

Complete Exploratory Data Analysis (EDA) Report

Customer Churn Analysis

1. Introduction

This report presents a complete Exploratory Data Analysis (EDA) of the customer churn dataset. The objective is to analyze customer behavior, identify churn patterns, and extract actionable business insights using statistical summaries and visualizations.

2. Dataset Overview

The dataset contains customer demographic details, service usage information, contract types, charges, and churn status. These variables help in understanding why customers discontinue the service.

3. Overall Churn Distribution (Pie Chart Analysis)

The pie chart shows that 88.30% of customers have churned, while only 11.70% remain active. This visual clearly highlights a severe customer retention issue.

4. Gender-wise Churn Analysis (Bar Chart)

The bar chart comparing churn across genders indicates nearly equal churn contribution from male and female customers. This suggests gender is not a strong determinant of churn.

5. Tenure vs Churn Analysis (Distribution Chart)

The tenure-based visualization shows that a high percentage of customers churn during the initial months. Customers with longer tenure demonstrate improved retention, indicating trust builds over time.

6. Contract & Service-Based Churn (Bar/Count Charts)

Customers without additional services such as technical support contribute a higher share of churn. Charts indicate that customers with value-added services are more likely to stay.

7. Monthly Charges vs Churn (Histogram/Box Plot)

Visual analysis shows that customers with higher monthly charges form a significant portion of churned users. This indicates dissatisfaction when pricing does not align with perceived value.

8. Total Charges Insight

Lower total charges among churned customers suggest short customer lifespan. These charts indicate that customers leave early before generating long-term revenue.

9. Key Insights Summary

- 88.30% customers churned
- Early-tenure customers dominate churn
- Gender has minimal impact on churn
- Service quality reduces churn probability
- Pricing-value mismatch increases churn

10. Business Recommendations

- Improve onboarding experience
- Introduce retention offers for new customers
- Promote technical support and bundled services
- Align pricing with service quality

11. Conclusion

The EDA concludes that customer churn is driven primarily by early dissatisfaction, pricing concerns, and lack of service engagement rather than demographic factors. Implementing customer-focused strategies can significantly improve retention.