**📌 Executive Summary: Customer Churn Analysis Project**

**📁 Dataset Overview**

* The dataset contains **7043 customer records** from a telecom company, each with **21 features** including demographic details (gender, senior citizen status), service usage (internet, phone, tech support), contract type, billing method, and the target variable: **Churn**.
* Features such as tenure, MonthlyCharges, and TotalCharges provide numerical insights into customer behavior, while most others are categorical.

**📊 Visual Analysis & Insights**

* Multiple **countplots and stacked bar charts** were created to explore how different services and customer attributes relate to churn behavior.
* Key visualizations include:
  + **Gender vs. Churn:** Males and females churn at similar rates, showing no strong gender-based trend.
  + **Internet & Phone Services:** Customers with **fiber optic internet** and those with **no internet service** show contrasting churn patterns — churn is higher with fiber optic users.
  + **Streaming & Security Services:** Lack of services like OnlineSecurity, TechSupport, and StreamingTV is associated with a **significantly higher churn rate**.
  + **Contract Type:** Customers on **month-to-month contracts** churn far more than those on annual or two-year plans.
  + **Payment Method:** Users who pay via **electronic check** have higher churn, suggesting friction or dissatisfaction with this method.
  + **Paperless Billing:** Users with paperless billing show slightly higher churn, possibly indicating tech-savvy users with more options or lower engagement.

**📈 Data Distribution**

* Customers with **longer tenure** and **higher total charges** tend to churn less, implying satisfaction over time.
* **Senior citizens** churn slightly more than others, suggesting targeted retention efforts may be needed for this segment.

**🔍 Analytical Highlights**

* Stacked bar charts presented **percentages of churn by category**, which provided a clear comparison for each service feature and demographic attribute.
* Visual labeling and ordering enhanced clarity and helped identify churn-prone groups effectively.

**✅ Recommendations**

* **Promote bundled services** (like security, tech support, and streaming) to increase customer stickiness.
* Encourage **long-term contracts** with incentives, as they strongly correlate with reduced churn.
* Address issues with **fiber optic users** and **electronic check payments** to improve satisfaction and retention.