010-11 to 25,65,278 in 2018-19 but thereafter started declining and reached 12,38,804 in 2021-22., registering a Compound Annual Growth Rate (CAGR) of -0.81%. The annual growth rate of total aircraft flown hours (nos.) over previous years is always positive, except for the year 2012-13, 2019-20 and 2020-21, when the growth rate was -10.1% , -5.4% and -56.0% . 2019-20 and 2020-21 growth rate negative due to the covid pandemic . The highest growth rate has been observed as 16.1% in 2021-22 and the lowest growth rate as -56.0% in 2020-21 due to the reasons already cited earlier .

Passengers Carried segment has been the key contributor to spectacular growth in the aviation network in India. The total passengers carried (nos.) in India grew from 6,70,00,819 in 2010-11 to 16,62,33,287 in 2018-19 but thereafter started declining and reached 8,42,98,830 in 2021-22 thereby making India the Third -largest civil aviation market in the entire world. The annual growth rate of total passengers carried (nos.) over previous years is always positive, except for the year 2019-20 and 2020-21, when the growth rate was -1.4 % and -64.% due to the covid pandemic . The highest growth rate has been observed as 43.5% in 2021-22 and the lowest growth rate as -64.2% in 2020-21 due to the



reasons already cited earlier. The Compound Annual Growth Rate (CAGR) of total passengers carried for the period 2010-11 - 2021-22 of 2.11% .In the present era, air transport are preferred by passengers due to the time saving and convenience.

Table 2: Year- on- year Growth and CAGR in Aircraft Flown And Passengers Nos. by All Scheduled Private Airlines (Domestic and International Services) over the Last 12 years

YEAR	AIRCRAFT FLOWN			PASSENGERS		VAILABLE SEAT KM.(MILLION)	PAX. LOAD FACTOR(%)
	DEPARTURES(NOS.)	HOURS (NOS.)	KMS.(THOUSANDS)	CARRIED (NOS.)	MS.PERFORMED(MILLION)		
2010-11	4,63,191	9,16,549	4,91,081	5,12,87,756	66,940	83,130	80.5
Growth	-	-	-	-	-	-	-
CAGR	-	-	-	-	-	-	-
2011-12	5,37,553	10,34,777	5,62,441	5,88,33,819	75,650	96,244	78.6
Growth	16.1%	12.9%	14.5%	14.7%	13.0%	15.8%	-2.4%
CAGR	16.1%	12.9%	14.5%	14.7%	13.0%	15.8%	-2.4%
2012-13	4,98,793	9,37,620	5,16,176	5,48,54,167	70,492	90,367	78.0
Growth	-7.2%	-9.4%	-8.2%	-6.8%	-6.8%	-6.1%	-0.8%
CAGR	3.8%	1.1%	2.5%	3.4%	2.6%	4.3%	-1.6%
2013-14	5,33,456	10,08,612	5,54,137	5,79,95,684	74,147	97,245	76.2
Growth	6.9%	7.6%	7.4%	5.7%	5.2%	7.6%	-2.3%
CAGR	4.8%	3.2%	4.1%	4.2%	3.5%	5.4%	-1.8%
2014-15	5,67,350	10,61,294	5,89,666	6,72,54,851	84,149	1,04,018	80.9
Growth	6.4%	5.2%	6.4%	16.0%	13.5%	7.0%	6.1%
CAGR	5.2%	3.7%	4.7%	7.0%	5.9%	5.8%	0.1%
2015-16	6,52,819	12,21,124	6,82,295	8,21,62,730	99,821	1,19,327	83.7
Growth	15.1%	15.1%	15.7%	22.2%	18.6%	14.7%	3.4%
CAGR	7.1%	5.9%	6.8%	9.9%	8.3%	7.5%	0.8%
2016-17	7,62,543	14,28,072	7,99,192	10,09,17,507	1,19,612	1,42,006	84.2
Growth	16.8%	16.9%	17.1%	22.8%	19.8%	19.0%	0.7%
CAGR	8.7%	7.7%	8.5%	11.9%	10.2%	9.3%	0.8%
2017-18	8,69,950	16,39,384	9,12,130	12,07,76,795	1,42,757	1,64,562	86.7



Growth	14.1%	14.8%	14.1%	19.7%	19.3%	15.9%	3.0%
CAGR	9.4%	8.7%	9.2%	13.0%	11.4%	10.2%	1.1%
2018-19	9,98,688	19,34,433	10,63,046	13,80,10,499	1,64,254	1,91,211	85.9
Growth	14.8%	18.0%	16.5%	14.3%	15.1%	16.2%	-1.0%
CAGR	10.1%	9.8%	10.1%	13.2%	11.9%	11.0%	0.81%
2019-20	9,74,634	17,74,232	9,96,009	13,49,78,636	1,47,862	1,71,734	86.1
Growth	-2.4%	-8.3%	-6.3%	-2.2%	-10.0%	-10.2%	0.2%
CAGR	8.6%	7.6%	8.2%	11.4%	9.2%	8.4%	0.75%
2020-21	4,52,420	8,17,867	4,57,546	5,02,84,476	53,779	77,212	69.7
Growth	-53.6%	-53.9%	-54.1%	-62.7%	-63.6%	-55.0%	-19.1%
CAGR	-0.24%	-1.13%	-0.70%	-0.2%	-2.2%	-0.74%	-1.43%
2021-22	6,39,243	10,80,380	5,94,744	7,68,28,203	74,921	1,00,794	74.3
Growth	41.3%	32.1%	30.0%	52.8%	39.3%	30.5%	6.6%
CAGR	3%	1.51%	1.8%	3.74%	1.03%	1.8%	-0.73%

The all scheduled Private Airlines total Aircraft Flown departures (nos.) in domestic and international services in India grew from 4,63,191 in 2010-11 to 9,98,688 in 2018-19 but thereafter started declining and reached 6,39,243 in 2021-22., registering a Compound Annual Growth Rate (CAGR) of 3%. The annual growth rate of total aircraft flown departures (nos.) over previous years is always positive, except for the year 2012-13, 2019-20 and 2020-21, when the growth rate was -7.2% , -2.4% and -53.6%. 2019-20 and 2020-21 growth rate negative due to the covid pandemic . The highest growth rate has been observed as 41.3% in 2021-22 and the lowest growth rate as -53.6% in 2020-21 due to the reasons already cited earlier The all scheduled private airlines total Passengers Carried (nos.) in India grew from 5,12,87,756 in 2010-11 to 13,80,10,499 in 2018-19 but thereafter started declining and reached 7,68,28,203 in 2021-22, registering a Compound Annual Growth Rate (CAGR) of 3.74%. The annual growth rate of total Passengers Carried (nos.) over previous years is always positive, except for the year 2012-13, 2019-20 and 2020-21, when the growth rate was -6.8% , -2.2% and -62.7%.

Table 3: Year- on- year Growth and CAGR in Cargo Carried by All Scheduled Indian Airlines (Domestic and International Services) over the Last 12 years

YEAR	CARGO CARRIED (TON)			TON KMS. PERFORMED (MILLION)				AVAILA BLE TONNE KM.(MIL LION	WEIGH T LOADF ACTOR(%)
	FREIGHT	MAIL	TOTAL	PAK	FREIG HT	MAIL	TOTA L		
2010-11	6,19,784.8	24,845.5	6,44,630.3	9,068.7	1,647.1	48.4	10,764.3	16,506.1	65.2
Growth	-	-	-	-	-	-	-	-	-
CAGR	-	-	-	-	-	-	-	-	-
2011-12	6,02,252.2	18,591.8	6,20,844.0	10,151.1	1,749.9	44.9	11,945.9	18,533.3	64.5
Growth	-2.8%	-25.2%	-3.7%	11.9%	6.2%	-7.3%	11.0%	12.3%	-1.2%
CAGR	-2.8%	-25.2%	-3.7%	11.9%	6.2%	-7.3%	11.0%	12.3%	-1.2%
2012-13	5,93,329.4	6,987.6	6,00,316.9	9,323.8	1,558.7	48.5	10,931.0	16,534.7	66.1



Growth	-1.5%	-62.4%	-3.3%	-8.1%	-10.9%	8.0%	-8.5%	-10.8%	2.6%
CAGR	-2.2%	-47.0%	-3.5%	1.4%	-2.7%	0.0%	0.8%	0.1%	0.7%
2013-14	7,47,925.5	7,193.4	7,55,118.9	10,156.4	1,749.0	42.8	11,948.2	17,724.2	67.4
Growth	26.1%	2.9%	25.8%	8.9%	12.2%	-11.7%	9.3%	7.2%	2.0%
CAGR	6.5%	-33.8%	5.4%	3.8%	2.0%	-4.0%	3.5%	2.4%	1.1%
2014-15	8,15,210.6	31,816.0	8,47,026.6	11,205.6	1,874.2	57.1	13,136.9	18,685.6	70.3
Growth	9.0%	342.3%	12.2%	10.3%	7.2%	33.5%	9.9%	5.4%	4.3%
CAGR	7.1%	6.4%	7.1%	5.4%	3.3%	4.2%	5.1%	3.1%	1.9%
2015-16	8,39,234.7	36,399.6	8,75,634.3	12,930.7	1,797.5	59.0	14,787.2	21,040.5	70.3
Growth	2.9%	14.4%	3.4%	15.4%	-4.1%	3.2%	12.6%	12.6%	0.0%
CAGR	6.2%	7.9%	6.3%	7.4%	1.8%	4.0%	6.6%	5.0%	1.5%
2016-17	8,91,126.8	39,954.8	9,31,081.6	15,080.5	1,999.6	61.3	17,141.4	24,312.0	70.5
Growth	6.2%	9.8%	6.3%	16.6%	11.2%	4.0%	15.9%	15.5%	0.3%
CAGR	6.2%	8.2%	6.3%	8.8%	3.3%	4.0%	8.1%	6.7%	1.3%
2017-18	10,24,286.0	42,863.4	10,67,149.4	17,690.9	2,490.6	77.3	20,258.8	27,865.3	72.7
Growth	14.9%	7.3%	14.6%	17.3%	24.6%	26.0%	18.2%	14.6%	3.1%
CAGR	7.4%	8.1%	7.5%	10.0%	6.1%	6.9%	9.5%	7.8%	1.6%
2018-19	10,99,186.4	45,933.6	11,45,120.0	20,024.8	2,677.7	77.8	22,780.3	31,666.3	71.9
Growth	7.3%	7.2%	7.3%	13.2%	7.5%	0.6%	12.4%	13.6%	-1.1%
CAGR	7.3%	7.2%	7.3%	13.2%	7.5%	0.6%	12.4%	13.6%	-1.1%
2019-20	9,19,417.6	32,136.3	9,51,553.9	19,163.2	1,722.8	59.6	20,945.6	30,429.2	68.8
Growth	-16.4%	-30.0%	-16.9%	-4.3%	-35.7%	-23.3%	-8.1%	-3.9%	-4.3%
CAGR	4.5%	2.9%	4.4%	8.7%	0.5%	2.3%	7.7%	7.0%	0.6%
2020-21	5,64,415.3	24,566.0	5,88,981.3	6,457.5	949.7	23.6	7,430.8	12,355.5	60.1
Growth	-38.6%	-23.6%	-38.1%	-66.3%	-44.9%	-60.3%	-64.5%	-59.4%	-12.6%
CAGR	-0.9%	-0.11%	-0.9%	-3.3%	-5.4%	-6.9%	-3.6%	-2.9%	-0.8%
2021-22	5,81,619	24,550	6,06,169	7,162	695	26	7,883	12,477	63.2
Growth	3.05%	-2.7%	2.92%	10.91%	26.82%	10.13%	6.1%	1.15%	5.16%
CAGR	-0.58%	-0.11%	-0.56%	-2.12%	-7.54%	-5.5%	-2.8%	-2.51%	-0.28%

the all scheduled Indian Airlines freight ton has increased from 6,19,784.8 in 2010-11 to 10,99,186.4 in 2018-19 but thereafter started declining and reached 581619 in 2021-22. the annual growth rate of



freight ton was negative in 2011-12, 2012-13 , it also became negative in 2019-20 to 2020-21 the growth rate was -16.4% and -38.6% due to the covid pandemic . The CAGR of the freight for the period 2010-11 - 2021-22 is -0.58%. the all scheduled Indian Airlines mail has increased from 24,845.5 in 2010-11 to 45,933.60 in 2018-19 but thereafter started declining and reached 24550 in 2021-22. the annual growth rate of mail was was negative in 2011-12, 2012-13 , it also became negative in 2019-20 to 2021-22 the growth rate was -30.0% , -23.6% and -2.7% due to the covid pandemic . The CAGR of the mail for the 2021-22 is -0.11%. India’s domestic and international air cargo handling grew by 7.5% compounded annual growth rate (CAGR) between FY 2010-11 and FY 2017-18 . Air cargo tonnage in 2021-22 surpassed pre- Covid averages.

The all scheduled Indian Airlines ton kms. performed (million) has increased from 10,764.3 in 2010-11 to 22,780.3 in 2018-19 but thereafter started declining and reached 7883 in 2021-22. the annual growth rate of ton kms. performed was positive from 2010-11 - 2021-22 , but 2012-13 , 2019-20 and 2020-21 it became negative showing. The CAGR of the ton kms. performed for the period 2010-11 - 2021-22 is -2.8% .

Table 4: Year- on- year Growth and CAGR in Cargo Carried by All Scheduled Private Airlines (Domestic and International Services) over the Last 12 years

YEAR	CARGO CARRIED (TON)			TON KMS. PERFORMED (MILLION)				AVAILABL E TONNE KM.(MILLI ON	WEIG HT LOAD FACT OR(%)
	FREIGHT	MAIL	TOTAL	PAK	FREIG HT	MAIL	TOTAL		
2010-11	4,43,941.8	3,359.7	4,47,301.5	5,482.7	1,009.8	6.7	6,499.1	9,283.8	70
Growt h	-	-	-	-	-	-	-	-	-
CAGR	-	-	-	-	-	-	-	-	-
2011-12	4,49,096.9	4,790.8	4,53,887.7	6,484.8	1,178.3	9.9	7,673.0	11,260.8	68.1
Growt h	1.2%	42.6%	1.5%	18.3%	16.7%	46.6	18.1%	21.3%	2.7%
CAGR	1.2%	42.6%	1.5%	18.3%	16.7%	46.6%	18.1%	21.3%	-2.7 %
2012-13	4,57,878.4	5,215.6	4,63,093.9	5,918.6	1,121.4	10.2	7,050.1	10,218.4	69
Growt h	2.0%	8.9%	2.0%	-8.7%	-4.8%	2.8%	-8.1%	-9.3%	1.3%
CAGR	1.6%	24.6%	1.7%	3.9%	5.4%	22.8%	4.2%	4.9%	-0.7 %
2013-14	5,69,570.5	4,763.6	5,74,334.2	6,248.8	1,136.7	9.6	7,395.1	10,650.1	69.4
Growt h	24.4%	-8.7%	24.0%	5.6%	1.4%	-5.8%	4.9%	4.2%	0.6%
CAGR	8.7%	12.3%	8.7%	4.5%	4.0%	12.4%	4.4%	4.7%	-0.3 %
2014-15	6,09,079.6	12,352.0	6,21,431.6	7,157.2	1,204.9	19.0	8,381.1	11,438.8	73.3
Growt h	6.9%	159.3%	8.2%	14.5%	6.0%	98.5%	13.3%	7.4%	5.5%



h									
CAGR	8.2%	38.5%	8.6%	6.9%	4.5%	29.6%	6.6%	5.4%	1.1%
2015-16	6,47,461.0	17,308.1	6,64,769.2	8,490.6	1,218.0	22.5	9,731.1	13,335.9	73.0
Growt h	6.3%	40.1%	7.0%	18.6%	1.1%	18.7%	16.1%	16.6%	-0.4%
CAGR	7.8%	38.8%	8.2%	9.1%	3.8%	27.3%	8.4%	7.5%	0.8%
2016-17	7,02,963.2	26,749.0	7,29,712.2	10,176.2	1,329.7	31.0	11,536.9	15,917.2	72.5
Growt h	8.6%	54.5%	9.8%	19.9%	9.2%	37.5%	18.6%	19.4%	-0.7%
CAGR	8.0%	41.3%	8.5%	10.9%	4.7%	29.0%	10.0%	9.4%	0.6%
2017-18	8,04,724.1	28,103.4	8,32,827.5	12,123.8	1,651.0	37.7	13,812.6	18,741.2	73.7
Growt h	14.5%	5.1%	14.1%	19.1%	24.2%	21.6%	19.7%	17.7%	1.7%
CAGR	8.9%	35.5%	9.3%	12.0%	7.3%	28%	11.4%	10.6%	0.7%
2018-19	8,67,139.2	32,227.0	8,99,366.2	14,108.8	1,756.3	39.8	15,904.8	21,934.9	72.5
Growt h	7.76%	14.67%	8.0%	16.4%	6.4%	5.4%	15.1%	17.0%	-1.6%
CAGR	8.7%	32.7%	9.1%	12.54%	7.2%	24.9%	11.8%	11.3%	0.4%
2019-20	6,91,032.9	17,531.7	7,08,564.6	12,988.6	837.0	17.8	13,843.5	20,540.3	67.4
Growt h	-20.3%	-45.6%	-21.2%	-7.9%	-52.3%	-55.1%	-13.0%	-6.4%	-7.1%
CAGR	5.0%	20.2%	5.2%	10.1%	-2.1%	11.5%	8.8%	9.2%	-0.42%
2020-21	4,76,743.2	24,466.2	5,01,209.4	4,661.7	603.4	23.2	5,288.3	8,571.5	61.7
Growt h	-31.0%	39.6%	-29.3%	-64.1%	-27.9%	29.9%	-61.8%	-58.3%	-8.5%
CAGR	0.7%	22%	1.1%	-1.6%	-5%	13.2%	-2.04%	-0.8%	-1.3%
2021-22	5,24,681.7	24,534.8	5,49,216.5	6,505.2	624.4	25.9	7,155.6	11,312.4	63.3
Growt h	10.1%	0.3%	9.6%	39.5%	3.5%	11.9%	35.3%	32.0%	2.5%
CAGR	1.53%	19.8%	1.9%	1.57%	-4.3%	13.1%	-0.87%	1.8%	0.91%

The All Scheduled Private Airlines Freight Ton has increased from 4,43,941.8 in 2010-11 to 8,67,139.2 in 2018-19 but thereafter started declining and reached 524681.7 in 2021-22. the annual growth rate of freight ton was positive from 2010-11 to 2018-19, but year 2019-20 and 2020-21 it became negative, when the growth rate was -20.3% and -31.0% due to the covid pandemic . The CAGR of the freight for the period 2010-11 to 2021-22 is 1.53%. the all scheduled private airlines mail has increased from 3,359.7 in 2010-11 to 32,227.0 in 2018-19 but thereafter started declining and reached 24534.8 in 2021-22. The annual growth rate of mail was positive from 2010-11 to 2018-19, but 2013-14, 2019-20 it became negative , 2019-20 it became -45.6% showing declining due to covid . The CAGR of the mail for the period 2010-11 - 2021-22 is 19.8%. The all scheduled private airlines ton km. Performed (million) has increased from 6,499.1 in 2010-11 to 15,904.8 in 2018-19 but thereafter started declining and reached 7155.6 in 2021-22. The annual growth rate of



ton km. Performed was positive from 2010-11 - 2021-22 , but 2012-13 , 2019-20 and 2020-21 it became negative showing. The CAGR of the ton kms. performed for the period 2010-11 - 2021-22 is -0.87%.

Table 5: Year- on- year Growth and CAGR For Aircraft Flown Major Civil Aviation Companies

YE AR	AIR INDIA EXPRES S(Nati onal)	AIR INDIA	ALLI ANCE AIR	AIR INDI A (Priv ate)	AIR AISA	STAR AIR	AIR TAXI	VIST ARA	TRUJ ET	INDIG O	FLY BIG	SPICE JET	GO AIR	BLU R DAR T
2011- 12	22,020	1,30,62 2	14,35 9	-	-	-	-	-	-	98,416	-	81,03 4	28,26 5	-
Growt h	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAG R	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2012- 13	18,486	1,25,73 1	10,17 1	-	-	-	-	-	-	131,23 7	-	109,2 38	33,75 0	1,35 4
Growt h	-16.0%	-3.7%	-29.2 %	-	-	-	-	-	-	33.3%	-	34.8%	19.4%	-
CAG R	-16.0%	-3.7%	-29.2 %	-	-	-	-	-	-	33.3%	-	34.8%	19.4%	-
2013- 14	20,889	1,36,63 4	9,097	-	-	-	-	-	-	158,48 8	-	121,7 38	40,71 0	5,42 5
Growt h	13.0%	8.7%	-10.6 %	-	-	-	-	-	-	20.8%	-	11.4%	20.6%	300. 7%
CAG R	-0.2%	2.3%	-20.4 %	-	-	-	-	-	-	26.9%	-	22.6%	20.0%	300. 7%
2014- 15	19,524	1,38,80 3	9,059	-	4,142	-	-	1,3 04	-	236,38 5	-	102,6 15	47,19 8	5,45 3
Growt h	-6.5%	1.6%	-0.4%	-	-	-	-	-	-	49.2%	-	-15.7 %	15.9%	0.5 %
CAG R	-3.9%	2.0%	-14.2 %	-	-	-	-	-	-	33.9%	-	8.2%	18.6%	100. 68%
2015- 16	20,101	1,40,01 6	10,79 6	-	11,93 2	-	-	13,9 20	3,56 1	236,38 5	-	95,75 5	48,36 0	6,03 9
Growt h	3.0%	0.9%	19.2%	-	188.1 %	-	-	967. 5%	-	0.0%	-	-6.7%	2.5%	10.7 %
CAG R	-2.3%	1.8%	-6.9%	-	188.1 %	-	-	967. 5%	-	24.5%	-	4.3%	14.4%	64.6 %
2016- 17	25,963	1,45,18 7	12,68 6	-	17,44 0	-	-	23,98 2	7,673	300,52 6	-	115,2 07	55,82 7	6,25 7
Growt h	29.2%	3.7%	17.5%	-	46.2%	-	-	72.3%	115.5 %	27.1%	-	20.3%	15.4%	3.6 %
CAG R	3.3%	2.1%	-2.4%	-	105.2 %	-	-	328.8 5%	115.5 %	25.0%	-	7.3%	14.6%	46.6 %
2017- 18	28,850	1,53,49 9	20,82 8	-	32,80 6	-	-	32,82 3	8,926	347,64 0	-	138,3 11	69,13 6	6,02 0
Growt h	11.1%	5.7%	64.2%	-	88.1%	-	-	36.9%	16.3%	15.7%	-	20.1%	23.8%	-3.8 %



CAGR								193.1						34.8
R	4.6%	2.7%	6.4%	-	99.3%	-		%	58.3%	23.4%	-	9.3%	16.1%	%
2018-19	30,851	1,59,586	28,983	-	47,893	278		40,645	11,785	448,904	-	156,182	80,002	5,806
Growth	6.9%	4.0%	39.2%	-	46.0%	-		23.8%	32.0%	29.1%	-	12.9%	15.7%	-3.6%
CAGR								136.3	49.02.					27.5
R	4.9%	2.9%	10.6%	-	84.4%	-		%	%	24.2%	-	9.8%	16.0%	%
2019-20	32,830	1,64,089	30,669	-	63,177	2,595		62,771	15,728	522,853	-	195,976	102,944	5,548
Growth	6.4%	2.8%	5.8%	-	31.9%		833.5	54.4	33.5			25.5%	28.7%	-4.4%
CAGR							833.5	177.1						22.3
R	5.1%	2.9%	9.95%	-	72.5%		%	%	45%	23.2%	-	11.7%	17.5%	%
2020-21	13,330	56,446	15,557	-	31,637	3,229	26	55,141		259,576		77,275	35,574	5,117
Growth	-59.4%	-65.6%	-49.3%	-	-49.9%			-12.2	-52.7			-60.6	-65.4	-7.8
CAGR							240.8							18.1
R	-5.4%	-8.9%	0.9%	-	40.3%		%	86.7%	15.9%	11.4%	-	-0.5%	2.6%	%
2021-22	186	63,150	27,947	1368	4	38797	5,746	21		376,222	2,210	78,121	58,423	5,663
Growth	-98.6%	11.9%	79.6%	-	22.6%	77.9%		-18.6	-39.7		878			10.7
CAGR							174.4	-18.6			878			17.2
R	-38.0%	-7.0%	6.9%	-	37.7%		%	70.7%	3.92%	14.4%	%	-0.4%	7.5%	3%

Source: Authors' Own Compilation

Table 5 shows the CAGR of aircraft flown departures (nos.) of all the Civil Aviation service providers operating for the period 2011-12 to 2021-22. The highest CAGR is registered by STAR AIR which is 174.4%. Other operators like VISTARA 70.7% AIR AISA 37.7% BLUR DART 17.23% ,INDIGO 14.4% and GO AIR 7.5% TRUJET 3.92% have also experienced high CAGR except AIR TAXI , SPICEJET that registered negative CAGR -18.6% and -0.4%. While Air India Express And Air India have registered negative CAGR -38.0% and -7.0% respectively implying that the number of their Aircraft Flown has decreased during 2010-11 to 2021-22.

In 2019-20, the top Aviation service operators companies are- Air India, Alliance Air , Jet Airways, Spicejet, Goair, Trujet, Indigo, Airasia, Vistara And Blue Dart . The three public sector Aviation companies Air India Express ,Air India And Alliance Air their aircraft flown departures (nos.) has increased from 22,020, 1,30,622 and 14,359 in 2010-11 to 32,830, 1,64,089 and 30,669 respectively in 2019-20. VISTARA entered the market in jan 2015 and has AGR and CAGR of 54.4% and 177.1% respectively in just four years and is giving a tough competition to the top service providers.

Table 6 : Year On Year Growth And CAGR For Passengers Nos. Of Major Civil Aviation Companies

YEAR	AIR INDIA EXPRESS	AIR INDIA	ALLIANCE AIR	AIR INDIA (Private)	AIR AISA	STAR AIR	AIR TAXI	VISTARA	TRUJET	INDIGO	FLYBIG	SPICEJET	GO AIR
2011-12	23,01,407	1,36,14,148	467,257	-	-	-	-	-	-	12,751,544	-	-	3,785,881
Growth	-	-	-	-	-	-	-	-	-	-	-	-	-



h													
CAG R	-	-	-	-	-	-	-	-	-	-	-	-	-
2012-13	21,64,153	1,41,83,238	392,947	-	-	-	-	-	-	16,887,969	-	11,68,1,066	4,386,914
Growt h	-6.0%	4.2%	-15.9%	-	-	-	-	-	-	32.4%	-	22.0%	15.9%
CAG R	-6.0%	4.2%	-15.9%	-	-	-	-	-	-	32.4%	-	22.0%	15.9%
2013-14	26,68,193	1,54,05,796	363,801	-	-	-	-	-	-	19,568,603	-	12,61,0,917	5,252,416
Growt h	23.3%	8.6%	-7.4%	-	-	-	-	-	-	15.9%	-	8.0%	19.7%
CAG R	7.7%	6.4%	-11.8%	-	-	-	-	-	-	23.88%	-	14.8%	17.8%
2014-15	25,83,255	1,72,63,599	310,492	-	553,106	-	-	100,919	-	25,180,370	-	11,70,0,059	6,529,936
Growt h	-3.2%	12.1%	-14.7%	-	-	-	-	-	-	28.7%	-	-7.2%	24.3%
CAG R	3.9%	8.24%	-12.7%	-	-	-	-	-	-	25.5%	-	6.9%	19.9%
2015-16	27,84,008	1,84,75,830	400,340	-	1,705,808	-	-	1,422,614	204,588	33,103,686	-	11,91,4,456	7,160,189
Growt h	7.8%	7.0%	28.9%	-	208.4%	-	-	1309.7%	-	31.5%	-	1.8%	9.64%
CAG R	4.9%	7.9%	-3.8%	-	208.4%	-	-	1309.7%	-	26.9%	-	5.6%	17.3%
2016-17	34,20,763	1,95,99,155	625,411	-	2,668,553	-	-	2,926,586	424,809	43,531,952	-	14,91,4,804	8,645,969
Growt h	22.9%	6.1%	56.2%	-	56.4%	-	-	105.7%	107.6%	31.5%	-	25.2%	20.8%
CAG R	8.2%	7.6%	6.0%	-	119.65%	-	-	438.5%	107.6%	27.8%	-	9.3%	18.0%
2017-18	38,89,643	2,11,72,463	1,281,251	-	4,984,419	-	-	4,434,987	474,123	52,141,844	-	18,09,0,019	10,82,9,141
Growt h	13.7%	8.0%	104.9%	-	86.8%	-	-	51.5%	11.6%	19.8%	-	21.3%	25.3%
CAG R	9.1%	7.6%	18.3%	-	108%	-	-	252.9%	52.2%	26.5%	-	11.2%	19.1%
2018-19	43,42,507	2,22,82,899	1,597,382	-	7,291,535	7,385	-	5,438,275	643,494	64,742,944	-	19,89,5,114	12,70,3,317
Growt h	11.6%	5.2%	24.7%	-	46.3%	-	-	22.6%	35.7%	24.2%	-	10.0%	17.3%
CAG R	9.5%	7.3%	19.2%	-	90.55%	-	-	170.9%	46.5%	26.1%	-	11.0%	18.9%
2019-20	48,25,454	2,24,81,177	1,639,757	-	9,441,070	84,876	-	8,372,892	836,453	75,025,960	-	24,78,3,266	16,26,1,509
Growt h	11.1%	0.9%	2.7%	-	29.5%	1049	-	54.0%	-	15.9%	-	24.6%	28.0%



h					%	%		%	30.0%				
CAGR	9.7%	6.5%	17.0%	-	76.4%	1049%	-	142%	42.2%	24.8%	-	12.6%	20.0%
2020-21	14,67,037	63,00,719	705,273	-	3,609,627	112,239	183	3,517,052	277,862	30,634,369	7,238	7,735,003	4,389,572
Growth	-69.6%	-72.0%	-57.0%	-	-61.8%	32.2%		-58.0%	-66.8%	-59.2%	-	-68.8%	-73.0%
CAGR	-4.9%	-8.2%	4.7%	-	36.7%	289.8%	-	80.7%	6.31%	10.2%	-	-2.3%	1.7%
2021-22	17,616	63,75,302	1,077,709	17,91,630	4,785,571	199,633	221	6,752,941	147,549	46,683,054	81,268	8,403,491	7,981,038
Growth	-98.8%	1.2%	52.8%		32.6%	77.9%	20.8%	92.0%	-46.9%	52.4%	1022.8%	8.6%	81.8%
CAGR	-38.6%	-7.3%	8.7%	-	36.1%	200.12%	20.8%	82.3%	-5.3%	13.9%	1022.8%	-1.3%	7.7%

Table 6 shows The CAGR of Passengers (Carried no.) of all the Civil Aviation service providers operating for the period 2011-12 to 2021-22. The highest CAGR is registered by STAR AIR which is 200.12% Other operators like VISTARA 82.3% AIR AISA 36.1% , AIR TAXI 20.8% ,GO AIR 7.7%, INDIGO 13.9% and have also experienced high CAGR except TRUJET , SPICEJET that registered negative CAGR -5.3% and -1.3% . While AIR INDIA EXPRESS and AIR INDIA have registered negative CAGR -38.6% and -7.3% respectively implying that the number of their passengers (carried no.) has decreased during 2010-11 to 2021-22. This remarkable increase in the number of private aviation company is due to fierce competition among the private service providers. In 2019-20, the top aviation service operators companies are- air india,alliance air , jet airways, spicejet, goair, trujet, indigo, airasia, vistara and blue dart . the three public sector aviation companies air india express ,air india and alliance air their passengers (carried no.) has increased from 23,01,407 , 1,36,14,148 and 467,257 in 2010-11 to 48,25,454 , 2,24,81,177 and 1,639,757 respectively in 2019-20.

Table 7: Year –On- year Growth and CAGR for Cargo Carried (Ton) by major Civil Aviation Companies

YEA R	AIR INDI A EXP RES S	AIR INDIA	ALLI ANC E AIR	AIR INDI A (Priv ate)	AIR AISA	VISTA RA	INDI GO	SPICEJ ET	GO AIR	BLUR DART
2011 -12	-	1,66,047.0	909.3	-	-	-	76,149.0	51,863.2	-	-
Grow th	-	-	-	-	-	-	-	-	-	-
CAGR	-	-	-	-	-	-	-	-	-	-
2012 -13	-	1,36,878.0	345.0	-	-	-	80,968.0	67,185.1	24,485	29,989.0
Grow th	-	-17.6%	-62.1%	-	-	-	6.3%	29.5%	-	-
CAGR	-	-17.6%	-62.1%	-	-	-	6.3%	29.5%	-	-



2013-14	-	1,80,571.8	213.0	-	-	-	106,638.0	80,431.5	43,857.0	117,431.0
Grow th	-	31.9%	-38.3%	-	-	-	31.7%	19.7%	79.12%	291.6%
CAG R	-	4.28%	-51.6%	-	-	-	18.3%	24.53%	79.12%	291.6%
2014-15	-	2,25,375.0	220.0	-	2,969.5	1,957.0	137,643.0	71,445.8	55,410.0	118,525.8
Grow th	-	24.8%	3.3%	-	-	-	29.1%	-11.2%	26.3%	0.9%
CAG R	-	15.43%	-37.7%	-	-	-	21.8%	11.3%	50.43%	98.8%
2015-16	4,035.2	2,06,658.0	172.0	-	12,080.5	20,414.7	150,211.0	63,210.0	56,871.0	125,536.0
Grow th	-	-8.3%	-21.8%	-	306.8%	943.2%	9.1%	-11.5%	2.6%	5.9%
CAG R	-	5.62%	-34.1%	-	306.8%	943.2%	18.5%	5.1%	32.43%	61.2%
2016-17	10,577.4	1,90,695.0	97.0	-	9,440.0	23,982	177,381.0	60,481.9	54,050.0	127,767.0
Grow th	162.1%	-7.7%	-43.6%	-	-21.9%	72.3%	18.1%	-4.3%	-5.0%	1.8%
CAG R	162.1%	2.8%	-36.1%	-	78.3%	250.1%	18.4%	3.1%	21.9%	43.67%
2017-18	14,599.9	2,19,607.9	114.0	-	10,117.1	32,823	207,704.8	74,647.0	24,255.4	125,579.0
Grow th	38.0%	15.2%	17.5%	-	7.2%	36.9%	17.1%	23.4%	-55.1%	-1.7%
CAG R	90.2%	4.76%	-29.3%	-	50.5%	156%	18.2%	6.26%	-18.83%	33.2%
2018-19	16,640.5	2,29,015.0	98.3	-	28,212.9	40,645	209,348.1	107,404.2	72,925.8	120,752.0
Grow th	14.0%	4.3%	-13.8%	-	178.9%	23.8%	0.8%	43.9%	200.7%	-3.8%
CAG R	60.36%	4.7%	-27.2%	-	75.57%	113.5%	15.5%	11.0%	19.95%	26.13%
2019-20	23,407.7	2,19,356.6	225.0	-	38,075.3	62,771	294,951.1	156,259.6	70,142.1	122,512.3
Grow th	40.7%	-4.2%	128.9%	-	35.0%	54.4%	40.9%	45.5%	-3.82%	1.5%
CAG R	55.2%	3.54%	-16.0%	-	66.57%	100.1%	18.4%	14.8%	16.23%	22.27%
2020-21	12,372.7	75,043.8	355.4	-	32,368.2	55,141	177,377.0	105,205.6	35,188.6	113,922.8
Grow th	-47.1%	-65.8%	57.95%	-	-15.0%	-12.2%	-39.9%	-32.7%		-7.0%



th	%		%		%		%		-49.8%	
CAGR	25.12%	-8.45%	-9.9%	-	48.9%	74.4%	9.9%	8.17%	4.64%	18.16%
2021-22	56,397.7	509.4	13,009.4	31,143.6	55,141	227,189.7	40,739.4	63,692.3	124,179.6	
Growth	-99.6%	-24.8%	43.4%	-	-3.8%	0.0%	28.1%	-61.3%	81.0%	9.0%
CAGR	-52.62%	-10.24%	-5.6%	-	39.9%	61.1%	11.6%	-2.4%	11.21%	17.1%

Source: Authors’ Own Compilation

The number of Cargo service providers is very limited compared to the Passengers service. providers due to an increased preference of Passengers . Air India express was established to provide these services all over India in place. The share of air India express is much larger in comparison to others because it covers the whole of India and world services. In 2021-22, cargo carried among private aviation operators, the highest CAGR is registered by vistara 61.1% followed by air Asia 39.9% blur dart 17.1%, indigo 11.6% and go air 11.21%. all the private aviation operators exclude spice jet have recorded positive CAGR which means that their cargo service have increased during the period 2010-11 to 2021-22. while air India express and air India have registered negative CAGR -52.62% and -10.24% respectively implying that the number of their cargo service has decreased during 2010-11 to 2021-22. There is fierce competition among the major aviation company due to which they have come up with new plans and discount schemes to gain a competitive edge and get more and more customer for their services. The slow growth of aviation sector is because aviation sector need massive investments, but the revenue prospects are not proportionate to the investments undertaken.

6. Conclusion

The Indian Civil Aviation sector has experienced substantial growth in terms of technology, penetration, as well as policy and has emerged as one of the two large growing Civil Aviation markets of Asia, next to China. This Civil Aviation revolution has led to an increase in the demand for basic and value-added services, an increase in domestic and international air service , an increase in air passenger traffic, an increase in the number of airports , an increase in the number of aircraft and higher participation of the private sector in the industry. Still, there are wide disparities in the distribution of aviation access among different states of the country Moreover, the Indian Civil Aviation market is getting stronger due to the fierce competition among the operators company. Air passenger traffic in India is increasing on a tremendous pace. There has been a growth of over 47% in the number of passengers carried by Indian domestic and international carriers in 2021 as compared to 2020. (1605.27 lakh passengers in 2021-22 while 1090.42 lakh passengers in 2020-21). It also plays a crucial role in promoting tourism by offering a robust transportation network. The promotion of the tourism industry also helps the economy and employment sector both domestically and globally. For Foreign Tourist Arrivals (FTA), air travel is the most chosen mode of transportation. Given that Civil Aviation services generate many externalities in the economy, the government should take initiatives to promote sector development and increased penetration. It should put in place investor- friendly business policies and make the regulatory framework more responsive to the rapidly changing needs of the Civil Aviation sector. There is a need to create an ecosystem that encourages foreign investors to view the markets as an opportunity for future expansion with immense potential for sustainable revenues. foreign investors may be given tax holidays for establishing aviation infrastructure and providing Civil Aviation services in remote areas. Special efforts are needed through customized value addition, innovative marketing and pricing in the country . All the stakeholders, viz. the government, Civil Aviation operators, equipment vendors and various local bodies will need to collaborate and



work together to continue to make the Indian Civil Aviation sector attractive to foreign companies and allow the country to benefit from the latest technological advances and to attract necessary finance for the development of the Civil Aviation industry.

References

- 1 Annual Report (2010-2011 to 2021-22), Directorate General of Civil Aviation, website. www.dgca.gov.in
- 2 Aniruddh Bhadra An Assessment of the Impact of increase in FDI Cap in the Civil Aviation Sector in India. *Asia Pacific Journal of Management & Entrepreneurship Research* 3 (1), 154, 2014
- 3 Bhagabata Behera Indian aviation industry: issues and challenges in post-reform era. *Splint International Journal of Professionals* 3 (2), 58-65, 2016
- 4 Ben Derudder, Frank Witlox The impact of progressive liberalization on the spatiality of airline networks: a measurement framework based on the assessment of hierarchical differentiation. *Journal of Transport Geography* 17 (4), 276-284, 2009
- 5 Devi Prasad Dash, Aruna Kumar Dash, Narayan Sethi Understanding the pandenomics: Indian aviation industry and its uncertainty absorption
- 6 *The Indian Economic Journal* 69 (4), 729-749, 2021
- 7 Eunice A Dobby The Role of Civil Aviation in Promoting International Trade in Africa: a Case Study of Kenya Aviation Industry. University of Nairobi, 2021
- 8 Hufrih Majra, Rajan Saxena, Sumi Jha, Srinath Jagannathan Structuring technology applications for enhanced customer experience: Evidence from Indian air travelers *Global business review* 17 (2), 351-374, 2016
- 9 Jatinder Singh, Shashi Ranjan Jha, Yadawendra Singh Impact of Liberalization on Foreign Direct Investment: An Empirical Analysis of Indian Economy in Post-Reform Period. *IUP Journal of Public Finance* 9 (3), 2011
- 10 Jae Woon Lee India's New Foreign Direct Investment (FDI) Regime in the Airline Industry: Changes and Challenges. NUS Law Working Paper, 2016
- 11 Margaret N Munene Liberalization of Air Transport in Africa: Case of Kenya's Air Transport. University of Nairobi, 2012
- 12 Meera Shanker Recruitment process and its impact on retention of commercial pilots in Indian aviation industry *Business Process Management Journal* 26 (3), 736-751, 2020
- 13 Meena Madhavan, Mohammed Ali Sharafuddin, Pairach Piboonrungrroj, Ching-Chiao Yang Short-term forecasting for airline industry: the case of indian air passenger and air cargo, *Global Business Review*, 0972150920923316, 2020
- 14 Megersa Abate, Panayotis Christidis, Alloysius Joko Purwanto Government support to airlines in the aftermath of the COVID- 19 pandemic, *Journal of air transport management* 89, 101931, 2020
- 15 Priyanka Saharia, Krishna Raj Indian Civil Aviation Industry: Analysing the Trend and Impact of FDI Inflow. Institute for Social and Economic Change, 2021
- 16 Pukar KC Modeling the Effects of Air Transport Liberalization on the Airline Industry. 2012. Economics Honors Papers. 7.
- 17 SL PEDGAONKAR Liberalization and Employment. *Economic Liberalisation and Its Implications for Employment*, 163, 2002
- 18 S Chandrachud, S Thangamayan, SN Sugumar Economic Impact of FDI on Indian Aviation Sector. *EXECUTIVE EDITOR* 9 (5), 328, 2018
- 19 Sujana K Saraswati Operating environment for a civil aviation industry in India. *Journal of Air Transport Management* 7 (2), 127-135, 2001
- 20 Rico Merkert, David A Hensher The impact of strategic management and fleet planning on airline efficiency-A random effects Tobit model based on DEA efficiency scores. *Transportation Research Part A: Policy and Practice* 45 (7), 686-695, 2011



- 21 Brajesh Mishra, Fateh Bahadur Singh, Ronak Batra Impact of Regional Air connectivity on Regional Economic Growth in India.2021 .European Transport\ Transporti Europei (2021) Issue 83, Paper no4 ISSN1825-3997
- 22 Vedant Singh, Somesh K Sharma Evolving base for the fuel consumption optimization in Indian air transport: application of structural equation model .European Transport Research Review 6 (3), 315-332, 2014
- 23 Xiaowen Fu, Tae Hoon Oum, Ruowei Chen, Zheng Lei Dominant carrier performance and international liberalization- The case of Northeast Asia. Transport Policy 43, 61-75, 2015
- 24 <https://www.ibef.org/pages/35892>.
- 25 <https://prsindia.org/theprsblog/clear-signal-for-fdi-in-civil-aviation>
- 26 <https://www.fdi.finance/sectors/civil-aviation>
- 27
<https://unacademy.com/content/railway-exam/study-material/general-awareness/fdi-in-the-civil-aviation-sector-in-india>