Airline Passenger Satisfaction – Business Intelligence Report

1. Introduction

This project focuses on analyzing airline operational performance and passenger satisfaction using Business Intelligence techniques. The objective is to calculate key airline KPIs and present insights through an interactive Power BI dashboard to support data-driven decision-making.

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2. Dataset Description

The analysis uses the **Airline Passenger Satisfaction** dataset, where each row represents an individual passenger.
Key attributes include:

- Arrival and departure delays (minutes)
- Passenger class (Economy, Business)
- Customer type (Loyal, New)
- Flight distance
- Overall satisfaction level

The dataset was cleaned and prepared using Microsoft Excel before analysis.

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3. Tools & Technologies

- **Excel**: Data cleaning and preprocessing
- **SQL**: KPI logic validation and aggregation

- **Power BI**: Data modeling, DAX calculations, and dashboard visualization

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4. Key Performance Indicators (KPIs)

4.1 On-Time Performance (OTP %)

OTP measures the percentage of passengers whose flights arrived within 15 minutes of the scheduled time.

Business Rule:
Arrival Delay ≤ 15 minutes → On-Time

This KPI reflects airline punctuality and operational efficiency.

4.2 Average Arrival Delay

Average arrival delay indicates the overall punctuality performance of flights and helps identify service reliability issues.

4.3 Total Passengers

Total passengers are calculated as the total number of records in the dataset, since each row represents one passenger.

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5. Dashboard Overview

An interactive Power BI dashboard was developed featuring:

- KPI cards for OTP %, average arrival delay, and total passengers
- Visual analysis of satisfaction by class and customer type
- Delay impact on passenger satisfaction

- Slicers for class, gender, and customer type

The dashboard enables quick performance monitoring and comparative analysis.

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6. Key Insights

- Passengers experiencing delays beyond 15 minutes show significantly lower satisfaction levels
- Business class passengers report higher satisfaction and lower average delays
- Loyal customers demonstrate greater tolerance toward minor delays compared to new customers

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7. Conclusion

This project demonstrates how airline operational and customer data can be transformed into actionable insights using Business Intelligence tools. The dashboard provides a clear, executive-ready view of punctuality and passenger experience, supporting informed decision-making for airline management.