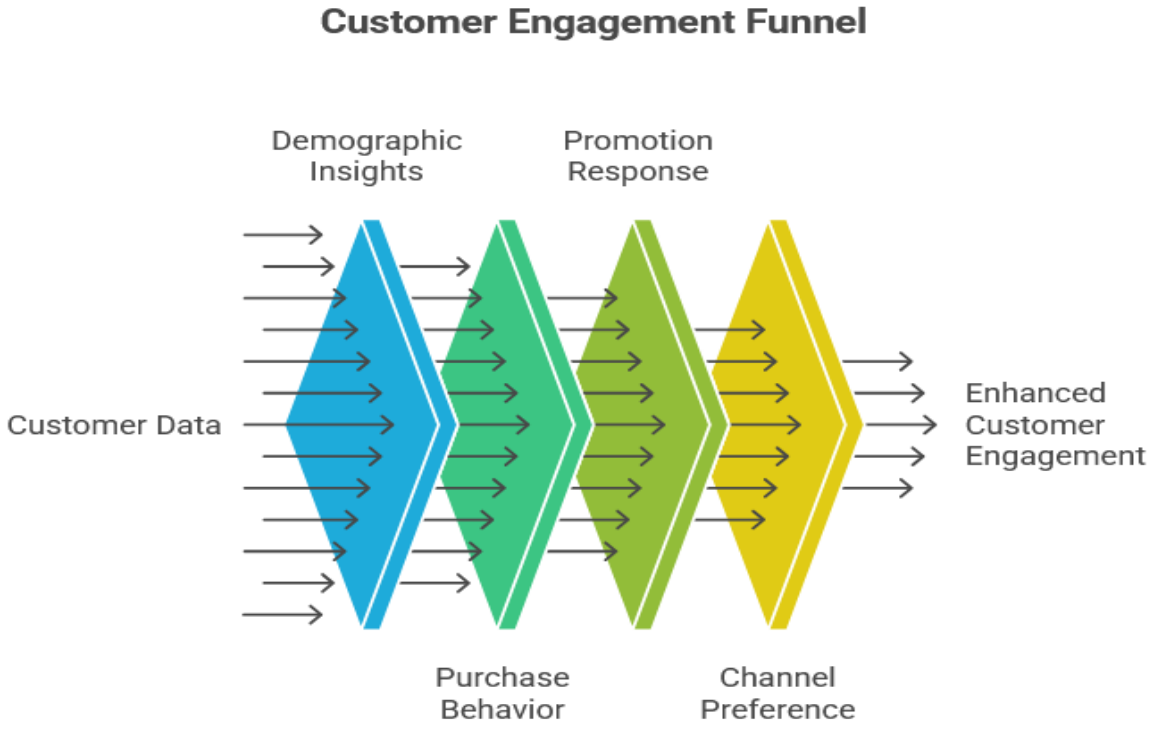
Customer Profiling & Targeted Marketing Strategy

Customer Profiling is a detailed analysis of a company's ideal customers. It helps a business to better understand its customers and makes it easier for them to modify products according to the specific needs, behaviours and concerns of different types of customers.

Customer profiling helps a business to modify its product based on its target customers from different types of customer segments. For example, instead of spending money to market a new product to every customer in the company's database, a company can analyze which customer segment is most likely to buy the product and then market the product only on that particular segment.



1. **Business Context: To understand how a strategy can be framed the company wants to understand the following**
    a. Improve targeting of marketing campaigns
    b. Identify high-value customer groups - Profile its customers
    c. Predict customer responsiveness to promotional offers
    d. Personalize offers based on customer characteristics
    e. Predict which customers respond to marketing campaigns
    f. Identify customer segments
    g. Visualize demographic & purchase behaviour
    h. Build a Streamlit app for analysts to interactively perform analysis

    The objective of the company is to do the customer profiling by following the below mentioned approach.

1. To create new customer behavior signals
2. To predict whether a customer will **accept a campaign offer**
3. To create customer segments

4. Integrate ML + clustering into **actionable marketing strategy**

2. Dataset Structure

Key fields:

- **Demographics**: Age, Marital Status, Education, Income
- **Lifestyle**: Household size, children, teenagers
- **Spending**: Wines, Fruits, Meats, Fish, Sweet Products, Gold Products
- **Activity**: Website visits, purchase channels
- **Campaign Responses**
- **Dates**: Customer enrollment date

Use these following hints to handle the data.

3. Data Pre-processing

3.1 Handle Missing Values

- Impute Income using median (skewed distribution)
- Remove extreme outliers (> 99.5 percentile)

3.2 Convert Dates

- Enrollment_Year = Current_Year – Year_Joined
- Customer_Tenure = days_since_enrollment

4. Feature Engineering

4.1 Customer Behavior Features

Total_Expenditure **= sum of all category spending**
= Wines + Fruits + Meat + Fish + Sweet + Gold

Average_Monthly_Spend = Total_Expenditure / Customer_Tenure_in_Months

Dependency_Ratio = (Kids + Teens) / Adults

Engagement_Score = (Web Visits * 0.4) + (Store Purchases * 0.6)

4.2 Campaign Response Target Variable

Convert campaign acceptances (5 campaign indicators) into a single label:

Campaign_Response = 1, if any campaign was accepted.

Else **Campaign_Response = 0**

4.3 Encode Categorical Variables

- One-hot encode: Education, Marital Status
- Binary encode: Has_Kids, Has_Teenagers
- Normalize Income, Expenditure, Tenure

Data Description:

People

- ID: Customer's unique identifier
- Year_Birth: Customer's birth year
- Education: Customer's education level
- Marital_Status: Customer's marital status
- Income: Customer's yearly household income
- Kidhome: Number of children in customer's household
- Teenhome: Number of teenagers in customer's household
- Dt_Customer: Date of customer's enrollment with the company
- Recency: Number of days since customer's last purchase
- Complain: 1 if the customer complained in the last 2 years, 0 otherwise

Products

- MntWines: Amount spent on wine in last 2 years
- MntFruits: Amount spent on fruits in last 2 years
- MntMeatProducts: Amount spent on meat in last 2 years
- MntFishProducts: Amount spent on fish in last 2 years
- MntSweetProducts: Amount spent on sweets in last 2 years
- MntGoldProds: Amount spent on gold in last 2 years

Promotion

- NumDealsPurchases: Number of purchases made with a discount
- AcceptedCmp1: 1 if customer accepted the offer in the 1st campaign, 0 otherwise
- AcceptedCmp2: 1 if customer accepted the offer in the 2nd campaign, 0 otherwise
- AcceptedCmp3: 1 if customer accepted the offer in the 3rd campaign, 0 otherwise
- AcceptedCmp4: 1 if customer accepted the offer in the 4th campaign, 0 otherwise
- AcceptedCmp5: 1 if customer accepted the offer in the 5th campaign, 0 otherwise
- Response: 1 if customer accepted the offer in the last campaign, 0 otherwise

Place

- NumWebPurchases: Number of purchases made through the company’s website
- NumCatalogPurchases: Number of purchases made using a catalogue
- NumStorePurchases: Number of purchases made directly in stores
- NumWebVisitsMonth: Number of visits to company’s website in the last month

Deliverables:

Based on the objective of the case study clearly mention your approach. Also perform the requisite analysis based on the objective and clearly design a strategy for customer profiling

by identifying the different segments of the customers. A mobile or web application to identify the customer segment.

(source: dataset is provided by Dr. Omar Romero-Hernandez)