Subject: Hypothesis Testing Approach: Effect of Price Sensitivity on Customer Churn

Hello Associate Directors

I want to share my thoughts on how we can approach this problem and test the hypothesis that customer churn is affected by price sensitivity. Here are the main steps that can be taken:

1. Data Collection

• We need historical data about SME/SME category customers such as the prices they pay, contracts, demographic profiles, previous customer interactions, and usage patterns of PowerCo client products.

• Customer churn data contains information on whether SME category customers choose to continue using PowerCo products or switch to other providers within a certain period after the price change.

2. Dataset Variables

• Making the churn variable the target to be predicted in the analysis. Based on the churn variable, we have an indicator whether the customer will be included in the churn group or not after experiencing a price change

• Identify any variables that influence churn variables such as price variables, contracts, contracts, demographic profiles, previous customer interactions and usage patterns of PowerCo products.

3. Data Preprocessing

• Data cleaning must be done to overcome missing values, invalid, awkward, duplicative, and outliers

• Data transformation is carried out if necessary, such as normalizing or changing categorical data which are written letters into numbers.

4. Exploratory Data Analytics

• Correlation analysis needs to be done between relevant variables to understand the relationship between price and other factors and customer churn. Correlation analysis can measure the influence of existing variables on targets with attachment values.

• Visual analysis is needed to make it easier to understand the contents of the dataset you want to display such as graphs, charts, maps and others.

5. Predictive Model Development

• Selection of a suitable model for the churn classification problem can be determined by selecting from several appropriate options such as: logistic regression, decision tree, or

other algorithms. Selection of the best algorithm can be done by comparing the measurement results of the mean value which is close to 1 and the standard deviation which is close to 0 which is produced by the algorithm in handling the dataset.

• Existing data is divided into train data and test data. The model will be trained with the training data set and evaluate its performance on the testing set using metrics such as accuracy, precision, recall, and F1-score.

• Cross validation is carried out to improve model performance by dividing the data into separate folds and training and testing the model for each fold

6. Conclusion

• Identification of the factors that have the most influence on customer churn based on model results, including price variables and relevant variables that have an attachment value that affects the target

• The model can be used to predict future customer churn and can identify the most price sensitive customer groups. Focus on offerings that keep customers from leaving PowerCo's products

7. Implementation of Bidding Strategy

Customers who have been identified by the model's predictive results as highly likely to churn may be offered a 20% discount as an incentive to stay with PoweCo. Evaluation of this bidding strategy can be reviewed by comparing the churn rate before and after implementing the 20% discount.

8. Improvements

Models should be monitored and updated regularly to improve performance. Models can be developed to be more complex or sophisticated to increase accuracy and understanding of the factors that affect customer churn.

In testing this hypothesis, it was important to work closely with the data science team and combine business knowledge with careful data analysis. In addition, effective communication with clients and internal stakeholders is essential to ensure successful bid strategy implementation. I hope this plan provides an initial view of how we might approach this problem and test the price sensitivity hypothesis to customer churn. I am ready to continue these steps and work with the team to achieve this goal.

Thank you for your attention.

Best Regards

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