Executive Summary(Customer Churn Analysis) And Recommendations.

This notebook presents a detailed **Customer Churn Analysis** to understand the behavioral patterns and key factors influencing customer churn. I have performed effective data preprocessing, exploration, and visual storytelling using various charts for better business insights.

🔍 **Key Steps Performed:**

- Imported essential libraries like **Pandas**, **NumPy**, **Matplotlib**, and **Seaborn**.

- Loaded and cleaned the dataset `customer churn.csv`, ensuring there were no missing or duplicate values.

- Transformed the `SeniorCitizen` column for better readability (converted binary values to "Yes"/"No").

📈 **Visual Insights and Analysis:**

1. **Churn Distribution:**

   - A **countplot** and **pie chart** clearly show that **26.54% of customers have churned**, which is a significant portion.

2. **Churn by Demographics:**

   - **Gender**: Churn seems fairly balanced between genders.

   - **Senior Citizens**: A **higher percentage of senior citizens have churned**, shown using both **bar charts** and a **stacked percentage chart**.

3. **Tenure Analysis:**

   - **Customers with longer tenure tend to stay**, whereas **those with 1–2 months tenure are more likely to churn**.

4. **Contract Type Influence:**

- ○ Customers with **month-to-month contracts have a higher churn rate** compared to those with yearly contracts.

🧠 **Insights for Business Action:**

- **Target senior citizens** with retention campaigns.

- Promote **long-term contracts** to reduce churn.

- Focus on improving **early user experience**, as churn is highest in the initial months.

📊 Executive Summary: Customer Churn Analysis

This project focuses on analyzing customer churn data to identify the factors that influence customers to leave a telecom service provider. The analysis includes data cleaning, transformation, exploratory visualizations, and deriving actionable business insights.

📁 Dataset Overview:

- The dataset includes **customer information** such as demographic details, subscription type, tenure, and whether they churned.

- Loaded from `customer churn.csv`.

- **No missing values or duplicates** were found in the dataset, making it ready for analysis.

🔧 Data Preprocessing:

- **Binary to Categorical Conversion**: The `SeniorCitizen` column was converted from 0/1 to "No"/"Yes" for better understanding.

- **Initial Checks**:

  - ○ Total null values: `0`

○ Duplicate `customerID`s: `0`

📊 Key Visual Insights & Analysis:

1. 📈 Overall Churn Rate

- Out of all customers:

  - **73.46% (approx.) have stayed** with the service.

  - **26.54% have churned** (as shown in the pie chart).

- This is a significant churn rate and needs strategic attention.

2. 👵 Churn by Senior Citizen

- Among senior citizens:

  - A **higher churn rate (~42%)** was observed compared to **non-senior citizens (~23%)**.

- A stacked bar chart confirmed that senior citizens are almost **twice as likely** to leave the service.

- **Business Action**: Introduce loyalty benefits or customized support for senior customers.

3. ⏳ Tenure vs. Churn

- Most of the churned customers had **tenure of 1–2 months**.

- Customers with **tenure > 12 months** had a significantly **lower churn rate (~10%)**.

- **Insight**: If a customer stays beyond 6–12 months, they are less likely to leave.

- **Suggestion**: Focus on the first few months – improve onboarding, offer trial discounts, or loyalty bonuses.

4. 📝 Contract Type vs. Churn

- Customers with:

    - **Month-to-month contract**: **44% churn rate**

    - **One-year contract**: ~11% churn

    - **Two-year contract**: **Only 2–4% churn**

- **Insight**: Long-term contracts strongly correlate with customer retention.

- **Actionable Tip**: Incentivize long-term plans (e.g., discounts, premium features).

5. ♂ Gender vs. Churn

- Gender alone does not significantly influence churn:

    - Male Churn Rate: ~27%

    - Female Churn Rate: ~26%

- **Conclusion**: Gender is not a determining factor for churn; focus more on contract type and tenure.

📌 Overall Findings:

Factor	Impact on Churn	Churn % (Approx.)
Senior Citizen	High churn among seniors	42%
New Customers (<3 mo)	High risk of churn	~50%
Long-term Customers	Much lower churn	<10%
Month-to-Month Plan	Very high churn	44%
One/Two Year Plans	Very low churn	2–11%
Gender	Minimal impact	~26–27%

🧠 Business Recommendations:

1. **Retain new customers** during the first 3 months with special onboarding programs.

2. Encourage customers to switch to **longer-term contracts** using discounts and benefits.

3. Offer **personalized services for senior citizens**, including call support, ease-of-use tools, or wellness programs.

4. Monitor customers on month-to-month plans and proactively offer retention deals.