**Subject: Approach to Testing Hypothesis on Churn Driven by Price Sensitivity**

Dear [Associate Director's Name],

I hope this email finds you well. I have thoroughly reviewed the client's situation and the hypothesis regarding churn driven by price sensitivities. Based on the information provided, I've formulated an approach to test this hypothesis using data science techniques. Here's how I would approach the problem:

**Formulating the Hypothesis as a Data Science Problem:**

The hypothesis states that customer churn within the SME segment is influenced by their price sensitivities. In other words, customers who are more sensitive to price changes are more likely to churn. To test this hypothesis, we need to create a predictive model that can identify customers who are at a higher risk of churning due to their sensitivity to price changes.

**Major Steps to Test the Hypothesis:**

**Data Collection and Preparation**: We need access to a comprehensive dataset that includes historical customer data, usage patterns, billing details, interaction history, and price changes. Each row in the dataset should represent a unique customer, and the columns should include relevant attributes such as customer ID, demographic information, contract details, billing history, and pricing information.

**Feature Engineering:** Extract meaningful features from the dataset that could influence customer churn. These features might include average monthly consumption, historical price changes, contract duration, payment history, customer tenure, business type, and any available customer feedback or complaints.

**Labeling Churn Instances**: Define churn criteria, such as customers who have not renewed their contract within a specific time frame. Label the dataset, accordingly, indicating whether each customer has churned or not.

**Model Selection and Training**: Choose appropriate classification algorithms for building the predictive model. Algorithms like logistic regression, decision trees, random forests, or gradient boosting could work well. Split the dataset into training and validation sets and train the model using historical data.

**Model Evaluation and Validation**: Evaluate the model's performance using metrics such as accuracy, precision, recall, F1-score, and ROC-AUC. These metrics will help us assess the model's ability to predict churn accurately.

**Feature Importance Analysis**: Analyze the importance of each feature in the model's predictions. This analysis will highlight whether price changes and other features related to price sensitivity significantly impact customer churn.

**Discount Strategy:** Utilize the trained model to identify customers at higher risk of churning due to price sensitivity. Offer a 20% discount to these customers and monitor their response over time. Analyze whether the discount effectively reduces churn rates among this group.

**Regular Model Updates**: Keep the model updated with new data on a regular basis to ensure its accuracy and relevance over time. Refine the model and strategies based on ongoing results and customer behavior changes.

Data Required from the Client:

**We would need access to the following data from the client:**

Historical customer information (demographics, contract details, tenure)**,**Usage patterns and billing history**,** Price change history**,** Interaction history with customer support**,** Customer feedback or complaints, if available

**Analytical Models to Use:**We will employ classification algorithms such as logistic regression, decision trees, random forests, or gradient boosting to build the predictive model. These algorithms will help us identify customers with a higher likelihood of churning due to price sensitivity.

**Exploratory Analyses**:Exploratory analyses on relevant fields can provide more insights about customer churn behavior. We can examine how customer tenure, contract duration, average monthly consumption, and previous price changes correlate with churn rates. Additionally, analyzing customer segments based on business type or demographic information could reveal interesting patterns.

I believe that by following this approach, we can effectively test the hypothesis regarding churn driven by price sensitivities and design strategies to mitigate churn within the SME segment.

Please let me know if you have any further guidance or specific areas, you'd like us to focus on. I'm eager to contribute to this project's success.

Best regards

Akshita Khandelwal