

User Behavior and Order Trends Analysis: Insights for Optimizing Engagement and Revenue

Objective

The goal of this project is to examine datasets relating to user behavior, culinary preferences, and order trends. The analysis focuses on cleaning and combining data, determining the correlations between cooking sessions and user orders, finding popular recipes, and investigating demographic characteristics that influence user behavior. Visualizations are made to highlight insights, and a report is generated to summarize the findings and make business suggestions.

Datasets Used

UserDetails: This section contains information about the user, including demographics.

CookingSessions: Record information regarding cooking sessions, such as duration and food type.

OrderDetails: Manages user orders, ratings, and dishes.

Data Cleanup and Preparation

Null Value Handling:

UserDetails: No significant null values were discovered.

CookingSessions: Missing values were minimized and eliminated.

OrderDetails: Null entries in the ratings column were filled with the mean rating.

Data Merging: The datasets were combined into a single DataFrame (final_data) with shared columns (user_id and session_id).

Analysis

1. Top 5 Users with the Most Orders.

A bar chart shows the top five users who placed the most orders. These users are important contributors to the business and present chances for loyalty rewards.

2. Top Five Most Ordered Locations

According to bar chart research, the most orders are placed in New York, Los Angeles, Chicago, San Francisco, and Seattle, indicating that targeted advertising should be conducted in these areas.

3. Meal Type Trends.

A line chart shows that dinner is the most commonly requested meal type, followed by breakfast and lunch. This suggests the possibility of extending evening services and targeted meal promotions.

4. Session duration by meal type

According to the bar charts, supper sessions last the longest, followed by breakfast and lunch. Enhancing dinner experiences may increase consumer happiness.

5. The most popular dishes.

A bar chart shows spaghetti and grilled chicken as the most popular dishes. This finding points to chances for menu innovation and promotional bundling.

6. Age Distribution.

A pie chart depicts age distribution, with 28, 35, and 42-year-olds accounting for 23.7% of the user base. Marketing strategies targeting these age groups could increase engagement.

7. Peak Order Times.

A line chart shows that nighttime is the peak order time, whereas daytime and morning orders are lower. Nighttime-specific advertising could boost order volume.

8. Most Expensive Orders

The study revealed that Alice Johnson placed the most expensive order, valued at \$15. High-spending users, such as Alice, are lucrative to loyalty programs.

9. Order Completion or Cancellation

Completed Orders: The majority of users were able to finish their orders, demonstrating high operational efficiency.

Canceled Orders: Charlie Lee had the highest cancellations, indicating the need for additional research into potential service difficulties.

Visualizations:

- Bar charts show the most popular users, the most frequently ordered places, and the favorite dishes.
- Line charts show meal type trends and peak order hours.
- Age distribution as shown by a pie chart.
- Summary metrics include session duration and most expensive orders.

Findings and insights:

Top Users and Locations: The majority of orders are driven by a small number of users and localities, creating opportunity for loyalty and regionally targeted promotions.

Meal Type Trends: Dinner orders are the most popular, but there is space for improvement in lunch and breakfast engagement.

Popular Dishes: Spaghetti and grilled chicken are popular, indicating possibilities for menu development.

Demographics: The bulk of customers are aged 28, 35, and 42, emphasizing crucial target markets.

Peak Times: Because nights account for the majority of order activity, overnight operations and promotions must be optimized.

Order difficulties: Focusing on resolving cancellation difficulties might boost overall customer satisfaction

Business recommendations

Loyalty Programs: Create unique rewards for high-value users to keep them.

Location-Based Marketing: Promote and expand in high-demand cities such as New York and Los Angeles.

Dinner Promotions: Expand dinner menus and improve session experiences to capitalize on increasing demand.

Popular Dish Bundles: Create combinations with pasta and grilled chicken.

Demographic targeting involves tailoring marketing campaigns to the dominant age groups.

evening Offers: Offer exceptional bargains during peak evening hours.

Feedback Loops: Address issues that cause order cancellations to reduce churn.

Premium Services: Provide premium choices for dinner sessions lasting longer.

Conclusion

The study identifies major opportunities for improving customer engagement and operational efficiency. Dinner is the most common meal type, with peak orders occurring at night. Targeted marketing initiatives aimed at certain places and demographics, paired with loyalty awards for top users, can help drive growth. Addressing cancellation concerns and providing premium services during dinner sessions could improve the user experience and increase revenue. By exploiting these data, the company is well positioned to grow its market presence and foster long-term consumer loyalty.