Business Intelligence Project – Week 1 Use Case Proposal

Business Intelligence Analysis of Airline Passenger Satisfaction

Group Members

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1. Industry & Organization Description

Industry: Aviation / Air Transportation Services

Organization Description:
The dataset represents a **fictional commercial airline company** operating domestic and international flights. The airline serves thousands of passengers daily and collects feedback through post-flight satisfaction surveys. These surveys capture passenger demographics, flight characteristics, service quality ratings, and overall satisfaction.

The airline's management aims to use Business Intelligence tools to better understand passenger satisfaction drivers, improve service quality, and enhance customer retention.

The data used in this project is anonymized and publicly available, making it suitable for academic analysis and BI solution development.

2. Business Problem

Despite collecting a large amount of customer feedback data, the airline struggles to:

- Identify the main factors influencing passenger satisfaction
- Understand differences in satisfaction across customer segments
- Monitor service performance consistently
- Support data-driven decisions for service improvement

Currently, decisions are often based on intuition rather than structured insights. Without a centralized BI solution, it is difficult for management to track satisfaction KPIs and prioritize improvement actions.

Business Objective:
Design and implement a Business Intelligence solution that analyzes passenger satisfaction data to identify key drivers of satisfaction, monitor performance indicators, and support strategic and operational decision-making.

3. Dataset Overview

Dataset Name: Airline Passenger Satisfaction Dataset
Source: Kaggle (public dataset)
Format: CSV
Approximate Size: 25,000+ rows
Data Type: Survey and flight operational data

Main Attributes Include:

- Passenger ID
- Gender
- Customer Type (Loyal / Disloyal)
- Age
- Type of Travel (Business / Personal)
- Class (Economy / Business / Eco Plus)
- Flight Distance
- Inflight service ratings (seat comfort, food, wifi, cleanliness, etc.)
- Departure and arrival delay
- Overall Satisfaction (Satisfied / Neutral / Dissatisfied)

This dataset exceeds the minimum requirement of 10,000 rows and is suitable for dimensional modeling.

4. Analytical Questions

1. What percentage of passengers are satisfied vs dissatisfied?
2. How does satisfaction differ by customer type (loyal vs disloyal)?
3. How does travel class impact passenger satisfaction?
4. Which service factors have the strongest impact on satisfaction?
5. Does flight distance affect satisfaction levels?
6. How do delays influence passenger satisfaction?
7. Is there a difference in satisfaction between business and personal travelers?
8. How does age group influence satisfaction?
9. Which services receive the lowest ratings?
10. How does satisfaction vary across different flight types?

5. Key Performance Indicators (KPIs)

1. **Overall Satisfaction Rate (%)**
2. **Number of Passengers**
3. **Satisfaction Rate by Class**
4. **Satisfaction Rate by Customer Type**
5. **Average Service Rating Score**
6. **Delay Impact Index** (satisfaction vs delays)
7. **Business Traveler Satisfaction Rate**
8. **Loyal Customer Satisfaction Rate**
9. **Average Flight Distance by Satisfaction Level**

6. Initial Data Model Overview

The BI solution will be built using a **star schema** structure.

Fact Table

Fact_Satisfaction - Passenger ID - Satisfaction Flag (Satisfied / Not Satisfied) - Service Ratings (numeric) - Delay Minutes

Dimension Tables

Dim_Passenger - Passenger ID - Gender - Age Group - Customer Type

Dim_Flight - Flight Distance - Type of Travel - Class

Dim_Service - Seat Comfort - Food & Drink - Wifi - Cleanliness

This structure meets the requirement of at least one fact table and three-dimension tables.

7. Business Value

The BI solution will allow airline management to:

- Identify key satisfaction drivers
- Improve low-performing service areas
- Enhance loyalty programs
- Reduce dissatisfaction caused by delays
- Support strategic decisions using data-driven insights

8. Conclusion

This project aims to develop a complete Business Intelligence solution that transforms raw passenger satisfaction data into actionable insights. By leveraging KPIs, dashboards, and analytical questions, the airline can improve service quality and customer experience while strengthening decision-making capabilities.