

The background is a deep blue gradient. It is decorated with a complex pattern of white and dark blue hexagons of various sizes. Some hexagons are solid dark blue, while others are white outlines. A network of white lines connects some of these hexagons, creating a circuit-like or molecular structure. In the lower-left area, there is a white icon of a padlock, suggesting security or data protection.

# SYRIATEL CUSTOMER CHURN PREDICTION REPORT.

# OVERVIEW

Customer churn is a huge challenge in the telecommunication industry today. This project aims to develop a machine-learning model that predicts which customers are likely to churn.

By identifying them early, SyriaTel can take proactive measures that can improve customer retention and reduce revenue loss.



# BUSINESS UNDERSTANDING

SyriaTel is a telecommunication company that is highly affected by customer churn and this is leading to revenue loss.

The company needs an early warning system to identify which customers might be leaving soon so they can take necessary actions to retain them.



# OBJECTIVES

- Predict churn.
- Analyze key factors leading to churn.
- Recommendations on how they can reduce customer churn leading to increase in revenue.



# DATA UNDERSTANDING

This dataset was sourced from Kaggle. This dataset is going to help us build the models. The key features includes:

- *Customer information* - State, Acc. length, Area code and Phone number
- *Service plan* - International plan and voice mail plan.
- *Usage data* - Total minutes, calls and charge (day, evening, night)
- *Customer support interaction* - Customer service calls
- *Target variable* - Churn(1 = left, 0 = Stayed)

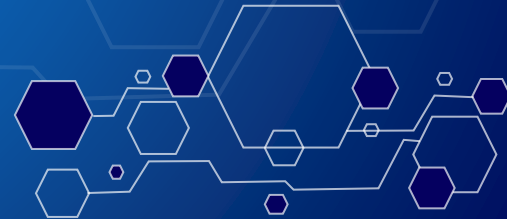


# DATA PREPARATION.

The key steps taken to clean and prepare our data include:

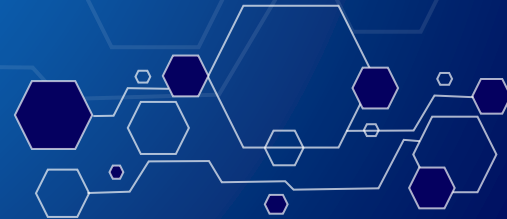
- Handling missing and duplicated values.
- Addressing class imbalance.
- Feature Engineering.
- Data Scaling and Encoding.

Tools used: Python



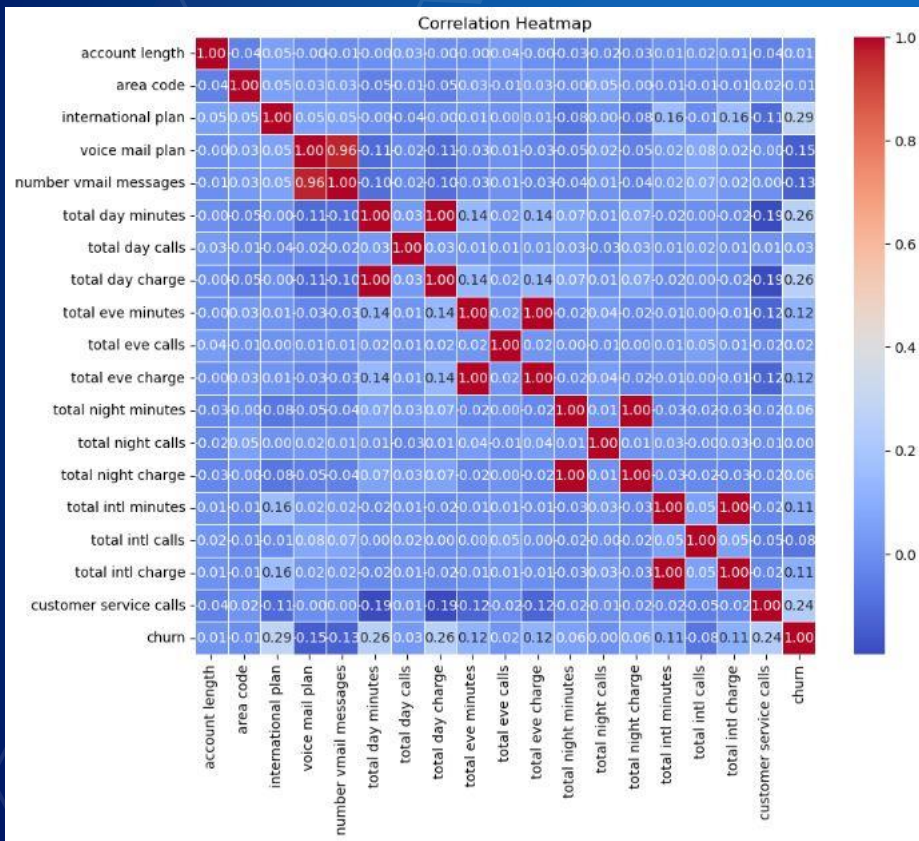
# DATA ANALYSIS

This section focuses on analyzing and visualizing the data to gain insights into what features correlates more with churn.





## Correlation heatmap.



From the heatmap above, we are able to see that:

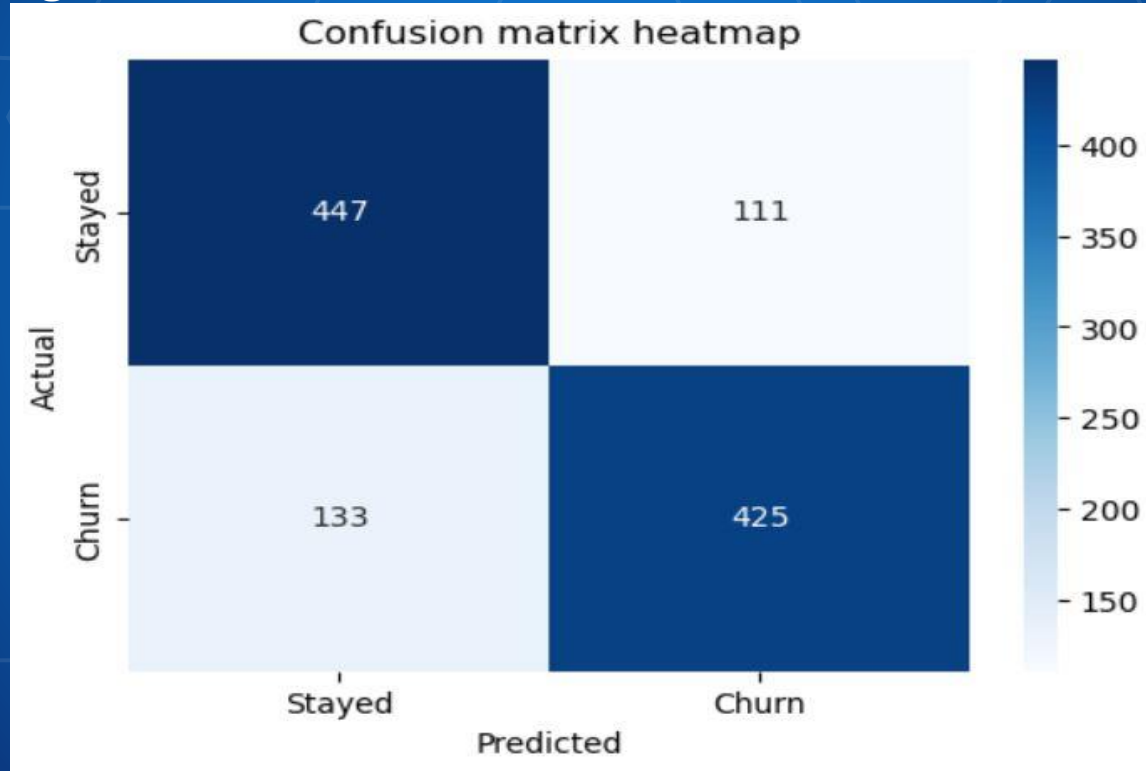
1. Customers with international plan churn more.(0.29)
2. High daytime usage correlates with churn.(0.26)
3. Frequent support calls will likely cause someone to churn.(0.24)
4. Customers with voice mail plan are less likely to churn.(-0.13)
5. More international calls slightly reduce churn.(-0.08)



# MODEL DEVELOPMENT

We trained two models:

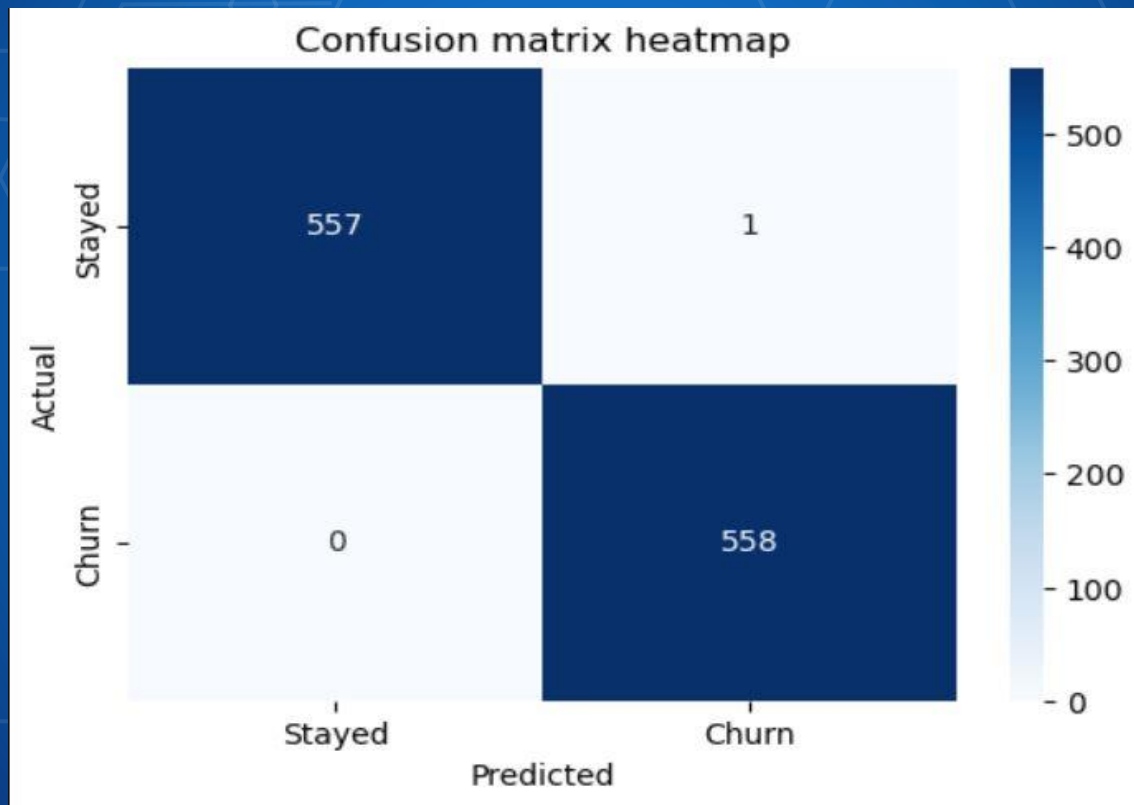
1. Logistic Regression Model.



## Findings from our logistic regression model:

1. The model was about 78.14% accurate.
2. Precision and recall was balanced across all customers.(78%)
3. The customers who stayed and were correctly classified were 447(True Negatives)
4. The customers who left and were correctly classified were 425(True Positives)
5. The customers who stayed and were wrongly classified as churned were 111(False Positives)
6. The customers who left and were wrongly classified as stayed were 133(False Negatives)

## 2. Random Forest Model.



## Findings from our Random Forest Model:

1. The model was 99.91% accurate. This is literally almost perfect!
2. Both precision and recall were all at 100% for all customers.
3. There were no false negatives meaning all the customers who left were correctly classified!
4. There was only one False positive meaning only 1 person who stayed was wrongly classified.
5. 557 customers who stayed were correctly classified and 558 customers who left were correctly classified!

# INSIGHTS

1. Customers with high international usage churn more.
2. Customers with high charges churn more.
3. Customers who call customer support often tend to leave.

# RECOMMENDATIONS

- 1. Offer better international plans** - Adjust pricing or give the customers better international packages.
- 2. Address high call chargers** - Since charges seem to be too high, you can review them or introduce loyalty discount for existing customers.
- 3. Improve customer service** - Focus on resolving the customers issues and make sure they were able to get a solution to their problems.



# CONCLUSION

This project provides a strong foundation for Syriatel to enhance customer retention efforts and minimize churn-related losses.

# THANK YOU!

Do you have any questions?

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