Retail Transaction Data Analysis

1. Instructions

1. **Situation**

   The company is hiring you as their new Data Science Consultant. In your first week, you are given a dataset (attached below in point #3). You are expected to analyze this dataset and draw insights on how the company can improve its sales. By the end of the first week, you are expected to present your analysis, insights, and recommendations to the company's CEO and Sales Director in a 30-minute meeting time.

2. **Submission**

   a. Please submit your assignment **7 days after receiving the email.**

   b. For this technical assessment you are expected to send us the following:

   - A brief presentation (max 7 slides) presenting the result of your analysis as well as your conclusion and/or recommendation.

   - Please provide a reference to the code implementation or visualization tools in the respective part of your analysis such as PowerBI (.pbix), Python File (.ipynb) or other Tools that you use for the purpose of completing this assessment.

   - Please indicate/cite in the code in case you have taken reference from any external source.

   c. Hint: Focus on how you share the insight in the presentation.

3. **Data source**: Retail Transaction Data <Attached in the zip>

2. Business Analysis

Could **you derive and share some insights** based on the dataset for the CEO and Sales Director, feel free to pick some metrics/findings that you think worth to share to the management.

3. Data Science Test

a. Demand Forecast

Situation → The CEO also expects you to do some demand forecasting, predict how the company will do in terms of sales in the next few months, and identify what products need to be stocked up.

Tasks → You are expected to create an analysis and demand prediction based on the dataset on the next 6 months, remember to not only create a model but ensure that there's some analysis and insight on why it's happening, and call-to-action on what should we do to make it better, share what model you used, how you evaluated your models, how confident are you with the models and what are the caveat/issues you faced during the analysis

b. Customer 360

Situation → The Sales Director is planning to implement a more personalized campaign for their customers to increase the company's customer retention rate. They plan to invest in promotional activities for customers who are deemed valuable. Furthermore, they intend to double down on the amount spent on customers who have not been as active as before.

Tasks → You are expected to share insights and a pilot plan to increase the customer retention rate. Your task includes creating a model to identify which customers are predicted to have a high value and which customers are likely to churn. You are also encouraged to create an analysis and proposal on what you think the company should do, utilizing machine learning. (Plus point, not mandatory, you can also help the Sales Director with the personalization by recommending the right product for the right users, or in short: what products we should offer to them)