**Task Details**

You're a marketing analyst and you've been told by the Chief Marketing Officer that recent marketing campaigns have not been as effective as they were expected to be. You need to analyze the data set to understand this problem and propose data-driven solutions. The data corresponds to the customers of some XYZ company.

**Expected Submission**

Submit a well documented notebook with these four sections:

**Section 01: Exploratory Data Analysis**

* Are there any null values or outliers? How will you wrangle/handle them -- **Answered**
* Are there any variables that warrant transformations -- **Answered**
* Are there any useful variables that you can engineer with the given data -- **Answered**
* Do you notice any patterns or anomalies in the data? Can you plot them? – **Answered** (Boxplots and the IQR)

**Section 02: Statistical Analysis (Done):**

Please run statistical tests in the form of regressions to answer these questions & propose data-driven action recommendations to your CMO. *Make sure to interpret your results with non-statistical jargon so your CMO can understand your findings.*

* What factors are significantly related to the number of store purchases?
* Does US fare significantly better than the Rest of the World in terms of total purchases?
* Your supervisor insists that people who buy gold are more conservative. Therefore, people who spent *an above average amount* on gold in the last 2 years would have more in store purchases. Justify or refute this statement using an appropriate statistical test
* Fish has Omega 3 fatty acids which are good for the brain. Accordingly, do "Married PhD candidates" have a significant relation with amount spent on fish? What other factors are significantly related to amount spent on fish? *(Hint: use your knowledge of interaction variables/effects)*
* Is there a significant relationship between geographical regional and success of a campaign?

**Section 03: Data Visualization**

Please plot and visualize the answers to the below questions.

* Which marketing campaign is most successful?
* What does the average customer look like for this company?
* Which products are performing best?
* Which channels are underperforming?

**Section 04: CMO Recommendations**

Bring together everything from Sections 01 to 03 and provide data-driven recommendations/suggestions to your CMO.

**Evaluation**

This is not a formal competition, so results won't be measured using a strict metric. Rather, what one would like to see is a well-defined process of exploratory and statistical analysis with insightful conclusions.

1. Data Exploration - Was the data wrangled properly? How well was the data analyzed? Are there any useful visualizations? Does the reader learn any new techniques through this submission? A great entry will be informative and thought provoking.
2. Statistical Analysis - Were the right statistical tests used? How well was the statistical output interpreted? A great entry will interpret results without the use of any statistical jargon.
3. Business Recommendation - Were the recommendations tied to your analysis in Sections 1-3? Are they data-driven and focused on marketing concepts such as targets, channels, or products?
4. Documentation - Are your code, and notebook well documented so a reader can understand what you did? Are your sources clearly cited? A high quality analysis should be concise and clear at each step so the rationale is easy to follow and the process is reproducible.

Features of Data:

* Kidhome – Number of kids in home.
* Teenhome – Number of teenagers in home.
* Recency – Number of days since the customer has last purchased.
* MntWines – Amount of money spent on wine.
* MntFruits – Amount of Money spent on fruits.
* NumDealsPurchased – Number of purchases made without a discount.
* NumWebPurchases – Number of purchases made through company’s website.
* NumCatalogPurchases – Number of purchases made using a catalogue.
* NumStorePurchase – Number of purchase made directly in stores.
* NumWebVisitsMonth – Number of visits to company’s website last month.
* AcceptedCmp3 – If customer accepted the offer in 3rd campaign.
* AcceptedCmp1 - If customer accepted the offer in 1st campaign.
* AcceptedCmp2 - If customer accepted the offer in 2nd campaign.
* Response – If the customer accepted the offer in the last campaign.
* Complain – If customer complained in last two years.
* Country – Customer’s location.