Marketing Campaigns

Problem scenario:

Marketing mix stands as a widely utilized concept in the execution of marketing strategies. It encompasses various facets within a comprehensive marketing plan, with a central focus on the four Ps of marketing: product, price, place, and promotion.

Problem objective:

As a data scientist, you must conduct exploratory data analysis and hypothesis testing to enhance your comprehension of the diverse factors influencing customer acquisition.

Data description:

The variables such as birth year, education, income, and others pertain to the first 'P' or 'People' in the tabular data presented to the user. The expenditures on items like wine, fruits, and gold, are associated with 'Product'. Information relevant to sales channels, such as websites and stores, is connected to 'Place', and the fields discussing promotions and the outcomes of various campaigns are linked to 'Promotion'.

Key Analysis:

Analyze customer behavior and marketing campaign effectiveness using data exploration, feature engineering, and hypothesis testing. The goal is to uncover key insights to improve marketing strategies.

◆ Data Cleaning & Preprocessing – Handle missing income values, clean categorical variables, and encode data for analysis.

◆ Feature Engineering – Create new variables such as customer age, household size, total spending, and purchase frequency.

◆ Exploratory Data Analysis (EDA) – Use box plots, histograms, and heatmaps to examine spending trends and customer segmentation.

◆ Hypothesis Testing – Validate assumptions on shopping preferences, sales cannibalization, and regional differences in campaign success.

◆ Business Insights – Identify top-performing products, customer spending patterns, and campaign acceptance trends.