

Subject: Data Requirements and Analytical Approach for Addressing PowerCo's Customer Churn

Dear [AD's Name],

Estelle and I have conducted an initial assessment of PowerCo's customer churn issue and propose the following plan, structured according to the five-step data science methodology:

## 1. Business Understanding

PowerCo is experiencing a significant churn rate among its SME customers, leading to revenue loss and increased customer acquisition costs. Our objective is to identify the key factors contributing to customer attrition and develop strategies to enhance retention.

## 2. Data Understanding

To analyze the churn phenomenon, we need to gather comprehensive data from PowerCo, including:

- **Customer Demographics:** Industry sector, company size, and geographic location.
- **Contract Details:** Contract length, renewal dates, and terms.
- **Billing Information:** Historical billing records, payment timeliness, and outstanding balances.
- **Usage Patterns:** Energy consumption data over time.
- **Customer Service Interactions:** Records of inquiries, complaints, resolutions, and service quality metrics.
- **Marketing Engagement:** History of marketing communications and customer responses.
- **Competitor Data:** Information on competitors' pricing, service offerings, and market positioning.

## 3. Data Preparation

We will clean and preprocess the data to handle missing values, normalize formats, and engineer relevant features. This step ensures the data is suitable for analysis and modeling.

## 4. Modeling

To identify factors influencing customer churn, we will employ the following analytical techniques:

- **Descriptive Analytics:** Summarize data to understand general trends and patterns.
- **Exploratory Data Analysis (EDA):** Visualize data distributions and relationships to uncover insights.
- **Predictive Modeling:** Utilize machine learning algorithms such as logistic regression, decision trees, or random forests to predict churn likelihood.
- **Survival Analysis:** Assess the time until a customer churns to identify critical periods.

## 5. Evaluation

We will assess model performance using metrics like accuracy, precision, recall, and the area under the ROC curve. Additionally, we will validate the models through cross-validation and test them on holdout datasets to ensure robustness.

## Key Factors Influencing Customer Churn

Based on industry insights, the primary reasons customers may choose to stay with or switch energy providers include:

- **Pricing:** Competitive rates and transparent billing.
- **Service Quality:** Reliable energy supply and prompt issue resolution.
- **Customer Support:** Accessible and effective customer service.
- **Sustainable Energy Options:** Availability of renewable energy sources.
- **Contract Flexibility:** Favorable terms and conditions.
- **Brand Reputation:** Perception of the company's market standing.

## Data Requirements to Investigate Key Factors

To explore these factors, we require data on:

- **Pricing:** Current and historical pricing structures, discount offers, and competitors' pricing.
- **Service Quality:** Metrics on service outages, maintenance schedules, and response times.
- **Customer Support:** Records of customer service interactions, resolution times, and satisfaction ratings.
- **Sustainable Energy Options:** Details of renewable energy plans and customer adoption rates.
- **Contract Flexibility:** Information on contract types, durations, and termination clauses.
- **Brand Reputation:** Customer feedback, survey results, and social media sentiment analysis.

## Analytical Approach

Upon obtaining the data, we will:

- **Conduct Descriptive Statistics:** To summarize and understand the central tendencies and dispersions in the data.
- **Perform Exploratory Data Analysis (EDA):** To visualize data distributions and identify potential correlations between variables.
- **Develop Predictive Models:** To assess the impact of identified factors on customer churn and predict future churn probabilities.
- **Implement Survival Analysis:** To determine the time-related aspects of customer retention and identify critical periods where interventions may be most effective.

By following this structured approach, we aim to uncover actionable insights that will inform strategies to reduce customer churn and enhance PowerCo's overall customer retention.

Best regards,  
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