### **📊 Executive Summary and Recommendations**

This analysis explores the key drivers behind customer churn in a telecom dataset. After preprocessing (e.g., converting binary columns like SeniorCitizen for better interpretability), a series of insightful visualizations were created to understand churn patterns.

* **Churn Rate Overview:** About **26.54%** of customers have churned, as illustrated by a pie chart.
* **Service Usage Trends:** Customers who retain services like **PhoneService**, **DSL-based InternetService**, and **OnlineSecurity** tend to show lower churn rates.
* **Key Observations:**
  + Lack of **OnlineBackup**, **TechSupport**, or **StreamingTV** is correlated with higher churn.
  + Visual analyses (stacked bar charts and count plots) clearly indicate that service engagement strongly impacts customer retention.

The findings suggest that increasing adoption of value-added services and ensuring consistent support (like TechSupport) may help reduce churn rates.

### **📊 Executive Summary: Telecom Customer Churn Analysis**

This analysis investigates customer churn patterns using a telecom dataset. The goal was to uncover factors influencing churn and visualize them for actionable insights.

#### **✅ Key Findings:**

* **Overall Churn Rate:** A **pie chart** revealed that **26.54%** of customers have churned, prompting a deeper dive into underlying causes.
* **Service-Based Retention Patterns:**
  + Customers **with PhoneService**, **DSL Internet**, and **OnlineSecurity** were less likely to churn.
  + Higher churn rates were seen among customers **without**:
    - **OnlineBackup**
    - **TechSupport**
    - **StreamingTV and Movies**

#### **📈 Visual Insights:**

* **Stacked Bar Charts & Count Plots** showed clear segmentation of churn across service features.
* The analysis included transformations (like converting binary SeniorCitizen to Yes/No) for easier interpretation.
* Charts effectively communicated relationships between services and churn probability, highlighting which services are valued most by retained customers.

#### **🧩 Business Implication:**

Improving engagement with **value-added services** and ensuring customers adopt **multiple support options** (like TechSupport and OnlineSecurity) can significantly reduce churn