Project Report: Cab Booking Data Analysis and Interactive Dashboard

Objective: The primary objective of this project was to analyse a comprehensive dataset comprising one month of cab booking data. The goal was to extract actionable insights related to customer behaviour, operational performance, and revenue patterns. The findings were visualized using an interactive and navigable Power BI dashboard, designed to address key areas of interest. The dashboard is segmented into five key areas: Overall, Vehicle, Revenue, Cancelled, and Ratings, offering stakeholders a clear and detailed view of the business operations.

Tools and Technologies Used:

1. **Data Storage and Querying:**
    - **MySQL:** Used to store the cab booking dataset, ensuring efficient data management and retrieval. SQL queries were employed to clean, preprocess, and analyze the data.
    - **SQL:** Provided the foundation for data manipulation and enabled querying to answer specific business questions.
2. **Data Visualization and Dashboarding:**
    - **Power BI:** Leveraged for creating a dynamic, user-friendly dashboard that presents the analysis in a structured and visually engaging format.

Process:

1. **Data Import and Storage:**
    - The cab booking dataset, covering the time frame from **01-07-2024** to **31-07-2024**, was imported into MySQL.
    - Data preprocessing steps included:
        - Handling missing values.
        - Resolving inconsistencies in booking statuses and payment methods.
        - Standardizing field names for easier analysis.
2. **Data Analysis:**
    - A series of SQL queries were executed to uncover trends and patterns in the dataset:
        - **Booking Trends:** Analysed daily and weekly fluctuations in booking volume.
        - **Revenue Analysis:** Segmented revenue by payment method and customer contributions.
        - **Cancellation Patterns:** Identified reasons for cancellations and their distribution among drivers and customers.
        - **Customer Ratings:** Evaluated ratings to determine overall satisfaction and detect potential areas for improvement.

- Key metrics computed included:
    - Total bookings.
    - Revenue distribution by payment method.
    - Success and cancellation rates.
    - Average customer ratings.

3. **Dashboard Development:**
    - The Power BI dashboard was meticulously designed to be both informative and user-friendly. It features:
        - **Overall Page:** Highlights total bookings, overall revenue, and a booking status breakdown, complemented by a line graph illustrating booking trends over time.
        - **Vehicle Page:** Delivers insights into the performance of different vehicle types, showing metrics such as revenue contribution, average distance per ride, and usage frequency.
        - **Revenue Page:** Explores revenue metrics, including a detailed breakdown by payment methods (Cash, UPI, Credit Card, Debit Card) and identifies top customers based on booking value.
        - **Cancelled Page:** Examines cancellation trends, categorizing reasons and highlighting rates for both driver and customer-initiated cancellations.
        - **Ratings Page:** Visualizes customer feedback through a distribution of ratings, identifying satisfaction levels and temporal trends.

Insights Derived:

1. **Total Bookings:** Recorded 103,024 bookings, with a success rate of 62.09%, indicating operational stability but highlighting room for improvement in reducing cancellations.
2. **Revenue Insights:** Cash emerged as the dominant payment method, followed by UPI, reflecting customer preferences.
3. **Cancellation Analysis:** With a cancellation rate of 28.08%, a significant proportion of rides were affected by driver and customer cancellations, necessitating interventions to improve reliability.
4. **Customer Ratings:** Average ratings consistently hovered around 4.00, signifying general satisfaction but revealing opportunities for addressing specific pain points like cancellations and service quality.

Dashboard Features:

- **Interactivity:**
    - Filters and slicers provide dynamic capabilities, enabling users to explore data based on time, vehicle type, and payment preferences.
    - Drill-down features offer deeper insights into specific metrics, such as revenue trends and customer behaviour.
- **Navigation:**
    - Intuitive navigation buttons and a clean layout facilitate seamless transitions between different sections of the dashboard.
    - Tooltips add context to visualizations, enhancing user understanding.
- **Visual Appeal:**
    - A mix of line graphs, bar charts, pie charts, and data tables ensures clarity and accessibility.
    - Thoughtfully chosen colour schemes and layout designs enhance readability.

Conclusion: This project showcases the effective integration of MySQL and Power BI to deliver actionable insights into cab booking operations. The comprehensive analysis and visualizations provide a roadmap for addressing operational inefficiencies, improving customer satisfaction, and optimizing revenue streams. The interactive dashboard serves as a powerful tool for decision-makers, enabling them to monitor performance and implement strategic improvements with ease.