SyriaTel

CUSTOMER CHURN PREDICTIONS

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Overview

Our goal was to understand and predict customer churn for **SyriaTel**, and provide actionable insights to address the issue.

Customer retention is crucial in competitive industries like telecommunications. Losing customers not only means **losing future revenue** but also the **initial acquisition cost.**

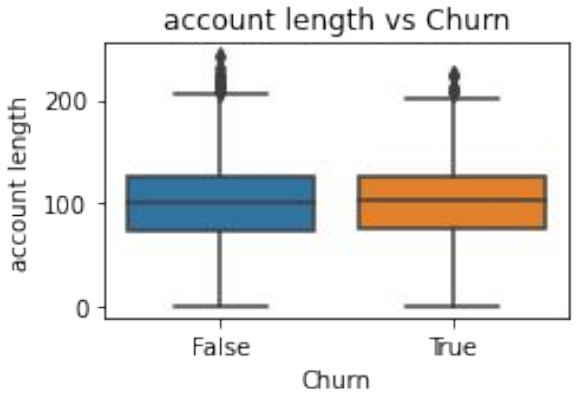
Recognizing traits of potential churners helps offer tailored strategies to retain them, maximizing revenue.

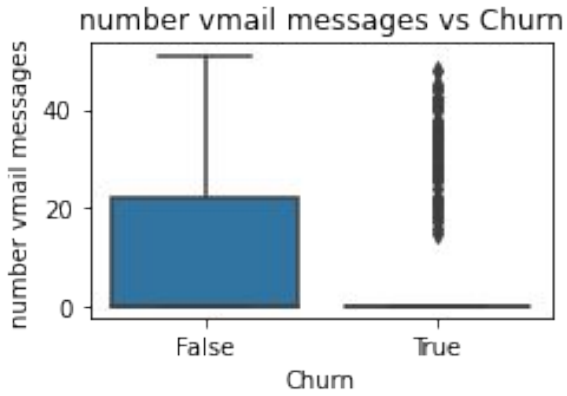
Data Understanding

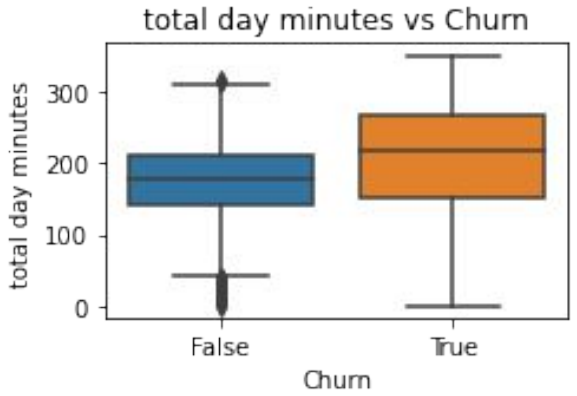
We used the **Churn in Telecom's dataset**, which provides a comprehensive view of customer profiles, their usage patterns, and churn status.

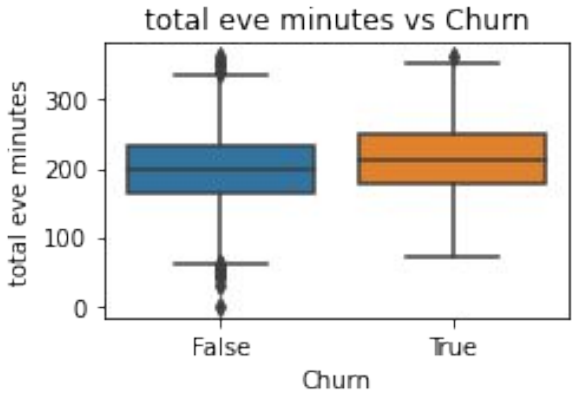
This dataset offers a mix of categorical and numerical features, providing a holistic view of customer behaviors and preferences.

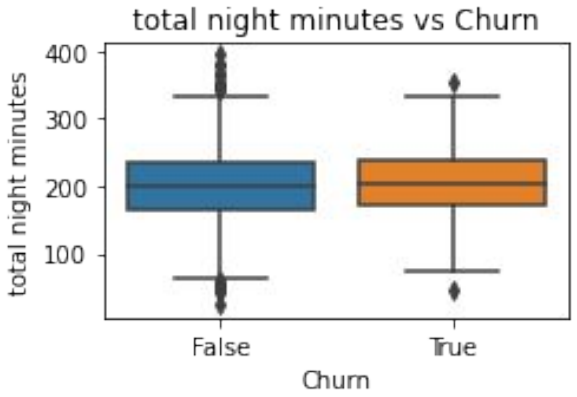
Data Analysis

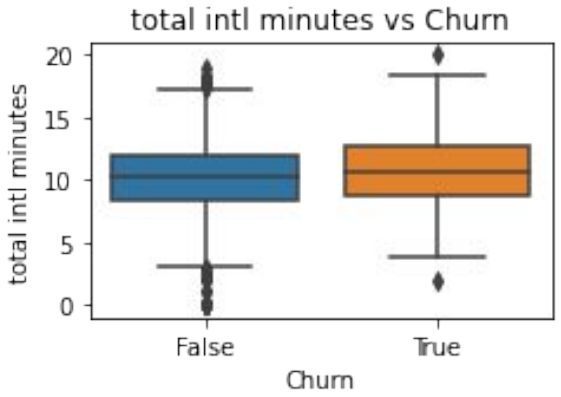


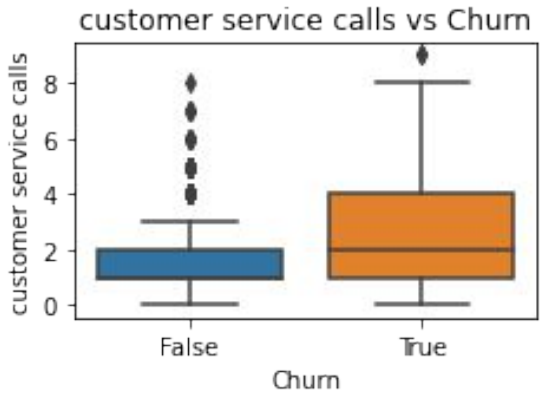












Initial Analysis reveals some initial patterns:

- Customers with higher **'total day minutes'** and **'total day charge'** seem more likely to churn.
- High '**customer service calls'** also indicate a higher likelihood of churn. This makes intuitive sense as dissatisfied customers tend to contact customer service more often.

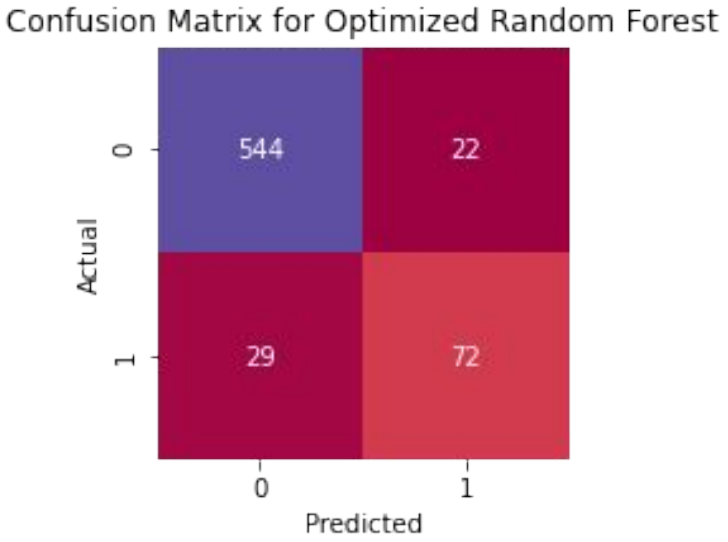
Modeling

We employed various machine learning models which we evaluated using:

- Precision and Recall.
- Accuracy.
- ROC-AUC.

The **Random Forest Model** emerged as our best performing model and offered insights to features that could significantly affect churn.

Evaluation



- Model correctly predicted **72** churn cases.
- Identified **544** non-churn cases.
- **False Positives**-Incorrectly Predicted **22** churn cases
- **False Negatives**- Model missed **29** churn cases -

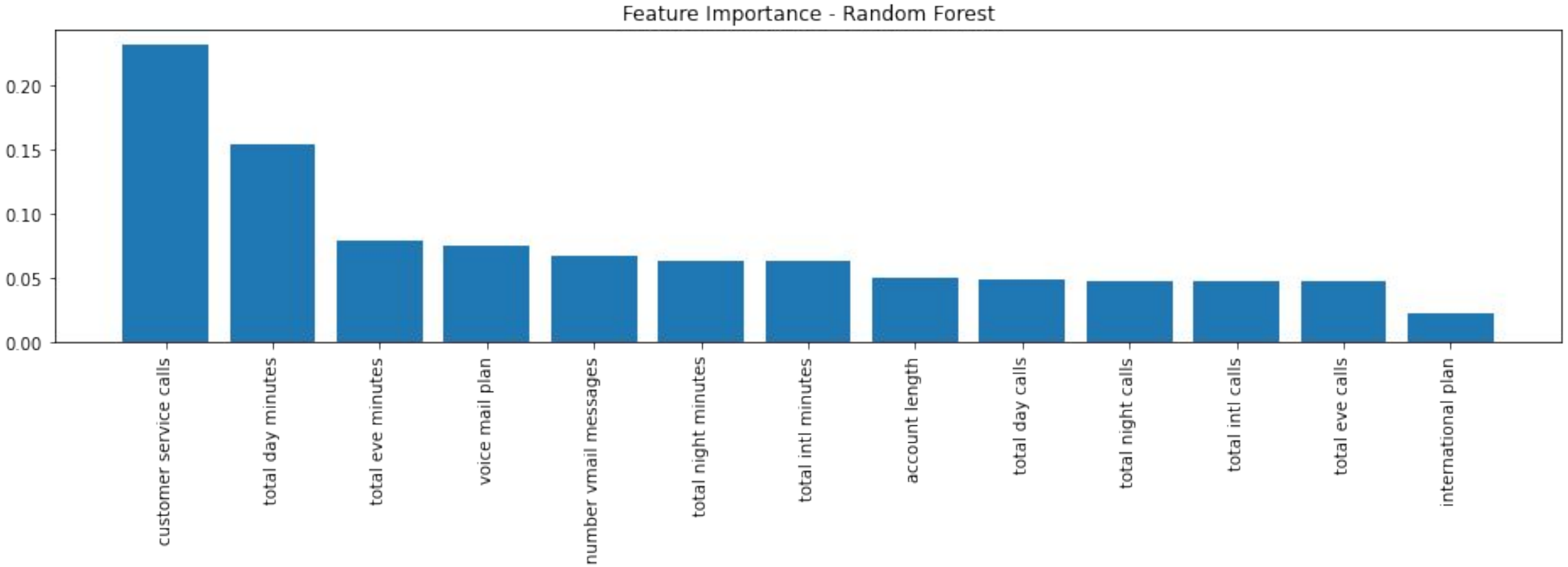
Classification Report for Optimized Random Forest:

	precision	recall	f1-score	support
0	0.949389	0.961131	0.955224	566.000000
1	0.765957	0.712871	0.738462	101.000000
accuracy	0.923538	0.923538	0.923538	0.923538
macro avg	0.857673	0.837001	0.846843	667.000000
weighted avg	0.921613	0.923538	0.922401	667.000000

- The model achieved an accuracy of approximately **92.35%** on the test data.
- **Precision for Churn (1): 76.60%**
- **Recall for Churn (1): 71.29%**

ROC-AUC Score: **0.8370**

Feature Importance

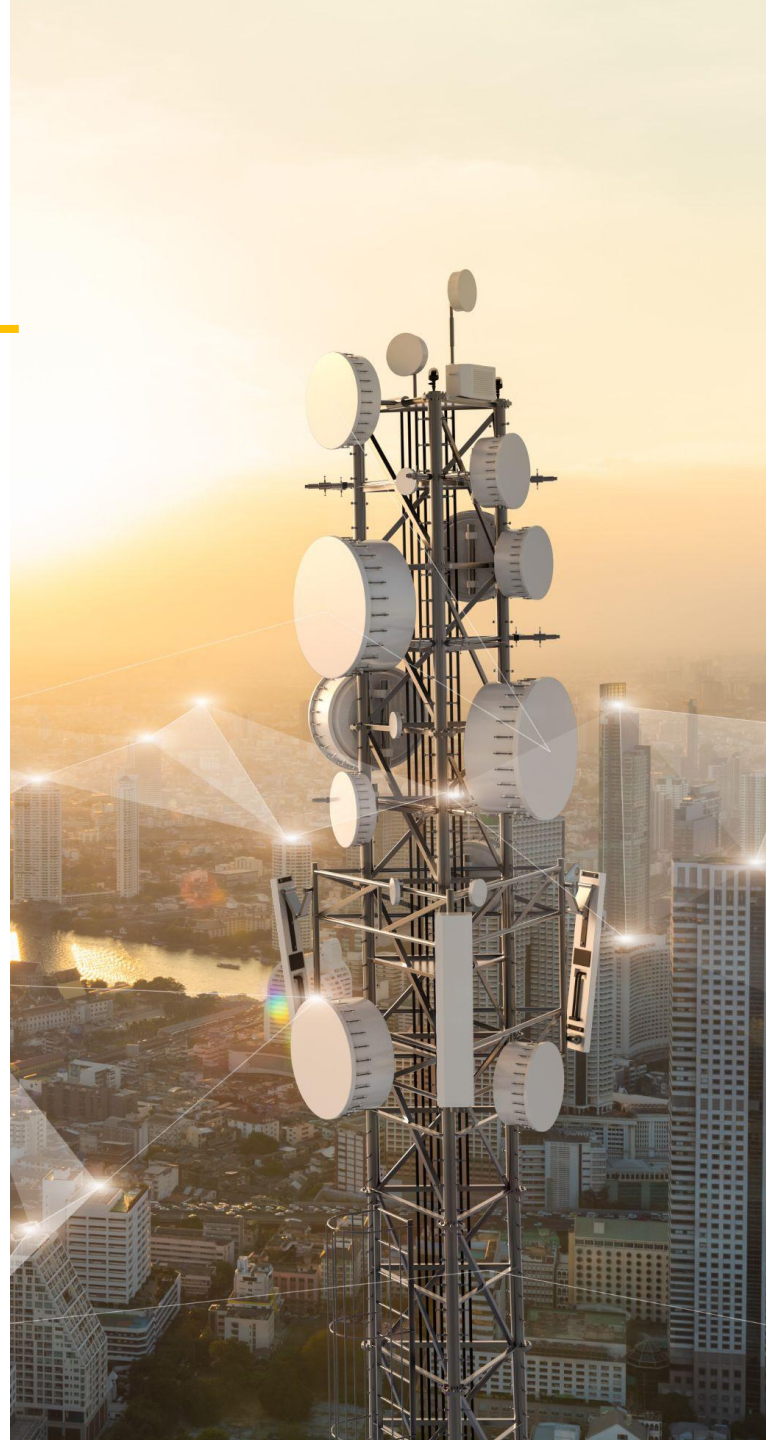


- The features related to the daily usage, such as **customer service calls** and **total day minutes**, appeared to be the most influential in predicting customer churn.

Conclusions

- Features like **'customer service calls',** and the **'total day minutes'**. were consistently highlighted as significant predictors of churn.

- This suggests that **daily charges** which had direct linear relationship with daily minutes, and the quality of customer service, are areas where customer dissatisfaction may arise, leading to churn.



Recommendations

- **Enhance Customer Service:** Improving customer service quality and efficiency, including quick issue resolution and personalized experiences through CRM systems, can boost customer retention.
- **Review Pricing Structure:** Analyze the pricing structure, particularly for daytime charges, considering the significant relationship between **'Total day minutes'** and **'Total day charge.'** Ensure it aligns with customer expectations and competitors.
- **Continuous Monitoring:** Customer preferences change, so it's vital to regularly update the model with new data and insights. Implement a real-time feedback loop for timely interventions.
- **Engage with Customers:** Conduct surveys or focus groups, especially with ‘at-risk’ customers identified by the model, to gain deeper insights. Direct feedback provides valuable context.
- **Implement Retention Strategies:** For customers at risk of churning, implement retention strategies like loyalty programs, special offers, and personalized communications to improve satisfaction and retention.
- **Explore Advanced Models:** While the Random Forest model performed well, explore more advanced models, fine-tune hyperparameters, and consider additional feature engineering to enhance predictive accuracy.

Thank You

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