A Study on Digital Transformation of Indian Aviation Industry with Special Reference to Udan Scheme

Author[1] – Ms. Vatsala R, Undergraduate Student, BBA (Aviation)
vatsala200617@gmail.com
Author[2] – Prof. Raksha H V, Assistant Professor – Department of BBA
rakshahv@soundaryainstitutions.in
Soundarya Institute of Management & Science – Bangalore – 560073

ABSTRACT

The Indian aviation industry has witnessed tremendous growth in recent years, aided by technological developments and the digitization of aviation services. Digital transformation has changed various aspects of the travel process, such as online booking of tickets, digital payment, passenger information systems, mobile apps, automated airport services and digital check-in facilities. The Regional Connectivity Scheme (RCS), popularly known as Ude Desh ka Aam Nagrik (UDAN), is a key component of Indian aviation policy that aims to provide air connectivity to remote and unserved destinations in India. The present study focuses on the role of digital transformation in Indian aviation with special reference to the UDAN scheme. It examines how digital technologies can enhance accessibility, passenger convenience and ease of doing business in regional aviation, and discusses their impact on operational efficiency and regional connectivity. The paper further highlights the challenges posed by technology-driven solutions, such as technological infrastructure, digital literacy, cybersecurity and accessibility in remote areas. The study is based primarily on secondary data. It attempts to highlight the applicability of digital transformation for achieving the objectives of the UDAN scheme and developing a more accessible, efficient and technologically advanced regional aviation network in India.

Keywords: *Digital Transformation, Indian Aviation Industry, UDAN Scheme, Regional Connectivity, Operational Efficiency.*

1. INTRODUCTION

The Indian aviation industry plays a significant role in the country's economic and social development by connecting people, businesses and regions while supporting tourism, trade, employment and economic activity. Over the years, the sector has experienced considerable growth due to increasing demand for air travel, improvements in infrastructure and the expansion of airline services. However, air connectivity has not been equally accessible across all regions, with smaller towns and underserved areas facing comparatively limited access to air transportation.

Alongside the growth of aviation, digital transformation has become an important part of the industry's development. Digital transformation refers to the adoption and integration of digital technologies to improve operational efficiency, accessibility and passenger experience. Technologies such as online ticket booking, mobile applications, digital payments, electronic boarding passes, automated check-in, real-time flight information and data analytics have changed the way passengers, airlines and airports interact and operate.

In this context, the Government of India introduced the Regional Connectivity Scheme (RCS), popularly known as UDAN (Ude Desh ka Aam Nagrik), on 21 October 2016 (Ministry of Civil Aviation, 2017) with the objective of improving air connectivity to underserved and unserved regions and making air travel more affordable and accessible. The scheme aims to connect smaller cities and regional areas with the wider aviation network while promoting tourism, employment and regional economic development. Digital transformation can support the objectives of UDAN by making regional air travel more accessible through online booking, digital payments, mobile-based services and real-time passenger information. However, the effective use of digital technologies in regional aviation may be influenced by factors such as digital infrastructure, internet connectivity, technological awareness, digital literacy and accessibility.

Therefore, understanding the relationship between digital transformation and the UDAN scheme is important for examining how technology can contribute to improving regional air connectivity and passenger services in India. The present study focuses on digital transformation in the Indian aviation industry with special reference to the UDAN scheme, examining its potential benefits and challenges in supporting a more accessible, efficient and inclusive regional aviation network.

1.1 Statement of the Problem

The Indian aviation industry has faced multiple challenges in the introduction and utilization of digital technologies such as online booking, digital payment, online applications, automated airport services and digital passenger information systems, which can increase the efficiency of airline operations while providing greater convenience and access to passengers. At the same time, the Government of India launched the UDAN (Ude Desh ka Aam Nagrik) scheme to improve air connectivity and enhance the accessibility of air travel for citizens in remote and underserved regions.

However, the benefits of the digital transformation of the aviation industry may not be available to all groups, owing to gaps in digital infrastructure, internet access, technical capabilities and awareness. Furthermore, the application of various digital technologies should be examined in terms of how they contribute to the objectives of the UDAN scheme and to the overall passenger experience.

Thus, the problem addressed by this study is the lack of understanding and analysis of the role and effectiveness of digital transformation in regional aviation within the framework of the UDAN scheme. The study seeks to identify the key benefits of digital technologies for the UDAN scheme, analyze their advantages and disadvantages, and explore ways in which digital transformation can be applied to enhance regional air connectivity.

1.2 Purpose of the Study

The purpose of this study is to examine the role of digital transformation in the Indian aviation industry with special reference to the UDAN scheme. The study aims to understand how digital technologies can be utilized to support regional air connectivity, improve passenger convenience and contribute to the efficiency of aviation services in underserved and unserved areas. It will attempt to identify the major benefits and challenges associated with the adoption of digital technologies in regional aviation and to understand how digital transformation can contribute to the objectives of UDAN.

1.3 Significance of the Study

This study is significant as it provides an understanding of the role of digital transformation in supporting the development of regional air connectivity in India through the UDAN scheme. It highlights how digital technologies can improve accessibility, passenger convenience and operational efficiency in regional aviation. It may be useful to the Ministry of Civil Aviation and other aviation authorities in understanding the importance of digitalisation in achieving the objectives of regional connectivity. Airlines and airport operators can also benefit by understanding how digital services can improve passenger experience and operational processes. For passengers, particularly those travelling from smaller towns and underserved regions, digital services can provide easier access to flight information, booking and payment facilities. The study may also be useful to students, researchers and academicians as a reference for further research on digital transformation, regional connectivity and the development of the Indian aviation industry.

2. REVIEW OF LITERATURE AND RESEARCH GAP

I. **Jose and Ram (2019)** examined the influence of the UDAN scheme on the network and regional connectivity of Indian airports. The study analysed airport connectivity using different network indicators and compared the domestic aviation network before and after the introduction of UDAN routes. The findings showed that UDAN improved connectivity, created new airport hubs and increased the visibility of previously underserved regions, particularly in North-East India. The study concluded that UDAN has contributed to stronger regional connectivity and expansion of the Indian domestic aviation network.

II. **Iyer & Thomas (2020)** critically evaluated the Regional Connectivity Scheme (RCS-UDAN) of

India and analyzed its business model, its impact on the aviation industry, and the opportunities and challenges of implementing the programme. The study used Data Envelopment Analysis (DEA) to measure the performance of Indian airports before and after implementation of the scheme. Iyer and Thomas stressed that although UDAN can enhance regional air connectivity, promote tourism and the regional economy, and create new job opportunities, its effectiveness depends on adequate passenger traffic and collaboration between governmental authorities and airport operators.

III. **Das, Bardhan and Fageda (2020)** studied India's new regional aviation policy using data on the performance of the scheme since its introduction in 2016. They found that the aviation market expanded through the addition of new routes under the scheme, but that performance showed a regional imbalance, and that questions remain about the long-term sustainability of many routes and the neglect of some priority regions. The authors identified economic and commercial challenges that need to be addressed for the programme to achieve its goals.

IV. **Arndt (2026)** examined how government commitment to the goals of UDAN has evolved since the scheme's launch in 2017. Using 2011 Census city populations, the author classified awarded routes as "mission-aligned" when they connected smaller, less populous cities to larger urban centres. Linear regression across all five UDAN rounds showed a statistically significant positive trend of about three percentage points per round in the share of mission-aligned routes, indicating growing government confidence in the original goals of UDAN. The author notes that the study measures strategic intent rather than realised operational outcomes.

V. **Jayathilakan et al. (2026)** examined the challenges to the implementation and continuation of the Regional Connectivity Scheme (UDAN) through an analytic hierarchy process (AHP) involving 31 experts from airlines, airports, regulators and travel agencies. The study found that stakeholder priorities differ: airlines prioritise financial viability, airports emphasise infrastructure readiness, regulators focus on compliance and safety, and travel agents concentrate on demand stability and service reliability. The authors argue that sustaining UDAN requires a stakeholder-differentiated approach that captures how each group perceives and prioritises barriers to connectivity.

VI. **Balaji (2026)** studied digital transformation in the Indian airline industry, focusing on the adoption of technologies such as artificial intelligence, automation, digital payments, online booking, digital check-in and data analytics. The study used a quantitative research approach based on responses from 200 airline passengers to understand their perceptions of digital initiatives. The findings revealed that passengers generally viewed digital transformation positively, particularly in terms of customer experience, service quality, operational efficiency and cost reduction. The study concluded that continued investment in digital technologies is important for maintaining customer satisfaction, improving efficiency and supporting innovation.

Research Gap

Existing studies have extensively examined UDAN in terms of regional connectivity, infrastructure, stakeholder coordination, government support and economic sustainability, while separate studies have examined digital transformation in Indian airlines. However, limited research has integrated these two areas to examine the role of digital technologies in supporting the objectives and implementation of UDAN. Therefore, the present study seeks to address this gap by examining the role of digital transformation in improving regional connectivity, passenger services, operational efficiency and accessibility under the UDAN scheme.

3. OBJECTIVES OF THE STUDY

1. To examine the role of digital transformation in the Indian aviation industry with special reference to the UDAN scheme.
2. To analyze how digital technologies can improve accessibility, passenger convenience and operational efficiency in regional air connectivity under UDAN.
3. To identify the key challenges and opportunities associated with the adoption of digital technologies

in supporting the UDAN scheme.

4. RESEARCH METHODOLOGY

The current research uses a systematic approach to study digital transformation in the Indian aviation industry, specifically focusing on the UDAN (Ude Desh ka Aam Nagrik) scheme. The study relies mainly on secondary data gathered from trustworthy and pertinent sources, namely the Ministry of Civil Aviation, the Airports Authority of India (AAI), the Directorate General of Civil Aviation (DGCA), government publications, research articles, scholarly journals and relevant aviation industry reports. The data relate mainly to the use of digital technologies in aviation and their impact on regional air connectivity through the UDAN scheme. The information is analyzed to comprehend the role played by digital transformation in making air travel convenient and efficient for passengers. The study also tries to understand the main challenges and opportunities of digitalization in regional aviation.

4.1 Research Design

This study adopts a descriptive and analytical research design. The descriptive design is used to explain the process of digital transformation in the Indian aviation industry and to describe the objectives, attributes and importance of the UDAN scheme in facilitating regional air connectivity. The analytical design is used to examine how digital technologies may help in achieving the objectives of the UDAN scheme through enhanced accessibility, passenger convenience, information and operational efficiency. This design also helps the study explore the advantages, drawbacks and future possibilities of using digital technologies in regional aviation. As the study is based mostly on secondary sources, information from government documents, aviation authorities, studies, journals and industry reports has been critically examined and analyzed.

4.2 Nature of the Study

The nature of the study is descriptive and analytical. It is descriptive because it describes digital transformation in the Indian aviation sector, the role and development of the UDAN scheme in improving regional air connectivity, and the contribution of different digital services to passenger convenience and efficiency. It is analytical because it examines different aspects of digital transformation in the context of the UDAN scheme. The research is based mainly on secondary data obtained from government publications, aviation authorities, research papers, academic journals and other relevant industry reports.

4.3 Data Sources

The study employs the secondary technique of data gathering, using information that has already been published and is accessible through trustworthy and pertinent sources. These include government publications, reports, research papers, academic journals, and aviation industry reports and websites concerning Indian aviation and the UDAN programme. Statistical information and reports from organisations such as the Ministry of Civil Aviation (MoCA), the Airports Authority of India (AAI) and the Directorate General of Civil Aviation (DGCA) are also included in the analysis, notably the RCS-UDAN scheme document (Ministry of Civil Aviation, 2017) and the RCS-UDAN Manual (Ministry of Civil Aviation, 2021). All data relating to digital technologies, regional air connectivity, passenger services, airport operations and the implementation of UDAN are drawn from these sources, and are then organized, analyzed and reviewed on the basis of the objectives of the study.

4.4 Methods of Data Collection

Data were collected through a review of government publications, reports, research papers, journal articles, aviation industry reports and websites regarding Indian aviation and UDAN, together with information published by organisations such as MoCA, AAI and DGCA. The collected information was organized, compared and reviewed according to the purpose of the research. Through this method, the researcher is able to gather relevant information and understand the role of digital transformation in facilitating regional aviation in India.

4.5 Data Analysis Methods

The gathered data are analyzed using descriptive and qualitative analysis techniques, in accordance with the research aims. Descriptive analysis helps reveal the importance of digital transformation in the Indian aviation sector and its

connection to the UDAN scheme, while qualitative analysis helps in examining major themes such as digital availability, passenger convenience, efficiency, technology adaptation, infrastructure and digital challenges. The qualitative analysis follows a simple thematic approach: the collected material is read, grouped under these recurring themes and compared across sources. Information from various sources is compared to identify common conclusions, advances and gaps concerning digital transformation and regional air connectivity. Finally, the information is interpreted to understand the benefits and challenges of digital transformation in the context of the UDAN scheme.

5. DATA ANALYSIS AND INTERPRETATION

5.1 Growth of UDAN Routes Operationalised (2017–18 to 2024–25)

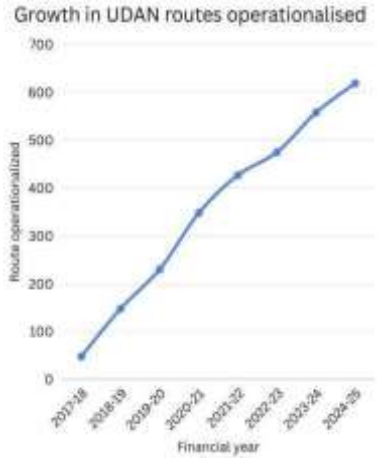


Figure 5.1: Growth in UDAN routes operationalised

Source: Compiled from Ministry of Civil Aviation, Government of India, UDAN data.

Analysis & Interpretation:

The graph shows a steady increase in UDAN routes from 48 in 2017–18 to 619 in 2024–25. This indicates significant expansion of regional air connectivity in India. The growing number of routes also increases the need for digital services such as online booking, digital payments and real-time flight information.

5.2 Growth in Passengers Travelled under UDAN

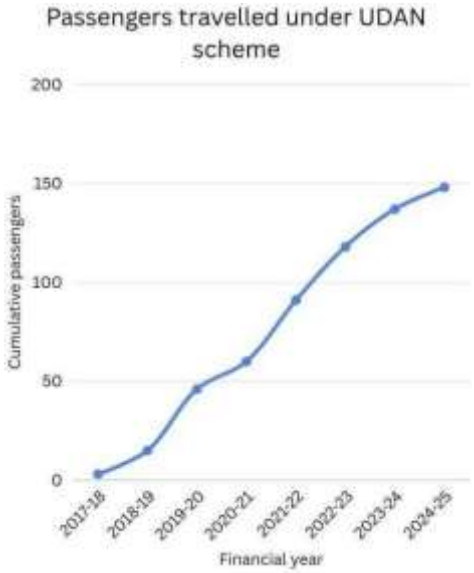


Figure 5.2: Cumulative passengers travelled under UDAN

Source: Compiled from Ministry of Civil Aviation, Government of India, UDAN data.

Analysis & Interpretation:

The graph shows a significant rise in cumulative passengers travelling under UDAN, from 3 lakh in 2017–18 to 148 lakh in 2024–25. This indicates growing utilisation of regional air connectivity. Digital services can support this growth by making booking, payments, check-in and access to flight information more convenient.

5.3 Digital Transformation and its Contribution to UDAN

Table 5.3: Contribution of digital technologies to UDAN

Digital Technology	Contribution to UDAN and Regional Aviation
Online ticket booking	Makes air travel more accessible by allowing passengers to book flights conveniently from anywhere.
Digital payments	Provides faster, easier and more convenient payment options for passengers.
Mobile applications	Provides access to flight schedules, booking details, notifications and other travel information.
Real-time flight information	Keeps passengers updated about flight timings, delays and cancellations.
Digital Technology	**Contribution to UDAN and Regional Aviation**
Digital check-in	Reduces waiting time and simplifies the passenger check-in process.
Biometric and contactless services	Improves passenger processing and reduces manual procedures at airports.

Source: Compiled by the author from the literature and sources reviewed.

Analysis & Interpretation:

The table shows that digital technologies can support the objectives of UDAN by improving accessibility, passenger convenience and operational efficiency. These technologies can make regional air travel easier and more efficient for passengers. However, challenges such as limited internet connectivity, digital literacy, cybersecurity and infrastructure need to be addressed for effective digital transformation in regional aviation.

5.4 Recent Development: Modified UDAN (2026)

Although the study period ends in 2024–25, a recent policy development is relevant context. On 25 March 2026 the Union Cabinet approved the Modified UDAN scheme for ten years, from 2026–27 to 2035–36, with a total outlay of ₹28,840 crore, including the development of 100 airports from existing unserved airstrips (Government of India, 2026). As on 28 February 2026, 663 routes had been operationalised across 95 airports, heliports and water aerodromes under the scheme. The continuation and expansion of UDAN strengthen the case for building digital infrastructure and services at regional airports, since the number of regional airports and routes is set to grow further.

6. STUDY PERIOD

The study covers the period from **2017–18 to 2024–25**. This period has been selected to examine the development and expansion of the UDAN scheme and the role of digital transformation in supporting regional air connectivity in India. The study analyses relevant secondary data, reports and information available during this period.

7. FINDINGS, SUGGESTIONS AND CONCLUSION

7.1 Findings

Based on the analysis of secondary data and the literature reviewed, the following findings emerge. Findings 1 and 2 are drawn directly from the data in Section 5, while findings 3 to 6 are interpretive and rest on the literature and the analysis of digital services in Section 5.3.

1. The UDAN scheme has played a significant role in enhancing regional air connectivity in India. The number of operational routes has increased from 48 in 2017–18 to 619 in 2024–25.

2. The number of passengers using the UDAN scheme has also increased greatly, from approximately 3 lakh in 2017–18 to 148 lakh in 2024–25.

3. Technologies such as online ticket booking, digital payments, mobile apps and real-time flight data have the potential to enhance accessibility and convenience for regional air passengers.

4. Digital check-in, biometric services and digital airport systems have the potential to reduce manual processes and improve operational efficiency.

5. The successful adoption of digital technologies in the regional aviation sector may be impeded by factors such as lack of internet connectivity, limited digital literacy, security concerns, inadequate infrastructure and shortage of skilled manpower.

6. Digital transformation appears to be an enabler for achieving the objectives of UDAN and building an accessible and efficient regional aviation network, although its impact has not been measured empirically in this study.

7.2 Suggestions

1. Enhance digital infrastructure at regional airports to enable effective implementation of digital services.

2. Airlines and airports operating under UDAN should provide online ticket booking, payment and passenger information systems.

3. Conduct digital awareness and literacy campaigns to encourage passengers from regional and underserved areas to take advantage of digital aviation services.

4. Adopt more digital check-in and contactless or self-service technology to minimize waiting time.

5. Implement cybersecurity and data protection policies to guarantee the safety of passengers' data.

6. Conduct regular training of employees on digital technology to improve their skills.

7. Government agencies, airline companies and airports should collaborate to promote digitalization and advance the objectives of the UDAN scheme.

CONCLUSION

The study concludes that digital transformation can play a major role in the development of the Indian aviation industry, especially in regional air connectivity through the UDAN scheme. The number of UDAN routes and passengers has grown substantially over the study period, which demonstrates the relevance of regional aviation in India.

Digital technologies such as online booking and payments, apps, real-time information, digital check-in and contactless services can be used to enhance the accessibility, convenience and efficiency of regional air travel. At the same time, the adoption of new technologies faces challenges such as the need for digital infrastructure, connectivity, literacy, cybersecurity and staff training.

Overall, the study concludes that UDAN provides a reliable basis for regional air connectivity, while digital transformation can enhance it by introducing more accessible, convenient and efficient aviation services.

BIBLIOGRAPHY & REFERENCES

1. Arndt, J. (2026). *Confidence in connectivity: Tracing government commitment through India's UDAN scheme.* Awareness Journals.

https://www.awarenessjournals.com/journal/confidence-in-connectivity-tracing-government-commitment-through-indias-udan-scheme

2. Balaji, P. (2026). *Digital Transformation of Indian Airlines.* International Journal of Creative Research Thoughts, 14(3), g351–g365.

3. Das, A. K., Bardhan, A. K., & Fageda, X. (2020). *New Regional Aviation Policy in India: Early*

Indicators and Lessons Learnt. Journal of Air Transport Management, 88, 101870.

4. Government of India. (2026, March 25). *Cabinet approves Regional Connectivity Scheme – Modified UDAN with a total outlay of Rs. 28,840 crore.*

https://www.pmindia.gov.in/?p=16818709

5. Iyer, K. C., & Thomas, N. (2020). *A Critical Review on Regional Connectivity Scheme of India.* Transportation Research Procedia, 48, 2020–2035.

https://doi.org/10.1016/j.trpro.2020.08.208

6. Jayathilakan, A., et al. (2026). *Stakeholder perspectives on the challenges to successful implementation and continuation of India's regional connectivity scheme – UDAN.* ScienceDirect. https://www.sciencedirect.com/science/article/pii/S2210539526001951

7. Jose, A., & Ram, S. (2019). *Influence of 'UDAN' Scheme on Network and Regional Connectivity of Indian Airports.* Urban India, 39(1), 7–27.

8. Ministry of Civil Aviation, Government of India. (2017). *Regional Connectivity Scheme (RCS/UDAN), Version 2.0.* Ministry of Civil Aviation, Government of India.

9. Ministry of Civil Aviation, Government of India. (2021). *Regional Connectivity Scheme – UDAN Manual 2021.* Ministry of Civil Aviation, Government of India.

****