**Data Sources**

In the analysis, I utilized a publicly available dataset, [**Telco Customer Churn**,](https://www.kaggle.com/datasets/blastchar/telco-customer-churn/data?select=WA_Fn-UseC_-Telco-Customer-Churn.csv) sourced from Kaggle. The dataset has been renamed as **TelcoCustomerChurn** for consistency within the Jupyter Notebook workflow. This dataset contains customer details, contract information, payment behavior, and churn status, making it suitable for building predictive models to analyze customer retention patterns.

To load the dataset in Jupyter Notebook, use the following command:

import pandas as pd

# Load the dataset

df = pd.read\_csv("TelcoCustomerChurn.csv")

# Display the first few rows

df.head()

The Telco Customer Churn dataset contains the following columns, which provide various customer attributes related to their subscription, contract details, and service usage:

### **Column Headings in the Dataset:**

1. **customerID** – Unique identifier for each customer.
2. **gender** – Customer’s gender (Male/Female).
3. **SeniorCitizen** – Whether the customer is a senior citizen (1) or not (0).
4. **Partner** – Whether the customer has a partner (Yes/No).
5. **Dependents** – Whether the customer has dependents (Yes/No).
6. **tenure** – Number of months the customer has been with the company.
7. **PhoneService** – Whether the customer has a phone service (Yes/No).
8. **MultipleLines** – Whether the customer has multiple phone lines (Yes/No/No phone service).
9. **InternetService** – Type of internet service (DSL/Fiber optic/No).
10. **OnlineSecurity** – Whether the customer has online security (Yes/No/No internet service).
11. **OnlineBackup** – Whether the customer has online backup (Yes/No/No internet service).
12. **DeviceProtection** – Whether the customer has device protection (Yes/No/No internet service).
13. **TechSupport** – Whether the customer has tech support (Yes/No/No internet service).
14. **StreamingTV** – Whether the customer has streaming TV (Yes/No/No internet service).
15. **StreamingMovies** – Whether the customer has streaming movies (Yes/No/No internet service).
16. **Contract** – Type of contract (Month-to-month/One year/Two year).
17. **PaperlessBilling** – Whether the customer has paperless billing (Yes/No).
18. **PaymentMethod** – How the customer makes payments (Electronic check/Mailed check/Bank transfer (automatic)/Credit card (automatic)).
19. **MonthlyCharges** – Monthly charges paid by the customer.
20. **TotalCharges** – Total charges paid by the customer.
21. **Churn** – Whether the customer churned (Yes/No).