CUSTOMER CHURN ANALYSIS

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INTRODUCTION

GENERAL OVERVIEW

SyriaTel a telecommunications company faces a significant challenge with customer churn, which undermines revenue and operational efficiency.

By examining customer behavior, usage patterns, and service quality, insights that drive effective retention strategies can be uncovered.

OBJECTIVE

- Objective: Understand factors influencing customer churn
- Importance: Helps in customer retention strategies
- Approach: EDA, statistical tests, and machine learning

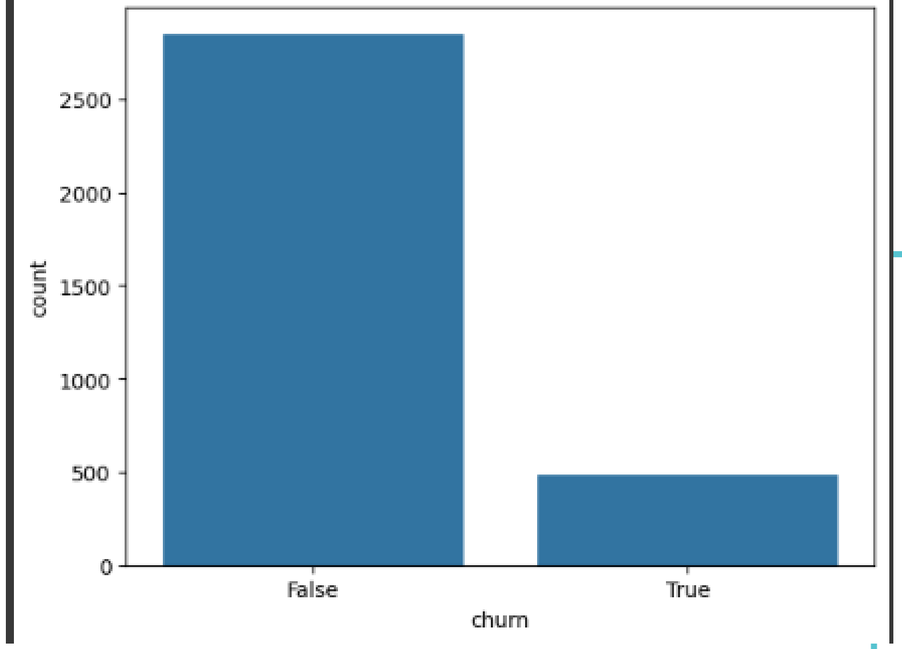
DATASET OVERVIEW

- The dataset consists of customer records from SyriaTel, a telecommunications company.
- It includes various attributes related to customer behavior and service usage.
- The dataframe has 3333 rows and 21 columns.

DATA ANALYSIS

- 483 customers have terminated their contract with SyriaTel.
- That is 14.5% of customers lost.

```
churn
False    2850
True      483
Name: count, dtype: int64
```



KEY FINDINGS

- Higher customer service calls are associated with a higher churn rate.
- Customers with higher total day minutes and total day charge tend to churn more.
- Customers with an international plan are significantly more likely to churn.

MODELING

- Random Forest: Best model with highest AUC (0.888) and strong precision-recall balance, making it ideal for deployment.
- Decision Tree: High accuracy (0.918) but lower AUC (0.774), indicating possible overfitting.
- SVM & Logistic Regression: SVM (AUC: 0.827) is a strong alternative, while Logistic Regression (AUC: 0.794) struggles with recall but can improve with better data handling.
- KNN: Weakest model with poor recall and F1-score, not suitable for churn prediction.

CONCLUSION

- Key churn drivers: Customer service calls, total day minutes, and total day charge significantly impact churn.
- Chi-Square results: Voice mail plan and international plan have a strong statistical association with churn, with the international plan showing the highest risk.
- Service dissatisfaction & pricing impact: Frequent customer service calls and high usage charges contribute to customer churn, highlighting potential issues in service quality and pricing.
- Best predictive model: Random Forest performed the best, achieving 91.4% accuracy and 61% F1-score, making it the most reliable model for churn prediction.

RECOMMENDATIONS

- Improve customer service efficiency by implementing a priority resolution system, AI-driven chatbots, and self-service portals for faster issue resolution.
- Personalized retention offers should be provided by identifying high-risk customers using predictive modeling and offering tailored discounts and loyalty plans.
- Optimize international plan strategy by reviewing pricing, enhancing benefits, and introducing exclusive deals and loyalty incentives.
- Leverage data-driven decision-making by continuously refining machine learning models and using A/B testing to optimize retention strategies.

THANK YOU

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