Zomato Sales Dashboard Report

SHIVENDRARAJ GODBOLE

Roll no.: 24M0051

Introduction

Project Scope and Objective

- The primary objective of this dashboard is to deliver a data-driven tool that aids in monitoring, analyzing, and improving Zomato's sales operations. By integrating multiple data sources, this dashboard aims to provide actionable insights that can drive strategic business decisions, optimize marketing efforts, and improve customer satisfaction.

Zomato Overview

Zomato is a leading online food delivery and restaurant discovery platform that operates globally. With millions of users and thousands of partner restaurants, understanding sales dynamics and customer preferences is crucial for maintaining competitive advantage.

Significance of Sales Analysis in the Industry:

For a platform like Zomato, which deals with high transaction volumes daily, analyzing sales data provides key insights into revenue trends, customer loyalty, operational bottlenecks, and market positioning.

Data Sources and Preparation

Datasets Overview:

- The project involves six primary datasets, each containing critical data points:

1. **Orders Dataset**: Contains details such as order ID, order date, total amount, discount applied, payment method, and delivery status. This dataset serves as the foundation for calculating sales metrics.

2. **Food Dataset**: Includes granular details of individual food items, such as item ID, item name, category (e.g., starter, main course, dessert), unit price, and serving size.

3. **Menu Dataset**: Represents the menu offerings of partner restaurants, including item availability, customizable options, combo deals, and time-based promotions.

4. **Order-Type Dataset**: Classifies orders into different types like delivery, takeaway, and dine-in. This classification helps in analyzing customer preferences and operational efficiency.

5. **Restaurant Dataset**: Holds information about partner restaurants, including restaurant ID, name, cuisine type, location (city, neighborhood), average rating, and number of reviews.

6. **Users Dataset**: Encompasses customer data such as user ID, age, gender, location, order history, preferred cuisine, and spending behavior.

1. Data Cleaning Techniques:

- Addressed missing values using multiple approaches (e.g., interpolation, median substitution for numeric fields).

- Handled inconsistent formats by standardizing date formats, categorizing order types, and ensuring uniform currency representation across price fields.

- Removed duplicates to maintain data integrity, especially in user and order datasets, ensuring accurate analysis.

- Data Transformation Processes in Power Query:

- Performed data merges using unique keys like Order ID, User ID, and Restaurant ID to create a cohesive data model.

- Transformed categorical data into binary fields (e.g., food category, order type) to facilitate more efficient slicing and dicing of data.

- Created calculated columns for essential metrics (e.g., Total Sales = Unit Price * Quantity), and used aggregation techniques to generate summary tables for quick analysis.

2. Handling Outliers:

- Identified outliers in metrics like order amount and item price using statistical methods (e.g., IQR) and flagged them for further review or exclusion.

3. Dashboard Design and Development

- Design Approach and Principles:

- Adopted a modular design with separate views or pages for different insights, such as Sales Overview, Restaurant Performance, and Customer Analysis.

- Emphasized the importance of clear data storytelling by incorporating intuitive color schemes (e.g., green for positive trends, red for negative), consistent font sizes, and simplified navigation.

- Data Model Architecture:

- Constructed a star schema with Orders at the center, linking to dimension tables like Restaurants, Users, Menu, and Order Types. This structure enhances query performance and provides flexibility in reporting.

- Defined relationships with appropriate cardinalities (e.g., many-to-one between Orders and Restaurants) to avoid ambiguous data joins or circular references.

- Use of DAX for Calculated Metrics:

- Designed custom DAX formulas for metrics like:

- Total Revenue: `SUMX(Orders, Orders[Quantity] * Menu[Unit Price])`

- Average Order Value (AOV): `DIVIDE(SUM(Orders[Order Amount]), COUNTROWS(Orders))`

-Customer Retention Rate: `CALCULATE(DISTINCTCOUNT(Users[User ID]), FILTER(Orders, Orders[Order Date] > Date-3-Months)) / Total Customers`

- Visualization Breakdown:

3. Sales Performance Overview:

1. - Line Chart: Monthly sales trends broken down by restaurant or cuisine type, enabling users to identify seasonality and market shifts.

- Cumulative Sales: An area chart visualizing cumulative revenue growth over time.

2. Top Menu Items Analysis:

- Stacked Bar Chart: Displays the contribution of different categories (e.g., desserts, beverages) to total sales.

- Tree Map: Provides a hierarchical view of menu items based on popularity and sales value.

3. Order Distribution by Type:

- Pie Chart: Visualizes the share of each order type (e.g., delivery, dine-in) in the total order count.

- Time Series Analysis: Helps in understanding how the preference for order types changes throughout the day or week.

4. Restaurant Performance Comparison:

   - Bar Chart with Conditional Formatting: Highlights top and bottom-performing restaurants based on sales, with color coding indicating performance tiers.

   - Location-Based Analysis: Interactive maps showing sales density by city or neighborhood, with filters for cuisine type.

   5. Customer Demographics and Behavior:

   - Segmented Bar Charts: Break down sales by age group, gender, and spending behavior, enabling targeted marketing strategies.

   - Customer Loyalty Analysis: A scatter plot correlating frequency of orders with average order value, identifying key customer segments like loyalists and high spenders.

4. Interactive Features

   - Dynamic Slicers and Filters:

   - Implemented dynamic date slicers allowing users to select custom date ranges for granular time-based analysis.

   - Multi-select filters for restaurant type, cuisine, and location enable personalized reporting, catering to specific analysis needs (e.g., analyzing only fine dining restaurants).

   - Drill-Down and Drill-Through Functionality:

   - Users can drill down from yearly sales trends to monthly or daily views for finer detail.

   - Drill-through reports are available for detailed exploration (e.g., drilling into a specific restaurant's performance to see detailed customer reviews and sales breakdown).

   - Conditional Formatting and Alerts:

   - Applied conditional formatting in tables to highlight key metrics like revenue growth or decline. For example, if monthly revenue drops by more than 10%, it's highlighted in red.

   - Set up visual cues and alerts (e.g., warning icons) for underperforming KPIs, which signal potential operational issues.

5. Insights and Analysis

   - Sales Patterns and Peaks:

- Analysis reveals that weekends account for the highest sales volumes, especially during dinner hours (6-9 PM). Promotions and discounts during these times could further boost sales.

  - Menu Optimization:

  - Identified high-demand items (e.g., popular combos, bestselling beverages) that consistently drive sales. Restaurants should focus on these core offerings while considering rotating lesser popular items.

  - Order Type Preferences:

  - The data shows a marked preference for delivery over dine-in or takeaway. Delivery orders also have a higher average basket size, suggesting targeted delivery promotions could be effective.

  - Customer Segmentation Insights:

  - Younger customers (ages 18-25) tend to prefer fast food and order frequently but with lower spend per order, while older demographics (ages 35+) spend more on each order but order less frequently.

  - Cross-referencing user preferences and order history suggests that promotions targeting specific cuisines (e.g., discounts on Asian cuisine) can increase order frequency among certain segments.

6. Challenges and Solutions

  - Complex Data Merging: Integrating six datasets with multiple joins was challenging. Using bridge tables and carefully managing relationships in Power BI resolved ambiguities and ensured data integrity.

  - Large Data Volumes Affecting Performance: As data size grew, the dashboard performance slowed down. Optimized the data model by reducing unnecessary columns, aggregating data, and applying query folding techniques in Power Query.

  - Inconsistent User Data: Incomplete or incorrect user profiles posed challenges in customer analysis. Mitigated this by focusing analysis on verified user profiles and implementing validation checks during data cleaning.
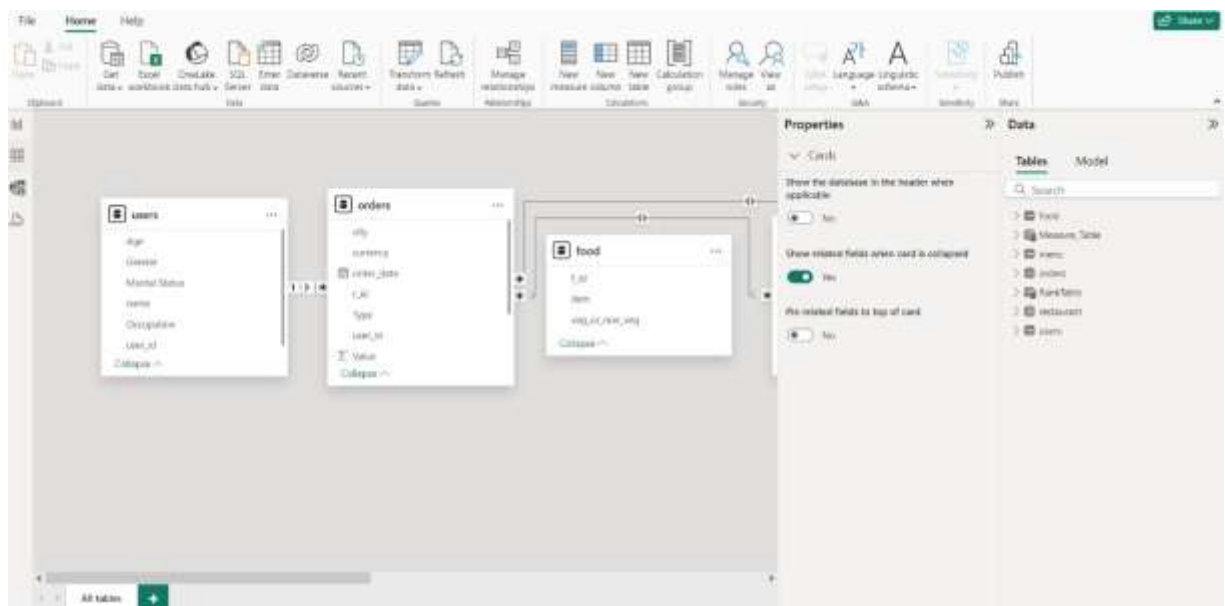
7. Conclusion and Recommendations

- Summary of Key Findings:

- The dashboard uncovers critical sales drivers such as peak ordering times, preferred food items, and high-performing restaurants.

- Detailed customer segmentation allows for better-targeted promotions, optimizing both customer acquisition and retention strategies.

- Strategic Recommendations:

- Restaurant Partnerships: Based on location-specific data, expand partnerships with high-performing restaurants in under-served regions.

- Promotional Strategies: Implement targeted discounts on popular menu items during peak times and tailor promotions to demographic preferences.

- Operational Improvements: Analyze underperforming restaurants to identify bottlenecks, such as delivery delays or menu issues, and take corrective actions.

- Future Enhancements:

- Incorporate machine learning models within Power BI for predictive analytics, like forecasting sales trends and customer churn.

- Expand the data sources to include customer feedback, enabling sentiment analysis