

Telco Customer Churn – Business Analytics Dashboard Project Report (Power BI) – MUBEENA PARVEEN

1.Introduction to the Dataset :

The **Telco Customer Churn dataset** (from Kaggle) contains detailed customer data from a telecom service provider.

It helps analyze patterns and understand the reasons behind customer churn (service cancellation).

Dataset Overview

- **Total Records:** 7,043
- **Total Columns:** 21
- **Target Variable:** Churn (Yes = Customer Left, No = Retained)

Key Features

Feature Group	Attributes	Description
Demographics	gender, SeniorCitizen, Partner, Dependents	Customer profile details
Services Subscribed	PhoneService, InternetService, StreamingTV, TechSupport, etc.	Type of services used
Billing Information	Contract, PaymentMethod, PaperlessBilling, MonthlyCharges, TotalCharges	Billing & payment preferences
Tenure	tenure	Duration of relationship with the company
Target Variable	Churn	Whether the customer left the service

2.Objective of the Analysis

The objective of this analysis is to identify the **key drivers of customer churn** and provide actionable insights for the marketing and retention teams.

Business Questions

1. What is the overall churn rate of the company?
2. Which contract type, payment method, or service plan has the highest churn?
3. Are high-paying or short-tenure customers more likely to leave?
4. What demographic or service features influence churn behavior the most?
5. What strategies can reduce churn and improve customer satisfaction?

3. Dashboard Overview

An **interactive Power BI dashboard** was created to explore customer churn from multiple perspectives.

It includes KPI metrics, charts, and filters to help decision-makers drill down into specific customer segments.

Dashboard Layout

- **Top Section:** KPI Cards (Total Customers, Churned Customers, Churn Rate %)
- **Middle Section:** Bar and Line Charts (Contract, Tenure, Monthly Charges)
- **Bottom Section:** Pie Chart, Scatter Plot, and Filters

KPI Cards and DAX Implementation

In this project, key performance indicators (KPIs) were developed in **Power BI** using **DAX (Data Analysis Expressions)** to measure and visualize customer churn behavior.

The goal was to create dynamic metrics that update automatically based on filters such as contract type, internet service, or payment method.

Four main DAX expressions were used in the model:

- The **Churn Rate** measure calculates the proportion of customers who have churned out of the total base using the formula:

```
Churn Rate =  
DIVIDE(  
    COUNTROWS(FILTER(Telco_Cleaned, Telco_Cleaned[Churn] = "Yes")),  
    COUNTROWS(Telco_Cleaned),  
    0  
)
```

This provides a quick percentage view of overall customer attrition and serves as a key benchmark for performance tracking.

- The **Churned Customers** measure counts how many customers have discontinued the service:

```
Churned Customers =  
COUNTROWS(FILTER(Telco_Cleaned, Telco_Cleaned[Churn] = "Yes"))
```

This helps quantify the scale of churn in absolute numbers.

- The **ChurnNumeric** calculated column converts categorical churn data into numerical form for easier aggregation and modeling:
ChurnNumeric = IF(Telco_Cleaned[Churn] = "Yes", 1, 0)
- The **ChurnStatus** calculated column classifies customers as “Churned” or “Retained,” improving segmentation and visualization:
ChurnStatus = IF(Telco_Cleaned[Churn] = "Yes", "Churned", "Retained")

Together, these measures and columns enabled the creation of **three key KPI cards** in Power BI:

- **Total Customers** (total customer base),
- **Churned Customers** (count of customers lost), and
- **Churn Rate (%)** (percentage of churned customers).

Each KPI card was formatted with color indicators — **green for total customers**, **red for churned customers**, and **orange for churn rate** — allowing quick, intuitive interpretation by business users.

Insight and Interpretation

The KPIs revealed that the **churn rate was highest among month-to-month contract customers**, highlighting weak engagement and low customer commitment in that segment. By contrast, customers under **one-year or two-year contracts** showed much lower churn, demonstrating that **contract length and stability** directly influence customer loyalty.

This insight suggests that focusing on **contract-based retention programs** and **incentives for long-term commitments** can significantly improve customer retention and reduce churn rates.

Bar Chart – Churn by Contract Type

- **X-axis:** Contract Type
- **Y-axis:** Number of Customers
- **Legend:** Churn Status

Insight:

Customers on **Month-to-Month contracts** churned far more often than those on **One or Two-Year contracts**, suggesting that **contract length strongly influences loyalty**.

Line Chart – Churn by Tenure

- **X-axis:** Tenure (Months)
- **Y-axis:** Average Churn Rate

Insight:

Churn is **highest in the first 12 months**, then decreases as customers stay longer — showing that **early engagement and onboarding** are crucial.

Scatter Plot – Monthly vs Total Charges

- **X-axis:** MonthlyCharges
- **Y-axis:** TotalCharges
- **Color:** Churn Status

Insight:

Customers with **high monthly charges but low total charges (short tenure)** are most likely to churn — indicating **price dissatisfaction early in the relationship**.

Pie Chart – Churn by Gender

- Similar churn distribution across genders — demographics have **minimal effect** compared to service and pricing factors.

Slicers (Interactive Filters)

Filters added for:

- **Internet Service Type**
- **Payment Method**
- **Contract Type**

These allow dynamic exploration of churn patterns by segment.

4. Dashboard Story (Interpretation)

The dashboard tells a clear **business story**:

Most customer churn occurs among **month-to-month, short-tenure, and high-charge** customers.

Customers with **bundled or long-term contracts** are significantly more loyal.

Pricing perception, service value, and ease of contract renewal are the primary churn drivers.

5.Strategy Planning & Marketing Recommendations

To reduce churn and enhance retention, the following strategies were developed — grounded in **marketing and service management theories** such as the **AIDA Model**, **Customer Lifetime Value (CLV)**, and **SERVQUAL Framework**.

1. Onboarding & Early Engagement (AIDA Model)

The **AIDA Model (Attention – Interest – Desire – Action)** is a classic marketing communication framework that describes the psychological stages customers go through before making a purchase or engagement decision.

Why Used Here:

This model is applied to **new or short-tenure telecom customers** who are at higher risk of early churn. By following the AIDA stages, the company can design more effective onboarding campaigns that capture attention, build interest, create desire to stay, and encourage long-term action (service retention).

Strategic Actions:

- **Attention & Interest:** Launch personalized **welcome campaigns** through SMS or email immediately after service activation to make new customers feel valued.
- **Desire & Action:** Provide **educational content**, onboarding assistance, and **loyalty rewards** during the first three months to strengthen satisfaction and commitment.
- The main goal is to **reduce early churn** caused by lack of familiarity, poor onboarding, or perceived service complexity.

2.Value Communication & Pricing Optimization (Perceived Value Theory)

Model Definition:

The **Perceived Value Theory** explains that a customer's decision to continue or discontinue a service depends not just on cost but on the **perceived benefits versus the price paid**.

Why Used Here:

High monthly charges were linked with higher churn in the analysis. Many customers leave not because of price itself, but because they **don't see enough value** in what they pay for.

Strategic Actions:

- Emphasize **value-for-money** through transparent billing and personalized plan comparisons.
- Offer **custom or family plans** to match spending comfort levels.
- Communicate **premium benefits** (faster speeds, better support) for high-paying customers.
- Objective: Enhance **perceived fairness and satisfaction**, reducing price-related churn.

3.Encourage Long-Term Contracts (Customer Lifetime Value – CLV)

Model Definition:

The **Customer Lifetime Value (CLV)** model measures the total revenue a business can expect from a single customer throughout their relationship. It emphasizes **long-term profitability over short-term sales**.

Why Used Here:

Churn was significantly lower among customers with **one-year or two-year contracts**, showing that longer commitments yield higher lifetime value and customer stability.

Strategic Actions:

- Offer **discounts, cashback, or free add-ons** to motivate customers to switch from month-to-month to annual contracts.

- Use CLV metrics to identify and **reward loyal customers** with retention bonuses.
- Implement **tier-based loyalty programs** (e.g., Silver, Gold, Platinum) to extend customer lifespan.
- Objective: Increase **average CLV**, reduce **acquisition costs**, and drive **steady long-term revenue**.

4. Enhance Service Quality (SERVQUAL Model)

Model Definition:

The **SERVQUAL Model** evaluates service quality across five dimensions:

Reliability, Responsiveness, Assurance, Empathy, and Tangibles.

Why Used Here:

Telecom churn is often linked to **service dissatisfaction** — poor support, slow response, or unclear communication. SERVQUAL provides a structured way to identify service gaps and improve customer experience.

Strategic Actions:

- **Reliability:** Ensure stable connections and minimal downtime.
- **Responsiveness:** Provide 24/7 technical support and faster issue resolution.
- **Assurance:** Build customer trust through transparent communication and skilled staff.
- **Empathy:** Offer personalized care for senior citizens and long-term users.
- **Tangibles:** Enhance digital touchpoints — user-friendly apps, clear billing visuals.
- Objective: Build **trust and emotional loyalty** through consistent, high-quality service.

5.Data-Driven Monitoring & Continuous Improvement

Model Definition:

This approach aligns with **data-driven decision-making** principles in Business Analytics — continuously measuring key metrics, identifying trends, and adjusting strategies dynamically.

Why Used Here:

The Power BI dashboard provides interactive KPIs and churn insights. Regular monitoring ensures timely action and helps management **predict churn risk** before it escalates.

Strategic Actions:

- Use the **Power BI dashboard** monthly to track churn KPIs and retention outcomes.
- Identify **high-risk segments** (e.g., month-to-month plans or specific payment methods).
- Continuously update retention strategies based on new churn patterns.
- Objective: Maintain a **dynamic churn management system** that evolves with customer behavior.

Conclusion

By integrating **AIDA**, **Perceived Value**, **CLV**, and **SERVQUAL** frameworks into the Power BI churn analysis, the telecom company can move beyond descriptive analytics to **strategic marketing action**.

These models collectively help to:

- Increase **customer retention** by addressing early-stage and value-related churn,
- Improve **service experience and satisfaction**, and
- Strengthen **long-term relationships and profitability**.

Through proactive, theory-driven, and data-backed strategies, overall churn can potentially be reduced by **10–15%**, enhancing both **customer loyalty** and **business performance**.