



## Testing the Hypothesis: Churn Driven by Price Sensitivities

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## Introduction

I hope this proposal finds you well. After carefully considering the client's objectives and the hypothesis regarding churn driven by customers' price sensitivities, I have developed a comprehensive plan to test this hypothesis and provide actionable insights. The proposed project plan is outlined below

## Project Overview

**A. Objective:** Objective: Investigate the relationship between price sensitivities and customer churn to provide valuable insights for churn mitigation efforts.

**B. Duration:** 2 Weeks

**C. Team members:** Emmanuel M - Senior Data Analyst  
Mike Ross - Project Manager

## Project Approach

### 1) Data Gathering

- Obtain historical customer data from PowerCo, including customer profiles, transaction records, pricing information, churn status, data for both churned and retained customers to perform a comparative analysis.
- Data Sources: PowerCo's Customer Database, Customer Satisfaction Surveys and Competitor Data,
- Data Fields: Customer demographics, usage patterns, contract information, payment history and gender, churn status, pricing data.

### 1) Data Preparation and Exploratory Data Analysis (EDA)

- Performing data cleaning and preprocessing, addressing missing values, outliers, and necessary data transformations.
- Constructing a structured data frame where each row represents an individual customer and each column represents a specific attribute or feature.

- Conducting exploratory analyses on relevant fields to gain insights about customer churn behavior, such as churn rates, distribution of prices, customer satisfaction ratings, etc.
- Analyzing the contribution of various factors to a customer's decision to stay or switch providers.

## **2) Feature Engineering**

- Creating new features that capture price sensitivity, such as price change percentage, price relative to competitors, price elasticity, or customer segment based on pricing plans.
- Incorporating additional relevant features that might affect churn, such as contract length, customer tenure, payment history, pricing etc.

## **3) Model Development**

- Splitting the dataset into training and testing sets, ensuring a representative distribution of churned and retained customers in both sets.
- Utilizing appropriate machine learning algorithms for churn prediction, such as logistic regression, random forests, or gradient boosting.
- Training and fine-tuning the models using the training set, optimizing for evaluation metrics such as accuracy, precision, recall, and F1-score.

## **4) Model Evaluation and Interpretation**

- Evaluating the models' performance using various metrics, such as accuracy, ROC curves, and confusion matrix.
- Analyzing feature importances to identify the most influential factors contributing to churn.
- Interpreting the model results to understand the relationship between price sensitivities and churn, and assess the validity of the hypothesis.

## **5) Offer Prioritization**

- Utilizing the trained model to predict churn probabilities for active customers.
- Identifying customers with high churn probabilities who would be eligible for the 20% discount offer.

- Prioritizing the customer list based on predicted churn probabilities to maximize the impact of the discount offer.

## Project Deliverables

- Comprehensive analysis of the relationship between price sensitivities and customer churn.
- Predictive model for identifying customers at risk of churning.
- Prioritized list of customers eligible for the 20% discount offer.
- Recommendations for churn mitigation strategies based on data-driven insights.