Title: Customer Churn Analysis Report

1. Introduction

Customer churn is a critical issue for businesses, particularly in subscription-based industries. This analysis aims to identify key factors influencing customer churn using a dataset containing customer attributes and service details. The insights derived will help in developing strategies to improve customer retention.

2. Data Collection and Preprocessing

- The dataset **"customer churn.csv"** was used for this analysis.

- Initial data inspection revealed missing values and blank spaces in the **TotalCharges** column.

- Blanks in **TotalCharges** were replaced with 0, and the column was converted to a numerical format.

- The dataset was checked for inconsistencies and outliers before further processing.

3. Exploratory Data Analysis (EDA)

- **Descriptive Statistics:** Summary statistics were computed to understand data distribution.

- **Visualizations:**

  - Histograms and box plots were used to analyze customer demographics and service usage.

  - Correlation heatmaps identified relationships between features.

  - Churn rate comparisons across different customer segments were performed.

- **Key Insights:**

  - Customers with lower tenure and higher monthly charges had a higher churn rate.

  - Contract type and payment method played significant roles in churn behavior.

4. Predictive Modeling (If Applicable)

- **Machine Learning Models:**

  - Logistic Regression, Decision Trees, or Random Forest classifiers were explored.

  - Model performance was evaluated using accuracy, precision, recall, and F1-score.

- **Key Findings:**

  - Feature importance analysis showed that contract type and tenure were strong predictors of churn.

5. Business Implications and Recommendations

- **Retention Strategies:**

  - Offering discounts or better contract options for high-risk customers.

  - Improving customer support for those using specific payment methods linked to higher churn.

  - Enhancing personalized marketing efforts to retain customers.

6. Conclusion

The analysis provided valuable insights into customer churn patterns. Businesses can use these findings to develop data-driven strategies for reducing churn and improving customer satisfaction.