**Case Study:** Analyzing Consumer Behavior for E-commerce Optimization

**Background:**

An e-commerce company has seen fluctuating sales over the past year and wants to understand the factors influencing consumer behavior. The company's goal is to optimize its marketing strategies and improve user experience on its platform to boost sales.

**Problem Statement:**

The analysis should answer the following questions:  
  
1. What are the key factors that predict whether a user will make a purchase?  
2. How does the source of traffic affect user behavior and sales outcomes?  
3. Can we segment the customer base in a way that allows for targeted marketing?  
4. Is there a correlation between website performance metrics and user behavior?  
5. What actionable steps can the company take to improve the user experience and increase sales?

**Methodology:**

1. Data Acquisition and Transformation:

* Obtained the dataset and imported it into Power BI.
* Cleaned and transformed the data to ensure accuracy and consistency, preparing the data for analysis.

2. Key Metric Creation:

* Defined relevant key metrics using DAX and calculated columns, including Total Sessions, Conversion Rate, and Average Loading Speed.

3. Customer Segmentation:

* Utilized matrix visuals to segment the customer base by age group and traffic source.
* Analyzed customer behavior and preferences based on age group and traffic source segments.

4. Time Analysis:

* Extracted timing information from timestamps to categorize sessions into different time periods (e.g., night, evening).
* Utilized time period information to analyze user behavior and preferences during different times of the day.

5. Dashboard Creation:

* Developed visually appealing charts and visualizations to represent key metrics and insights.
* Included KPIs such as Total Sessions, Conversion Rate, and Average Loading Speed on the dashboard.
* Integrated a funnel graph to visualize the session flow from sessions to add-to-cart to check-out.
* Created line and stacked column charts to compare Conversion Rate and Total Sessions, as well as Check-out Rate and Average Loading Speed over time.
* Incorporated matrix visuals to analyze customer behavior by age group and traffic source, as well as by time period and age group.

**Insights & Recommendations:**

1. **Key Factors Predicting Purchase:**

• Age Group: Users **aged 18-35** are more likely to make a purchase.

• Traffic Source: Users coming from **email** and **direct search** are more likely to make a purchase.

1. **Impact of Traffic Source on User Behavior and Sales Outcomes:**

• Overall Conversion Rate: The overall conversion rate is 72.1%, with a high add-to-cart rate of 99.8%.

• **Email**: Email traffic has the highest conversion rate at **74.2%.**

• **Social Media**: Social media traffic has the lowest conversion rate at **69.92%.**

1. **Customer Segmentation for Targeted Marketing:**

• 18-25: Targeted marketing can focus on **paid ads** and **social media**.

• 26-35: **Direct search** can be a key strategy for this segment.

• 36-45: **Email** and **social media** can be effective channels for targeting this age group.

• 46-65: **Email marketing** may be the most effective approach for this demographic.

1. **Correlation Between Website Performance Metrics and User Behavior:**

• **Loading Speed**: There is a negative correlation between loading speed and conversion rate. When loading speed increases, the conversion rate tends to decrease.

1. **Actionable Steps for Improving User Experience and Increasing Sales:**

• **Desktop**: Focus on improving loading speed for Windows and iOS users, as slower loading times may be affecting conversion rates.

• **Mobile**: Address loading speed issues, particularly for Linux and Android users, and explore strategies to improve conversion rates for iOS users.

• **Tablet**: Optimize loading speed for Linux users and implement strategies to increase conversion rates for Android and Windows users.

Overall, tablets show higher conversion rates, while Linux users experience longer loading times.