

BCG DATA SCIENCE AND ANALYTICS VIRTUAL EXPERIENCE PROGRAM

MY SUBMISSION

PROBLEM STATEMENT:

Our client - PowerCo is a major gas and electricity utility that supplies to corporate, SME (Small & Medium Enterprise), and residential customers. The power-liberalization of the energy market in Europe has led to significant customer churn, especially in the SME segment. They have partnered with BCG to help diagnose the source of churning SME customers.

Task 1: Business Understanding & Hypothesis Framing

Your first task today is to understand what is going on with the client and to think about how you would approach this problem and test the specific hypothesis.

You must formulate the hypothesis as a data science problem and lay out the major steps needed to test this hypothesis. Communicate your thoughts and findings in an **email** to your AD, focusing on the data that you would need from the client and the analytical models you would use to test such a hypothesis.

Hypothesis

One of the hypothesis under consideration is that churn is driven by the customers' price sensitivities and that it is possible to predict customers likely to churn using a predictive model. The client also wants to try a discounting strategy, with the head of the SME division suggesting that offering customers at high propensity to churn a 20% discount might be effective.

In order to test the hypothesis that the churn is driven by price sensitive, we need to build a model on prediction of the probability of customer churn, and derive the effect of prices on churn rates. We will need following data:

Customer Data – which should include characteristics of each client, for example, industry, historical electricity consumption, date joined as customer ...

Churn Data – which could contain if the client has churned

Historical Price Data – which should include the prices which the client got charged to each customer for both electricity and gas at granular time intervals

- **Null Hypothesis:** The change in customer price affects customer churn.
- **Alternative Hypothesis:** The change in customer price does not affect customer churn.

SOLUTION

Hello AD,

I intend to solve the problem by the following steps:

Step1: test the hypothesis.

The hypothesis can be tested with historical data about customer's contract

Extract data on the customers who switched to other providers

Identify whether customers churned and increase in price happened at same time.

Prove the hypothesis:

If the customer churn is along with the increase in price. We can conclude null hypothesis.

On the contrary, if the customers churned even if there is no change or decrease in price, then we can say that prices do not affect customer churn.

Step2: Build models to predict customer churn.

It's a binary classification problem of whether customers churned or not (1 –if customers switched providers, 0 if stayed with PowerCo)

For this we use customer data which includes their contract information, energy consumption amount.

Do a proper exploratory data analysis and build machine learning models and evaluate its performance.

Step 3:

Identify whether a discount can prevent customer churn- Apply 20% discount on the prices, then predict the customer labels again. If the predicted labels (got from step2) change from 1 to 0 , this indicates discount can prevent customer churn. On the contrary, if labels are still 1, this denotes discount cannot stop customer churn.

Regards,

Varshini CH P D R

Data Scientist – BCG