

# An Empirical Study Passenger Awareness and Adoption of Digital Technologies at Cochin International Airport

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## Abstract

*The aviation industry is increasingly integrating digital technologies such as self-service kiosks, mobile check-ins, biometric authentication, and AI-assisted services to enhance passenger experience. This study investigates passenger awareness and adoption of digital technologies at Cochin International Airport (CIAL). Using a survey of 180 passengers, the study assesses awareness levels, perceived ease of use, utility, trust, and behavioural intention to adopt digital services. Data were analysed using descriptive statistics, ANOVA, regression analysis, and Structural Equation Modeling (SEM). Results reveal moderate awareness among passengers, with adoption positively influenced by perceived ease of use and trust. The study provides actionable insights for airport management to improve digital adoption and passenger satisfaction.*

**Keywords:** Passenger Awareness, Digital Technology Adoption, Airport Services, Cochin International Airport, Technology Acceptance Model

## Introduction

Digital transformation has become a cornerstone of modern airport operations worldwide. Airports are increasingly deploying technologies like self-service check-in kiosks, biometric systems, mobile boarding passes, and AI-powered customer assistance to improve efficiency and passenger experience. In India, initiatives such as Digi Yatra aim to streamline airport processes through facial recognition-based boarding and digital identification systems.

Despite the widespread availability of digital tools, passenger awareness and adoption vary significantly. Lack of knowledge, digital literacy, and trust concerns can hinder effective utilization. Understanding passenger awareness and adoption patterns is therefore critical for airports to optimize technology deployment and improve service quality. Cochin International Airport, being a leading Indian airport with high international and domestic traffic, provides an ideal setting to study passenger responses to emerging digital technologies.

## Literature Review

### Passenger Perceptions and Satisfaction

Studies indicate that passenger perceptions are central to successful technology adoption. Shiwakoti et al. (2022) examined airline passengers' satisfaction with digital technologies during the COVID-19 pandemic. They found that perceived ease of use, usefulness, and trust strongly influenced adoption behaviour. Passengers who perceive digital tools as simple and reliable are more likely to adopt them consistently.

### Conceptual Models for Technology Adoption

The Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) are widely applied in understanding technology adoption in airports. These frameworks consider factors such as perceived usefulness, ease of use, social influence, facilitating conditions, and behavioural intention. Such models provide a strong theoretical foundation for evaluating passenger awareness and willingness to adopt digital services.

### Global Airport Practices

International studies show that airports implementing effective awareness campaigns, training, and clear instructions achieve higher adoption rates for digital services. For example, airports in Singapore and Dubai report higher passenger engagement with self-service and biometric systems, driven by user-friendly interfaces and robust security measures. These findings highlight the importance of communication, trust-building, and passenger education in fostering digital adoption.

## Methodology

### Research Design

This study adopts a descriptive survey design to explore passenger awareness and adoption of digital technologies at Cochin International Airport.

### Population and Sample

- Population: Passengers traveling through Cochin International Airport.
- Sample Size: 180 passengers selected via convenience sampling, ensuring representation from both domestic and international travellers.

### Survey Instrument

A structured questionnaire was developed with sections covering:

1. Demographics: Age, gender, frequency of travel.
2. Awareness: Knowledge of digital services such as self-service kiosks, mobile check-ins, and Digi Yatra.
3. Ease of Use: Perceived simplicity in operating digital tools.
4. Perceived Utility: Benefits of using digital services.
5. Trust and Security: Concerns regarding personal data privacy and reliability of services.
6. Behavioural Intention: Likelihood of future use of digital technologies.

### Data Collection

Questionnaires were administered at airport terminals, before and after passenger use of digital services, with proper ethical considerations including informed consent and confidentiality.

## **Data Analysis**

### **Descriptive Statistics**

Descriptive measures summarize demographic profiles and awareness levels. Frequency distributions and percentages are used to present key findings.

### **Inferential Statistics**

- ANOVA assesses differences in awareness across demographic groups (e.g., age, gender, travel frequency).
- Regression Analysis examines the relationship between awareness, perceived ease of use, utility, trust, and behavioral intention.
- Structural Equation Modeling (SEM) tests the conceptual model derived from TAM and UTAUT frameworks, evaluating how perceived usefulness and ease of use influence adoption intention.

### **Tools**

Data analysis was conducted using SPSS 28 for descriptive and inferential statistics and AMOS 28 for SEM Modeling.

### **Discussion**

The study finds that passenger awareness at CIAL is moderate, with frequent travellers demonstrating higher familiarity with digital services. Ease of use and trust emerged as significant predictors of adoption intention, consistent with Shiwakoti et al. (2022) and international studies.

Passengers expressed concerns over data privacy and some reported difficulty navigating digital interfaces, especially first-time users. Comparison with international airports shows that comprehensive awareness campaigns and staff guidance can improve adoption rates.

The findings emphasize the need for continuous passenger education, user-friendly interfaces, and robust security measures to enhance trust and promote widespread adoption of digital technologies.

### **Conclusion and Recommendations**

The study highlights that while Cochin International Airport has integrated several advanced digital services, passenger awareness and adoption remain uneven. Key conclusions include:

- Awareness is positively correlated with travel frequency and prior exposure to digital services.
- Ease of use and trust significantly influence adoption intentions.
- Targeted awareness campaigns, clear instructions, and assistance for first-time users can improve adoption rates.

### **Recommendations**

1. Conduct regular passenger awareness programs highlighting benefits and usage of digital services.
2. Enhance user interface design for self-service kiosks and mobile applications.
3. Strengthen data security measures to build trust among passengers.
4. Train airport staff to guide passengers in using digital services effectively.
5. Monitor passenger feedback to continually refine digital technologies and services.

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