Telecom Customer Churn Data Analysis.

Python Project Analysis: Telecom Customer Churn Analysis

1. Project Objective

The objective of this project is to analyze customer churn in a telecom company to understand factors influencing customer retention and churn. By identifying trends, patterns, and risk factors, the company can implement strategies to reduce churn and improve customer loyalty.

2. Key Performance Indicators (KPIs) & Questions

To evaluate customer churn, we analyze the following key aspects:

- Churn Rate: What percentage of customers have left the service?
- Demographic Influence: How do gender and senior citizen status impact churn?
- Service-Based Churn: Which services (internet, phone, streaming, etc.) contribute to higher churn?
- Contract Type & Retention: Which contract types have the highest and lowest churn rates?
- Monthly Charges vs. Churn: Do higher monthly charges lead to more churn?
- Tenure & Customer Loyalty: How does customer tenure influence churn probability?
- Churn Prediction & Mitigation: What factors can help predict and prevent churn?

3. Process of Data Analysis

1. Data Cleaning & Preprocessing:

- Handle missing values in Total Charges and ensure accurate data representation.
- Convert categorical data into numerical formats where necessary.
- Remove duplicates and standardize data types for consistency.

2. Exploratory Data Analysis (EDA):

- Calculate churn rates across different customer groups.
- Analyze service usage patterns and their impact on churn.

- Identify customer segments with high churn rates (e.g., contract types, monthly charges).
- Compute churn percentages for various demographic groups.

3. Visualization & Insights:

- Use bar charts and pie charts to display churn distribution.
- Create line and scatter plots to analyze tenure vs. monthly charges.
- Generate heatmaps to identify correlations between services and churn.
- Segment customers into different churn risk categories for targeted retention efforts.

4. Project Insights (Key Findings)

- **Overall Churn Rate:**
    - 26.5% of total customers have churned.
- **Demographic Influence:**
    - Senior citizens have a significantly higher churn rate (45.1%) compared to non-senior customers (22.3%).
- **Service-Based Churn:**
    - Customers with internet-only plans have a higher churn rate compared to bundled service users.
- **Contract Type & Retention:**
    - Month-to-month contract customers exhibit the highest churn (42.5%), while two-year contract holders have the lowest churn (3.9%).
- **Pricing Impact:**
    - Customers paying over $70/month churn at a higher rate (32.8%).
- **Customer Tenure Influence:**
    - Customers with a tenure of less than 12 months have the highest churn (51.6%), while long-term customers (>36 months) have a much lower churn rate (8.2%).

5. Final Conclusion & Recommendations

- **Enhance New Customer Retention:**
    - Provide better onboarding experiences and incentives for customers with low tenure.

- **Encourage Long-Term Commitments:**
    - Month-to-month contracts see high churn. Offer discounts on annual contracts to increase retention.
- **Adjust Pricing Strategies:**
    - Flexible pricing plans and customized service bundles can help retain high-churn segments.
- **Improve Senior Citizen Retention:**
    - Develop senior-friendly plans and support services to lower churn among this group.
- **Leverage Service Bundles:**
    - Customers using multiple services (internet + phone + TV) churn less. Promote bundled offerings to reduce attrition.

By implementing these recommendations, the telecom company can significantly reduce churn, improve customer satisfaction, and enhance revenue growth.