Executive Summary

Project Title: Customer Data Analysis and Insights

Objective: This project focuses on analyzing customer data to identify trends, behaviors, and key insights related to customer retention, service usage, and churn prediction. The dataset includes demographic details, service subscriptions, and customer engagement metrics.

Background: With increasing competition in the telecommunications and service industries, understanding customer behavior is critical for improving retention and satisfaction. This project utilizes machine learning and statistical methods to extract insights from customer data.

Key Research Areas:

- **Data Preprocessing & Cleaning:** Handling missing values, standardizing data formats, and transforming categorical variables.
- **Exploratory Data Analysis (EDA):** Identifying patterns in tenure, service subscriptions, and contract types.
- **Churn Prediction:** Using classification models to predict customer churn based on various attributes.
- **Feature Engineering:** Selecting and creating meaningful features for predictive modeling.
- **Visualization & Reporting:** Creating dashboards and reports to present findings effectively.

Technical Implementation:

- **Machine Learning Models:** Logistic regression, decision trees, and random forests for churn prediction.
- **Data Processing:** Pandas and NumPy for handling datasets efficiently.
- **Visualization Tools:** Matplotlib and Seaborn for graphical representation of trends.
- **Performance Metrics:** Accuracy, precision, recall, and F1-score for model evaluation.

Expected Outcomes:

- Identification of key factors influencing customer churn.
- Development of a predictive model for proactive customer retention strategies.
- Insights into customer segmentation based on service usage and demographics.

Conclusion: This project aims to provide valuable insights into customer behavior, helping businesses optimize their retention strategies and improve customer satisfaction through data-driven decision-making.