# Food Trends Understanding Customer Preferences using Power BI

# Team D

## Problem Statement

In the highly competitive food and beverage industry, changing customer tastes and operational inefficiencies can lead to revenue loss. The objective of this project is to utilize Power BI to analyze transactional data and customer feedback. By visualizing ordering patterns, peak hours, and cuisine popularity, we aim to identify emerging food trends, optimize menu planning, and personalize marketing strategies to enhance customer retention and profitability.

## Dataset

| Table Name | Rows | Columns |
| --- | --- | --- |
| food.csv | 3,71,489 | 3 |
| restaurants.csv | 2,56,447 | 11 |
| orders.csv | 1,47,063 | 9 |
| customers.csv | 1,00,000 | 10 |
| menu.csv | 18,78,898 | 5 |

**food.csv**

| Column | Description |
| --- | --- |
| FID | Unique food identifier |
| Item | Name of food item |
| Veg_or_NonVeg | Category of food item |

**restaurants.csv**

| Column | Description |
| --- | --- |
| RID | Identifier from each restaurant |
| Name | Specify restaurant name |
| Menu_ID | Relate to the menu of a restaurant |
| Cuisine | Type of foods available |
| Locality | Locality where restaurant belongs |
| City | City from where restaurant belongs |
| Ratings_Count | Ratings of a restaurant |
| Ratings_Bound | Lower bound of ratings for sorting |
| New_Restaurant | Check if the restaurant is a new one |
| Cost | Average cost of person eating in restaurant |

**orders.csv**

| Column | Description |
| --- | --- |
| OID | Identifier for each order |
| Order_Date | Date when order was placed |
| Order_Day | Day of order |
| RID | Identifies restaurant where food was purchased |
| UID | Identifies the customer |
| Sales_Amount | Amount of order |
| Amount_Ruppes | Amount of order in rupees |
| Currency | Type of currency |

**customers.csv**

| Column | Description |
| --- | --- |
| UID | Identifies the customer |
| Age | Age of the customer |
| Name | Name of the customer |
| Gender | Gender of the customer |
| Monthly_Income | Income of customer monthly |
| Income_Bound | Lower bound of the income range |
| Marital_Status | Whether customer is married/unmarried |
| Occupation | what is the customer profession |
| Family_Size | Size of customer family |
| Qualifications | Qualification of customer |

**menu.csv**

| Column | Description |
| --- | --- |
| Menu_ID | Id of the menu |
| RID | Identifies the restaurant |
| FID | Identifies food in the menu |
| Cuisine | Determines the type of food |
| Price | Price of the food item |

## Relationships Established

The dataset contains 5 relationships

1. menu[FID] ← food[FID]
2. order[RID] ←→ restaurant[RID]
3. orders[UID] ← customers[UID]
4. restaurant[Menu_ID] ←→ menu[Menu_ID]
5. restaurant[RID] ←→ menu[RID]

1 and 3 are **One to Many**
2, 4 and 5 are **Many to Many**

## Preprocessing Steps

**food.csv**
1. Capitalized columns FID, Item and Veg_or_NonVeg
2. Trimmed all the columns
3. Removed duplicate rows
4. Removed rows containing empty or null values
5. Auto detected data types of each columns

**restaurants.csv**
1. Capitalized and Trimmed column Name
2. Added custom column New_Restaurant depending on Rating
   If Rating = NULL, then New_Restaurant = 'Yes'
   Else New_Restaurant = 'No'
3. Added custom column Ratings_Bound depending on Rating used to store mid point of the Ratings range
4. Splitted column Cuisine(initially multi valued) using ',' delimiter and then unpivoted the Cuisine.1 and Cuisine.2 columns

5. Splitted column City (initially containing Locality and City) while some of the restaurant do not have Locality such that a new custom column named Locality was added

    If City.1 = NULL and City.2 != NULL then Locality = City.2

    Else if City.1 != NULL and City.2 != NULL then Locality = City.1

6. Removed duplicate rows
7. Removed rows containing empty or null values
8. Auto detected data types of each columns

## orders.csv

1. Prefixed 'U' to UID, 'R' to RID and 'O' to OID to get more clarity
2. Added a new custom column Amount_Ruppees such that

    If Currency = 'INR' then Sales_Amount

    Else if Currency = 'USD' then Sales_Amount * 89.92

3. Added a new custom column Order_Day that saves the day of order placed using Order_Date column
4. Removed duplicate rows
5. Removed rows having negative amount under Sales_Amount
6. Auto detected data types of each columns

## customers.csv

1. Capitalized and Trimmed columns like Name, Occupation, Qualifications
2. Removed unwanted columns like Email, Password
3. Added new custom column Income_Bound to keep track of lower bound of income range used to help in sorting

## menu.csv

1. Splitted column Cuisine(initially multi valued) using ',' delimiter and then unpivoted the Cuisine.1 and Cuisine.2 columns
2. Prefixed 'F' to FID , 'R' to RID and 'M' to Menu_ID to get more clarity.
3. Removed unwanted columns like LicenseNo, Restaurant Link
4. Auto detected data types of each columns
5. Removed duplicate rows

## Conclusion

The Power BI implementation provides actionable insights via visual dashboards on food trends, ordering patterns, and customer preferences. This enables optimized menu planning, targeted marketing, and enhanced customer retention, boosting overall profitability.