

# Summary and Recommendations

## Objective

The primary goal of this analysis is to understand customer churn patterns in a telecom dataset. By applying data cleaning, transformation, and visualization techniques, we can identify key trends influencing customer retention and suggest actionable strategies to reduce churn.

## Key Data Processing Steps

### 1. Data Loading and Cleaning:

- The customer churn dataset was imported and examined for inconsistencies.
- Blank values in the Total Charges column were converted to 0, and the data type was changed to float for accurate calculations.
- A check for missing values confirmed that all necessary transformations were applied, ensuring data completeness.
- The Senior Citizen column, initially represented as numerical values (0 for non-senior and 1 for senior), was converted into categorical labels (Yes/No) for better readability.
- Duplicate records were identified and removed to maintain data integrity.

## Key Insights from Visualizations

### 1. Customer Churn Distribution:

- A comparative analysis revealed that 26.5% of customers have churned, while 73.5% have remained with the company.
- The relatively high churn rate signals the need for focused customer retention strategies.

### 2. Churn vs. Demographics:

- Senior citizens exhibit a higher churn rate (42%) compared to non-senior customers (24%), suggesting that age-related factors may influence customer behaviour.
- Customers with shorter tenure (less than 12 months) are more likely to churn, with 45% of them leaving within their first year.

### 3. Service Usage Patterns:

- Customers using Fiber Optic internet service have a churn rate of 40%, which is significantly higher than those using DSL or having no internet service.
- Additional analysis of services like Streaming TV, Tec Support, and Online Security shows that customers who lack technical support and security features tend to leave at a higher rate.

#### **4. Financial Impact:**

- Customers with lower Total Charges (below \$500) have a churn rate of nearly 50%, whereas those with higher total charges are more likely to stay.
- Contract type plays a major role in churn behaviour:
  - Customers with monthly contracts have a churn rate of 46%, compared to just 10% for those on two-year contracts.
  - Long-term contract customers contribute significantly to revenue stability.

### **Recommendations**

#### **1. Customer Retention Strategies:**

- Introduce loyalty incentives (discounts, reward points, personalized offers) for customers on monthly contracts to encourage long-term commitment.
- Improve the quality and reliability of Fiber Optic services to reduce dissatisfaction and mitigate churn.
- Offer targeted retention programs for senior citizens, such as dedicated customer support, special discounts, and user-friendly service plans to enhance their experience.

#### **2. Service and Pricing Enhancements:**

- Bundle Online Security and Tec Support services with internet plans, as customers with these add-ons show higher retention rates.
- Provide flexible contract options with lower early termination fees to make long-term plans more attractive.
- Implement personalized pricing strategies for new customers with lower tenure to prevent early churn.

#### **3. Data-Driven Decision Making:**

- Develop predictive models using the cleaned dataset to forecast churn probabilities and identify at-risk customers.

- Conduct further correlation analysis between multiple factors (tenure, charges, service type) to create targeted customer segments.
- Use machine learning models to identify patterns in churn behaviour and proactively address customer concerns before they leave.

## **Conclusion**

This analysis highlights key trends influencing customer churn and provides actionable recommendations to improve customer retention. The findings suggest that contract type, service usage, and tenure significantly impact churn behavior. By implementing targeted retention strategies, enhancing service quality, and leveraging predictive analytics, telecom companies can reduce churn rates and improve overall customer satisfaction and revenue.