## Define the Hypothesis:

Hypothesis: Churn in the SME segment is influenced by price changes.
Null Hypothesis: Churn in the SME segment is not influenced by price changes.

## Data Collection:

To test this hypothesis, we need access to the following data from PowerCo:

Customer data: This should include relevant demographic information, contract details, and historical usage data.
Pricing data: We require historical pricing information for each customer, including any changes made during their contract period.
Churn data: We need a dataset that identifies customers who churned during a given period. It should include the churn date, customer ID, and other relevant information.

## Data Preparation and Exploration:

Once we have the necessary data, we should perform the following steps:

Data Cleaning: Cleanse and preprocess the data to address any missing values, outliers, or inconsistencies.
Feature Engineering: Create relevant features such as contract duration, average monthly spend, percentage change in price, etc.
Exploratory Data Analysis: Conduct a thorough analysis to identify patterns and relationships between churn and pricing variables. We can explore metrics like churn rate, churn distribution across price segments, and visualizations to gain insights into customer behavior.

## Hypothesis Testing:

To test the hypothesis, we can employ a predictive modeling approach. Here's a suggested approach:

Model Selection: Select a suitable classification model for predicting customer churn, such as logistic regression, decision trees, or random forests.
Training and Validation: Split the data into training and validation sets to train the model and assess its performance.
Feature Selection: Use techniques like feature importance or recursive feature elimination to identify the most influential pricing variables in predicting churn.
Model Evaluation: Evaluate the model's performance using appropriate metrics like accuracy, precision, recall, and F1-score.
Statistical Testing: Conduct hypothesis testing (e.g., t-tests) to determine the statistical significance of the relationship between price changes and churn.

## Model Deployment and Discount Strategy:

Once we have a reliable predictive model, we can deploy it on the 1st working day of each month to identify customers at risk of churning. Based on the model's predictions, we can offer a 20% discount to those customers to incentivize them to stay with PowerCo.

By following this approach, we can test the hypothesis and gain insights into the impact of price sensitivities on customer churn. Additionally, we will be equipped with a predictive model that can guide the identification of at-risk customers for the discount offering.