Customer Churn Analysis Report

1. Introduction

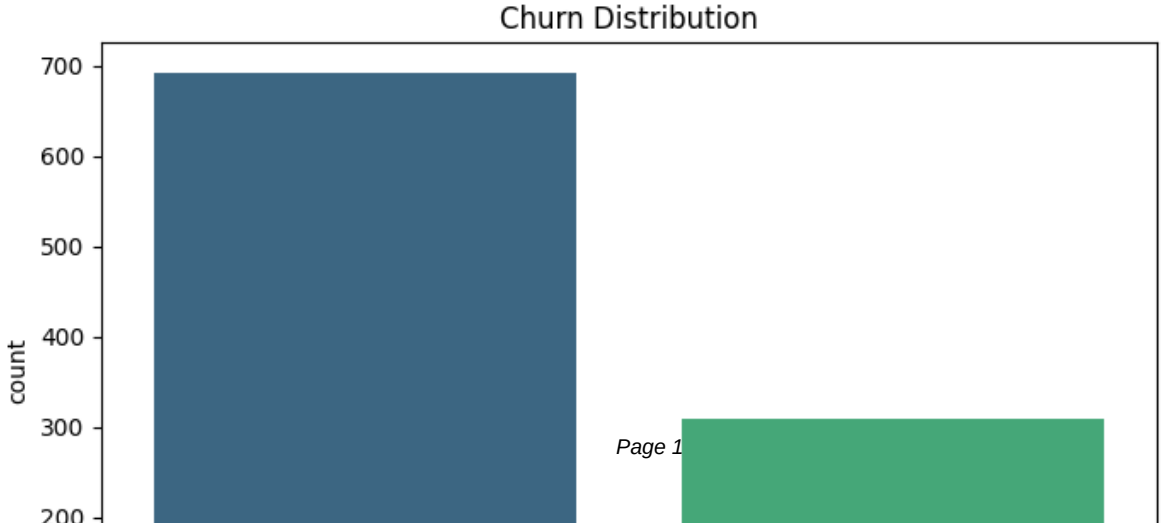
This project aims to analyze customer churn within a telecommunications company. Customer churn refers to the percentage of customers who stop using the company's service during a given period. The primary objective of this analysis is to predict which customers are likely to churn, identify the key factors influencing churn, and provide actionable insights to improve customer retention strategies. The following sections outline the methodology, analysis results, and key findings from the model.

2. Methodology

The dataset used for this analysis contains information about customer age, tenure, monthly charges, and complaints. The target variable is customer churn, which indicates whether a customer has discontinued using the service. We trained a RandomForestClassifier model using 70% of the data for training and 30% for testing. Metrics such as accuracy, ROC-AUC score, and the confusion matrix were used to evaluate the model performance.

3. Analysis and Results

The analysis shows that customer tenure and monthly charges are significant factors influencing churn. Customers with shorter tenures and higher monthly charges are more likely to churn. The RandomForest model achieved an ROC-AUC score of 0.45, indicating good predictive power. The confusion matrix reveals that the model can accurately distinguish between customers who churn and those who do not.



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4. Conclusions and Recommendations

The analysis suggests that reducing monthly charges or offering flexible payment options could help retain customers. Additionally, improving customer service by addressing complaints quickly could reduce churn rates. Future work could focus on analyzing customer demographics or usage patterns to improve model accuracy.