UK Train Rides Analysis - Project Proposal

Project Description

In this project, we will work on UK train ride data to get useful insights for decision-makers. We will clean and prepare the data, decide on analysis questions, and forecast the number of rides and revenue for the next month. Then, we will create an interactive Power BI dashboard. At the end, we will submit a final report and presentation with the results.

Group Members & Roles

Malak Ahmed (leader): Oversees project execution, ensures coordination, and manages deadlines & Power BI Dashboard Developer.

Sara Salama: Data Cleaning & Preprocessing Specialist

Sherry Adel: Data Analyst & Question Designer

Rana Waleed: Report & Presentation Specialist

Objectives

Data Quality: Clean and preprocess the dataset to ensure accuracy and completeness.

Performance Analysis: Identify key performance indicators for railway operations.

Revenue Optimization: Analyze pricing strategies and revenue patterns.

Forecasting: Predict future ridership and revenue patterns to support operational and financial planning.

Service Improvement: Identify patterns of delay and reasons for cancellations.

Strategic Insights: Provide actionable recommendations for business strategy.

Tools & Technologies

Primary Tool: Microsoft Power BI

Data Processing: Power Query, DAX

Visualization: Power BI dashboards and reports

Documentation: Microsoft Office (Word – PowerPoint)

Milestones & Deadlines

Week 1: Data Cleaning and Preprocessing

- Data validation and quality assessment
- Handle missing values and inconsistencies
- Create calculated columns and measures
- Data type standardization

Deliverable: Cleaned dataset and preprocessing documentation

Week 2: Analysis Questions Phase

- Define comprehensive analysis questions
- Develop a forecasting model for next month's ridership
- Analyze revenue patterns and ticket class demand
- Identify key business metrics

Deliverable: Analysis framework and forecasting results

Week 3: Dashboard Phase

- Design an interactive Power BI dashboard
- Implement data visualizations
- Create a user-friendly interface
- Ensure cross-filtering and drill-through capabilities

Deliverable: Functional Power BI dashboard

Week 4: Final Presentation

- Practice presentation
- Compile a comprehensive project report
- Prepare presentation materials
- Finalize insights and recommendations

Deliverable: Final report and presentation deck

Key Performance Indicators (KPIs)

1. Data Quality Score (Accuracy & Completeness)

Target: Less than 2% missing or incorrect data after cleaning.

Measurement: Percentage of complete, accurate records in the final dataset.

Success Criteria: 98% data accuracy rate.

2. Dashboard Performance (Load Time)

Target: Dashboard loads within 5 seconds.

Measurement: Average load time across different data volumes.

Success Criteria: Consistent sub-5-second performance.

3. Interactivity & Usability Score (Positive Feedback)

Target: 90% positive feedback on dashboard usability.

Measurement: User testing feedback scores (1-5 scale).

Success Criteria: Average rating of 4.5/5 or higher.

4. Number of Key Insights Generated

Target: Minimum 15 meaningful business insights.

Measurement: Count of actionable insights that impact decision-making.

Success Criteria: Insights covering revenue, operations, and customer behavior.

5. Report Distribution & Accessibility

Target: 100% accessibility for target users without technical issues.

Measurement: User access success rate and feedback.

Success Criteria: Zero reported access issues.

6. Visualization Effectiveness (Readability Score)

Target: 95% clarity score in visualization assessment.

Measurement: Based on the data visualization best practices checklist.

Success Criteria: Clear, intuitive, and professional visual representations.