

Restaurant Feature Analysis Level 2: Report

This Level 2 report dives deeper into the restaurant dataset, analyzing the relationship between key restaurant features and customer ratings. The goal is to uncover meaningful insights that can inform restaurants on how to enhance customer satisfaction and improve service offerings. By focusing on features such as table booking, online delivery, price range, and engineered features, this report outlines strategic opportunities for optimizing service and customer engagement.

Task 1: Table Booking and Online Delivery

Analysis

The analysis in this section focuses on the availability and usage of table booking and online delivery services, examining how these features correlate with restaurant ratings. The dataset reveals that both services are underutilized among restaurants:

- **12.12% of restaurants offer table booking**, indicating a low adoption rate for this feature.
- **25.66% of restaurants provide online delivery**, suggesting that delivery services are still not widely offered across the dataset.

Key Findings

- **Table Booking:** Restaurants that offer table booking receive higher average ratings (**3.44**) compared to those without table booking services (**2.56**). This substantial difference suggests that providing table booking significantly enhances the customer experience, offering greater convenience and potentially elevating the restaurant's reputation.
- **Online Delivery:** The availability of online delivery is more common in **Price Range 1** (budget-friendly restaurants), with 32.1% of restaurants in this range offering delivery services. In contrast, only 8.9% of restaurants in **Price Range 4** (Premium restaurants) provide online delivery, suggesting a correlation between price sensitivity and delivery service adoption. High-end establishments appear to prioritize a **dine-in experience**, while lower-priced restaurants focus on providing **convenient delivery options**.

Insights and implications

- **Market Potential:** The low overall adoption rates of table booking and online delivery present significant **growth opportunities**. Restaurants, especially in higher price ranges, can expand their services by offering table booking or enhancing their delivery capabilities, potentially attracting a broader customer base.
- **Customer Experience Enhancement:** Offering **table booking** and **online delivery** can significantly improve customer convenience. Given that customers are likely to reward this with higher ratings, restaurants could see a direct impact on customer satisfaction.
- **Targeted Service Offerings:** Restaurants in different price ranges can **tailor their services** to match customer expectations. For budget-friendly establishments, delivery services are essential, while higher-end restaurants should focus on refining the dine-in experience, potentially incorporating table booking for added convenience.

Task 2: Price Range Analysis

Analysis

This task explored the relationship between a restaurant's price range and its average aggregate ratings. The findings suggest a clear correlation between **price range** and **customer satisfaction**, with higher-priced restaurants generally receiving better ratings. The data highlights the popularity of budget-friendly options while simultaneously demonstrating that customers tend to rate higher-priced restaurants more favorably.

Key Findings

- **Most Common Price Range:** Restaurants in **Price Range 1** are the most frequent in the dataset, representing budget-friendly options. This highlights the **preference for affordable dining** choices in the regions represented by the data.
- **Average Rating Trends:** There is a positive correlation between **price range** and **customer ratings**. Restaurants in **Price Range 4** receive the highest average rating (**3.82**), whereas those in **Price Range 1** receive an average rating of **2.91**. This suggests that customers likely have **higher expectations** from premium establishments and reward them with better ratings when these expectations are met.

Insights and implications

- **Customer Expectations:** Higher-priced restaurants are expected to provide **superior service, quality, and ambiance**, leading to higher ratings. These establishments must maintain high standards to justify their price points and meet customer expectations.
- **Pricing Strategy Optimization:** Restaurants in **lower price ranges** may focus on delivering value for money, offering affordable yet high-quality meals to compete in their segment. Meanwhile, higher-priced restaurants should ensure they exceed customer expectations in both food and service to maintain high ratings.

Task 3: Feature Engineering

Analysis

This task focused on expanding the dataset by creating new features that provide additional context for analysis. The goal was to extract more meaningful information and prepare the dataset for future predictive modeling. Two new features were engineered, and categorical features were encoded into binary variables for simplicity and better compatibility with machine learning algorithms.

Key Findings

- **Restaurant name length:** This feature measures the number of characters in a restaurant's name, providing potential insights into **branding strategies**. Restaurants with longer names might emphasize a specific identity or branding, which could resonate more with customers. Whether or not this impacts ratings is a topic for further analysis.
- **Address Length:** This feature quantifies the number of characters in a restaurant's address. A longer address may indicate a more **complex or precise location description**, which could be important in regions with dense restaurant clusters or hard-to-find locations. Understanding whether location complexity affects customer ratings could be an interesting area for further study.
- **Binary Encoding:** The categorical variables "**Has Table Booking**" and "**Has Online Delivery**" were encoded into binary variables to simplify the analysis and make the dataset compatible with machine learning models. This step is essential.

for predictive modeling, as it transforms qualitative data into a format that algorithms can process effectively.

Insights and implications

- **Data Enrichment:** The addition of **new features** like name length and address length enhances the dataset's depth, allowing for more **comprehensive analysis**. These features provide an additional layer of context that could reveal more about restaurant branding, location, and their influence on customer ratings.
- **Predictive Modeling:** By encoding categorical features as binary variables, the dataset becomes better suited for **machine learning**. This simplification not only aids future modeling efforts but also ensures that the data structure supports the development of more accurate predictions regarding customer satisfaction and restaurant performance.

Conclusion

The Level 2 analysis of restaurant features provides valuable insights into how various attributes of restaurants—such as table booking, online delivery, price range, and engineered features—affect customer ratings and satisfaction. The following key takeaways can guide future restaurant strategies:

1. **Underutilization of Table Booking and Online Delivery:** There is significant room for growth in offering these services, particularly for higher-priced restaurants where customer convenience could drive higher ratings.
2. **Correlation Between Price Range and Ratings:** While budget-friendly options are common, higher-priced restaurants tend to achieve higher customer satisfaction. Ensuring premium quality in higher price ranges is essential for maintaining high ratings.
3. **Feature Engineering:** By adding new features and encoding categorical data, the dataset is now more suitable for predictive modeling, opening the door to deeper insights and more targeted recommendations for improving restaurant performance.