# Telco Customer Churn Analysis (PowerBI)

## 1. Project Overview

Customer churn is a major challenge for telecom companies. This project focuses on analyzing customer data to identify churn patterns, key drivers of churn, and business insights using **Power BI**. The goal is to help stakeholders understand why customers leave and how churn can be reduced.

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## 2. Objectives

- Analyze overall customer churn rate
- Identify key factors influencing churn
- Compare churn across gender, contract type, tenure, and payment method
- Provide actionable insights for business decision-making
- Build an interactive and interview-ready Power BI dashboard

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## 3. Dataset Description

**Dataset Name:** Telco Customer Churn Dataset

### Key Columns Used

- `CustomerID` – Unique customer identifier
- `Gender` – Male / Female
- `SeniorCitizen` – Indicates if customer is a senior citizen
- `Tenure` – Number of months the customer stayed
- `Contract` – Month-to-month / One year / Two year
- `PaymentMethod` – Payment type
- `MonthlyCharges` – Monthly bill amount
- `TotalCharges` – Total amount charged
- `Churn` – Yes / No (Target variable)

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## 4. Tools & Technologies Used

- **Power BI Desktop** – Data modeling & visualization
- **Power Query** – Data cleaning and transformation

- **DAX** – Measures and KPIs

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# 5. Data Cleaning & Transformation (Power Query)

The following transformations were performed:

- Removed duplicate records
- Changed data types (numeric, text, boolean)
- Handled missing values in `TotalCharges`
- Renamed columns for clarity
- Created calculated columns where required

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# 6. Data Modeling

- Single fact table model
- Relationships handled implicitly
- Clean star-like structure for performance

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# 7. DAX Measures Created

### Total Customers

```
Total Customers = DISTINCTCOUNT(Telco[CustomerID])
```

### Churned Customers

```
Churned Customers = CALCULATE([Total Customers], Telco[Churn] = "Yes")
```

### Churn Rate %

```
Churn Rate % = DIVIDE([Churned Customers], [Total Customers])
```

### Total Revenue

```
Total Revenue = SUM(Telco[TotalCharges])
```

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# 8. Dashboard Design & Visuals

### KPI Cards

- Total Customers
- Churned Customers
- Churn Rate %
- Total Revenue

### Charts Used

- **Clustered Column Chart:** Churn by Gender
- **Clustered Column Chart:** Churn by Contract
- **Line Chart:** Customer Tenure vs Churn
- **Key Influencers Visual:** Factors influencing churn

### Slicers

- Gender
- Contract
- Payment Method
- Senior Citizen

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# 9. Key Influencers Analysis

The Key Influencers visual shows that:

- Month-to-month contracts increase churn probability significantly
- High monthly charges increase churn likelihood
- Customers with low tenure churn more
- Long-term contracts reduce churn

This visual is highly valuable for interviews and business presentations.

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# 10. Key Business Insights

- Month-to-month customers show the highest churn
- Customers with higher monthly charges are more likely to churn
- New customers (low tenure) have higher churn risk
- Long-term contracts significantly reduce churn

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# 11. Folder Structure

```
Telecom Churn Analysis/
├── Dataset/
├── Screenshots/
├── Dashboard Overview/
```

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# 12. Challenges Faced

- Understanding correct field placement in Power BI visuals
- Formatting churn rate as percentage
- Handling missing TotalCharges values

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# 13. Learning Outcomes

- Hands-on experience with Power BI
- Strong understanding of churn analysis
- Practical use of Power Query and DAX
- Dashboard design best practices

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# 14. Conclusion

This project demonstrates end-to-end data analysis using Power BI, from data cleaning to dashboard creation and business insights. It is suitable for portfolio, resume, and interview discussions.

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# 15. Author

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