Website Performance Analysis

Step 1: Import Required Libraries

Imported essential Python libraries such as NumPy for numerical computations, Pandas for data manipulation and analysis, and Matplotlib and Seaborn for data visualization.

Step 2: Exploratory Data Analysis (EDA)

A. Data Cleaning: Removed unnamed or redundant rows to ensure data consistency.
B. Data Type Conversion: Converted columns to appropriate data types for analysis.
C. Feature Engineering: Created a new column ‘DateHour’ to separate date and hour components.

Step 3: Data Visualization and Business Insights

A. Sessions and Users Over Time: Analyzed the patterns and trends in website traffic to understand how user visits fluctuate over different periods.
B. Total Users by Channel: Identified which marketing channels drive the highest number of users, providing insights for optimizing marketing strategies.
C. Average Engagement Time by Channel: Compared engagement times across channels to evaluate content effectiveness and audience interest.
D. Engagement Rate Distribution by Channel: Visualized how engagement rates vary across different traffic sources to identify high-performing channels.
E. Engaged vs Non-Engaged Sessions: Compared the proportion of engaged sessions to non-engaged ones to assess overall user interaction quality.
F. Traffic by Hour and Channel: Created a heatmap to visualize peak activity hours across various traffic channels for targeted content scheduling.

Conclusion

The Website Performance Analysis project provided valuable insights into user behavior, channel performance, and engagement patterns. By leveraging data-driven visualization and exploration, actionable recommendations can be derived to enhance website engagement and marketing effectiveness.