

An Insight of In-flight Connectivity: Current Scenario and way ahead in Indian Aviation Sector

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Abstract

The generation today is glued to the mobile sets, and we cannot imagine ourselves without Wi-Fi or 4G/LTE. But while traveling via flight, we have to deprive ourselves of this advantage as we put our phones on airplane mode, which is the gap addressed by In-Flight connectivity (IFC). In-flight connectivity or IFC is simply providing the internet and entertainment services while you are on the flight. The Indian government has already given a green signal, and many industry stalwarts have started working on making this facility available to us. IFC is a step towards door to door connectivity i.e. connectivity from home/office to airport to flight to the destination. IFC will also help in optimizing the maintenance, fuel efficiency, etc in the aircraft. This paper aims to understand the concept of IFC, the regulatory framework, and its future in context of the Indian aviation market. The Indian aviation market is the fastest-growing aviation in the world and is expected to be the second-largest market by 2038. The IFC can give an airline an edge over its competitors and ancillary revenue options. The research is secondary, and the data has been collected from various sources like websites, research papers, and conference proceedings.

Keywords

In-flight connectivity (IFC), In-flight entertainment (IFE), Indian Aviation, Internet on board.

1. Introduction

Before the introduction of In-flight connectivity (IFC), airlines operated manually by referring to various navigational and aeronautical charts, flight checklists, log books and operating manuals which were aircraft and flight crew specific. But the constant decrease in cost of computing and size of portable devices coupled with IP standard has paved the path for Connected Aircrafts ("The evolution of connected aircraft - Gogo", n.d.).

In-flight connectivity is simply digitisation of cabin crew's day-to-day processes and it strengthens commercial offerings to customers. It allows passengers to surf internet, browse websites, watch movies, share messages, reply emails, do video chats etc. along with ensuring better connectivity within the flight cabin.

The world has now become internet of things where everything that can feature an IP address (cell phones, television, coffee maker, head phones, lights, etc.) can be connected to internet with an on and off button. With this, aircrafts can seamlessly communicate with ground, remaining fleet, and other connected systems.

2. Objective of the Study

This paper will contribute to understanding the concept of In-flight connectivity (IFC) and its basic working. The paper also deals with the Indian regulatory framework and future of IFC in Indian context.

3. Research Methodology

Extensive literature review of news articles, research work (by Gogo, Mortar Intelligence etc.) were done.

4. Review of Literature

4.1 Concept of IFC

According to the global in-flight connectivity survey by Inmarsat (a British satellite telecommunication company) in August 2018, 78 percent of respondents considered Wi-Fi as fundamental to daily life and 87 percent of business travellers would use internet on board to work. (Inmarsat, 2018). Total number of internet users in India is 566 million, which is the second highest in the world after China. Out of the total internet users in India, 87 percent are regular users and 97 percent of the regular users surf internet on mobile phones ("Internet

users in India to reach 627 million by 2019-end: Kantar ICUBE 2018 Report - Exchange4media", 2019). The Indian users spend more time than the world's average in using internet (Kemp, 2019).

In-flight connectivity (IFC) gives an advantage to passengers of staying connected by browsing internet, surf websites, video calling, sending emails and messages etc.

It is not restricted to passenger services only and will also help in improving the entire aircraft communication experience by ensuring sharing of real-time in-flight performance data like fuel consumption, engine health, wing conditions etc. which will reduce aircraft maintenance time by providing better maintenance schedules. Therefore, a connected aircraft will have all the crew applications, aircraft monitoring systems, electronic flight bag, safety services and entertainment devices like laptop, tablet, seatback screens and cell phones connected to the internet allowing sharing of information/data in real time basis (BELLAMY III, n.d.). There are four major components of connected airlines which are explained below (Gogo, 2015).

Table 1: Components of Connected Airlines

Component	Benefit
In-Flight Services	<ul style="list-style-type: none">• Equip the crew members with customized information about passengers like meal preferences, tailored entertainment packages• Source of ancillary revenue• Coordination with ground handling team
Flight Operations	<ul style="list-style-type: none">• Connected Electronics Flight Bags allows exchange of real time information which can be used for the flight• Fuel savings and minimising delays• Turbulences can be mapped which allows safety and comfort of passengers• Automated reporting of aircraft
Maintenance	<ul style="list-style-type: none">• Maintenance needs can be predicted• Allow paperless documentations
Aircraft Systems	<ul style="list-style-type: none">• Ensure Air craft Health Monitoring on real time basis

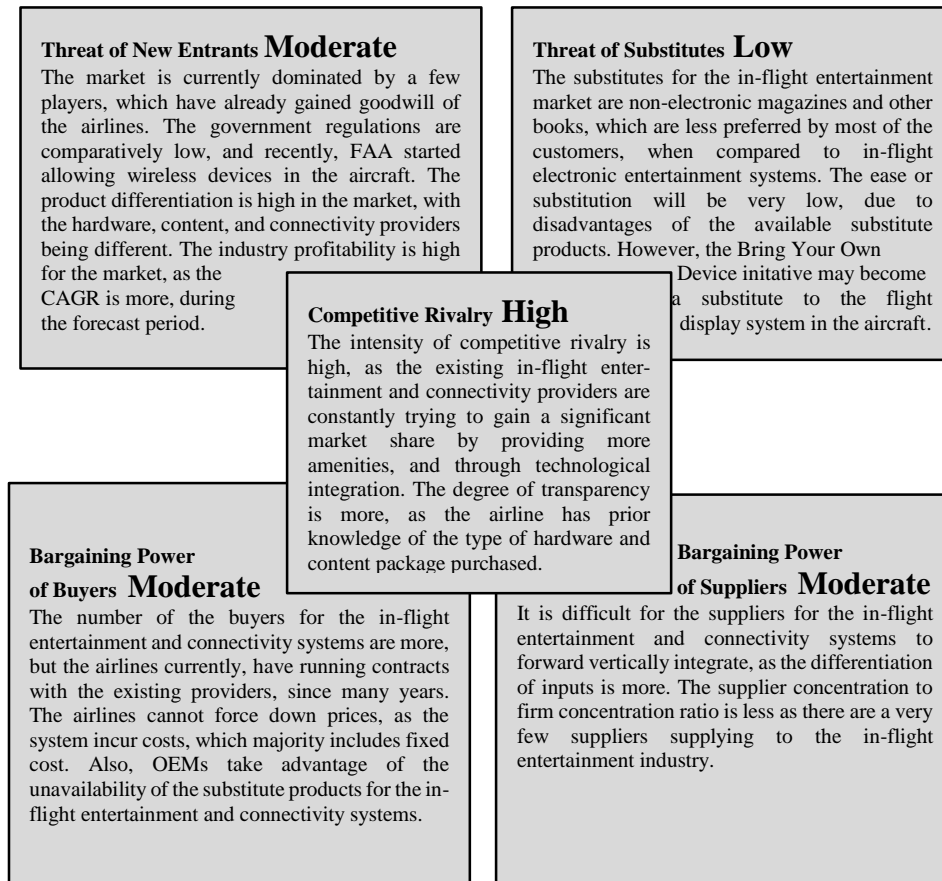


Figure 1: Porter's Five Forces Analysis of IFC Market

Source: Mordor Intelligence, 2019

IFC can help the airlines in getting demand and competitive advantage, opportunity to earn ancillary revenue and increase the fleet efficiency. Currently, the Department of Telecommunication (DoT) has allowed only Indian Space Research Organisation (ISRO) to provide satellite bandwidth and this has created a monopoly which will affect the prices and the airlines have to evaluate the pros and cons ("3 telecommunications companies have applied for In-Flight Connectivity - Live from a Lounge", 2019).

4.2 How IFC works?

Internet on flights is different from the existing public Wi-Fi connections available at home, hotels, railway stations etc. For this, geo-stationary satellites are used which are also used for weather

forecasts and TV signals. The aircraft can be connected in two ways – Air To Ground (ATG) and Satellites. In ATG, the signals from satellites are first received at receivers on ground and then transmitted to the antennas on airlines. In the latter case, the satellites directly send signals to antennas on airline which ensures connectivity irrespective of the flight is over land or water. (Ahaskar, 2018).

4.3 Indian Regulatory Framework

The Department of Telecommunication (DoT) has issued the Flight and Maritime Connectivity Rules (FMC) on 14th December 2018 and thereby allowing airlines (both Indian and International) and shipping companies to partner with telecom companies and provide voice and data services. FMC defines the applicability, eligibility, validity, restrictions and other regulatory provisions for In-flight and Maritime Connectivity (IFMC) (Ministry of Communication (DoT), 2018). IFC is expected to be a market of \$130 billion by 2035. Currently there are 83 airlines providing internet on board but the services are yet to be launched in India (Joshi, 2018). Licenses to Reliance Jio, BSNL, Bharti Airtel, Hughes India and Tatanet Services are already in process (Economic Times, 2019).

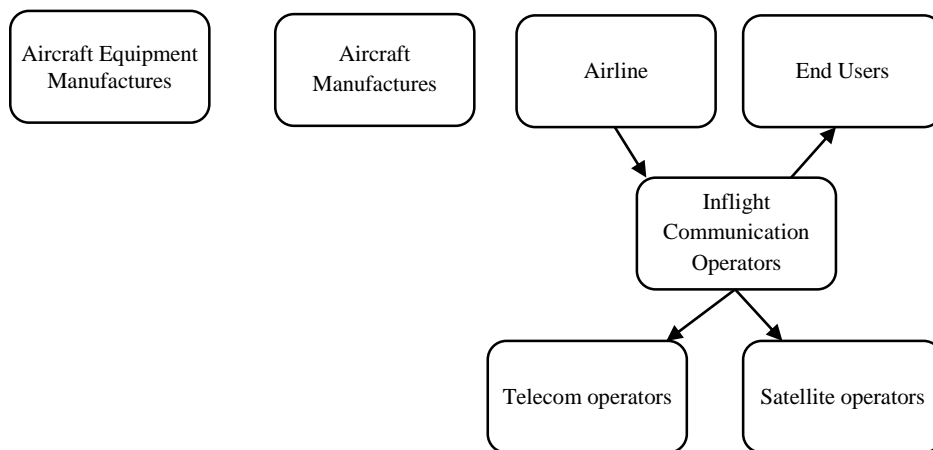


Figure 2: In-flight Connectivity Value Chain

Source: (El Ayoubi et. al., 2016)

4.4 Future of IFC

The introduction of IFC is uncertain in India as the government is still working on adding new rules and regulations to the Aircraft Act. The Flight and Maritime Connectivity Rules have allowed telecom operators to apply for licenses which have been approved now. Even the airlines are perplexed whether to install the wi-fi setup in the old aircrafts or not as it will only add up to the cost (Bailey, 2019).

5. Conclusion

In-Flight Connectivity can be beneficial to (2019):

- Aircraft: in improving communication with Air Traffic Controller (ATC) and Airline Operation Centre
- Airlines: in being more effective and efficient in ensuring smoother customer experience at lower costs
- Airports: in getting more precise and accurate information about aircrafts and passengers
- Air Traffic Management in delivering optimum service

The aircrafts will become nodes (connection points) which are capable of sharing information/ data with other aircrafts and ground handling staff at speeds that current Aircraft Communications Addressing and Reporting System (ACARS) and Aircraft Condition Monitoring System (ACMS) cannot (BELLAMY III, n.d.). Considering the popularity and demand of the services, it can be an easy, fast and scalable mode of reaching out to a large base of users. IFC can be a source of ancillary revenue to the airlines. Airlines can also benefit by becoming a marketing and promotional partner to third parties. India, being the fastest growing aviation industry in the world has a huge scope for the same.

6. References

1. Ahaskar, A. (2018). How Wi-Fi on airplanes works and why it is expensive yet slow. Livemint. Retrieved from <https://www.livemint.com/Technology/McLxVVqf3kWcpK5bZd98jN/How-WiFi-on-airplanes-works-and-why-it-is-expensive-yet-slo.html>
2. BELLAMY III, W. The Connected Aircraft: Beyond Passenger Entertainment and Into Flight Operations. Retrieved 2 October 2019, from <http://interactive.avionictoday.com/the-connected-aircraft/>

3. Economic Times. (2019). Reliance Jio applies for in-flight connectivity licence to DoT: Sources. Retrieved from <https://economictimes.indiatimes.com/tech/internet/reliance-jio-applies-for-in-flight-connectivity-licence-to-dot-sources/articleshow/68-903082.cms?from=mdr>
4. El Ayoubi, S., Jeux, S., Agyapong, P., Singh, S., Qi, Y., & Schotten, H. et al. (2016). Refined scenarios and requirements, consolidated use cases, and qualitative techno-economic feasibility assessment. Retrieved from https://pdfs.semanticscholar.org/24ca/c7e6e7937063fe265d290fe45cbe6f7a0a03.pdf?_ga=2.46273184.643998079.1570034145-1098092395.1570034145
5. Gogo. (2015). Gogo Whitepaper: Building the Case for the Connected Airline. Retrieved from <http://concourse.gogoair.com/gogo-whitepaper-building-the-case-for-the-connected-aircraft/>
6. Inmarsat. (2018). 2018 Inmarsat Inflight Connectivity Survey – Global Whitepaper. Retrieved from https://www.inmarsat.com/aviation/commercial-aviation/in-flight-connectivity-survey/#gf_110
7. Internet users in India to reach 627 million by 2019-end: Kantar ICUBE 2018 Report - Exchange4media. (2019). Retrieved 16 September 2019, from <https://www.exchange4media.com/digital-news/566-million-internet-users-in-india-18-annual-growth-kantar-icube-2018-report-95137.html>
8. Joshi, H. (2018). Can in-flight connectivity, a \$2-3 billion opportunity, take off in India?. Financial Express. Retrieved from <https://www.financialexpress.com/opinion/can-in-flight-connectivity-a-2-3-billion-opportunity-take-off-in-india/1361566/>
9. Kemp, S. (2019). Retrieved from <https://datareportal.com/reports/digital-2019-global-digital-overview>
10. Ministry of Communication (DoT). (2018). Flight and Maritime Connectivity Rules, 2018. Retrieved from http://dot.gov.in/sites/default/files/2018_12_17%20AS%20IFMC_1.pdf?download=1

11. Mordor Intelligence. (2019). In-Flight Entertainment And Connectivity Market (2019 -2024).
12. The evolution of connected aircraft - Gogo. Retrieved 30 September 2019, from <https://www.gogoair.com/learning-center/evolution-connected-aircraft/>
13. (2019). In Connected Aircraft Asia Summit 2019 (India). New Delhi.
14. 3 Telcos have applied for In-Flight Connectivity - Live from a Lounge. (2019). Retrieved 2 October 2019, from <https://livefromalounge.boardingarea.com/2019/01/21/inflight-wifi-in-india-getting-setup/>