ENHANCING CUSTOMER LOYALTY AT SYRIATEL

PREDICTIVE MODELING FOR CHURN PREVENTION

CONTENT

BUSINESS UNDERSTANDING

Business Problem:

- **Customer Retention Challenge**: SyriaTel faces a significant challenge in retaining its existing customer base.

Objective:

- To pinpoint the factors driving customer churn for SyriaTel. Through predictive modeling, we have adopted a data-driven approach to develop a predictive classifier to identify factors that impact customer retention positively or negatively.
- This analysis will uncover these critical features, enabling us to formulate recommendations to minimize churn and bolster customer retention.

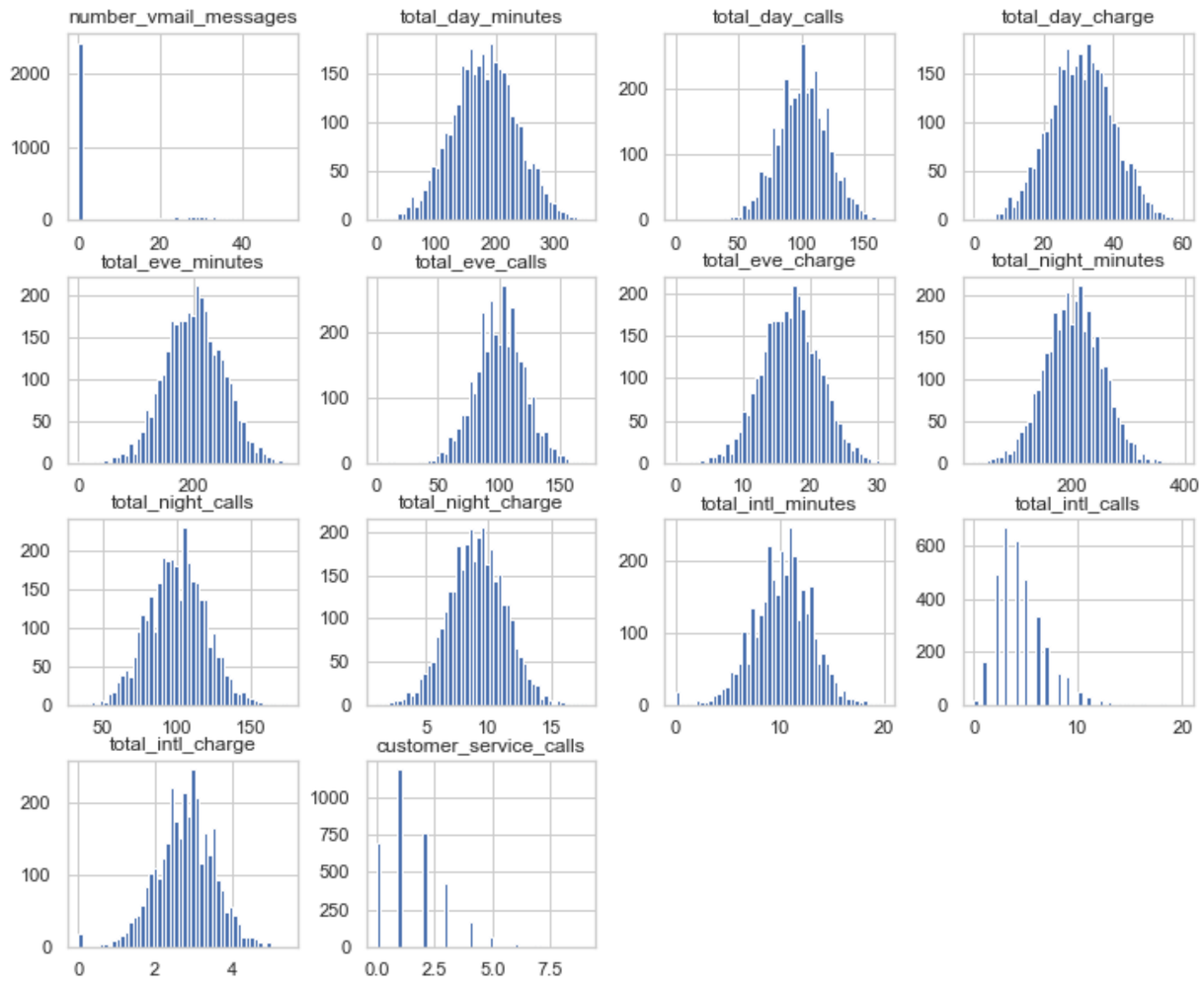
DATA UNDERSTANDING

Data source:
The dataset was sourced from here and includes valuable insights into customer behaviour patterns. It offers a comprehensive view of features that will be used to predict and understand some of the factors that may lead to the termination of their contract with SyriaTel.

The data has exactly 3,333 rows and 21 columns
The feature columns used for the analysis and predictive modeling include :state, area code, international plan, voice mail plan, number vmail messages, total day minutes, total day calls, total day charge, total eve minutes, total eve calls, total eve charge, total night minutes, total night calls, total night charge, total intl minutes, total intl calls.

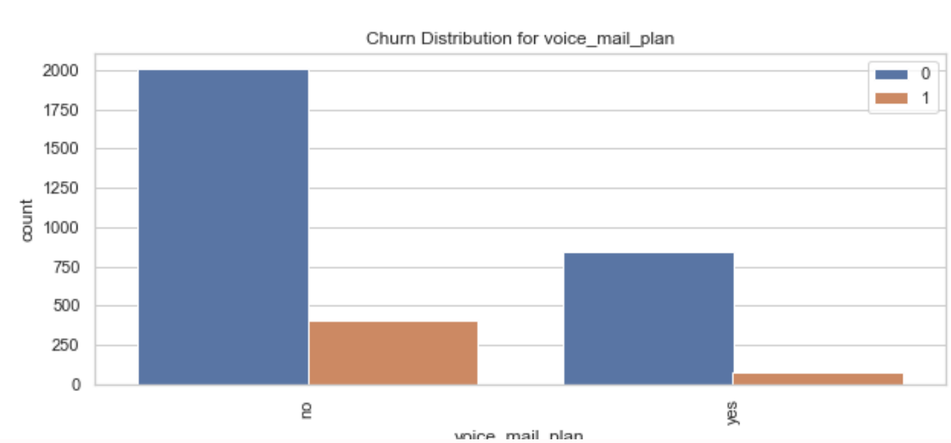
DATA EXPLORATION

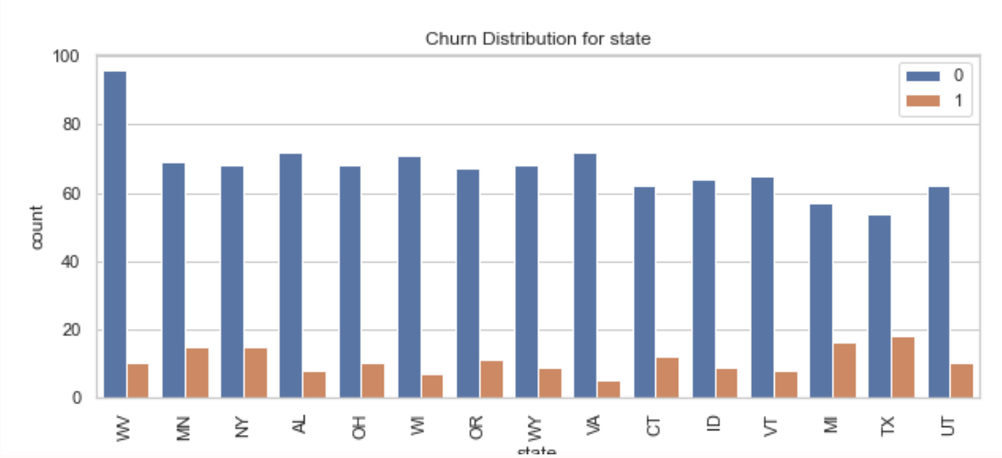
CONTINUOUS FEATURES DISTRIBUTIONS

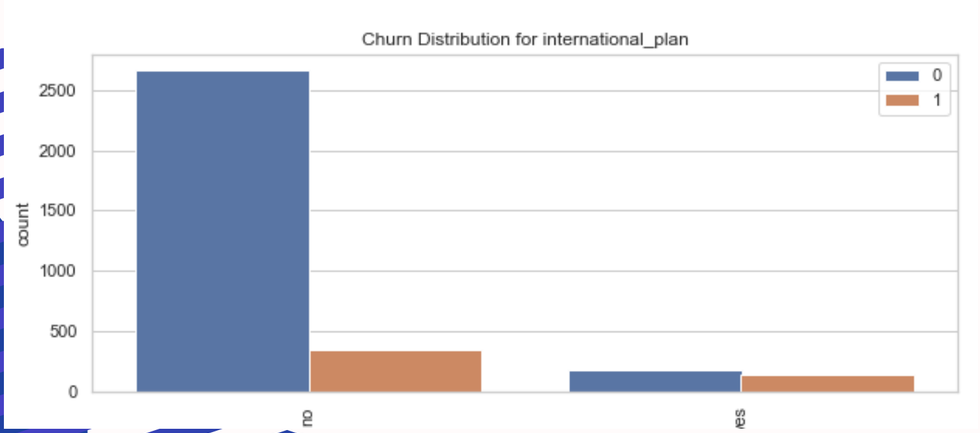


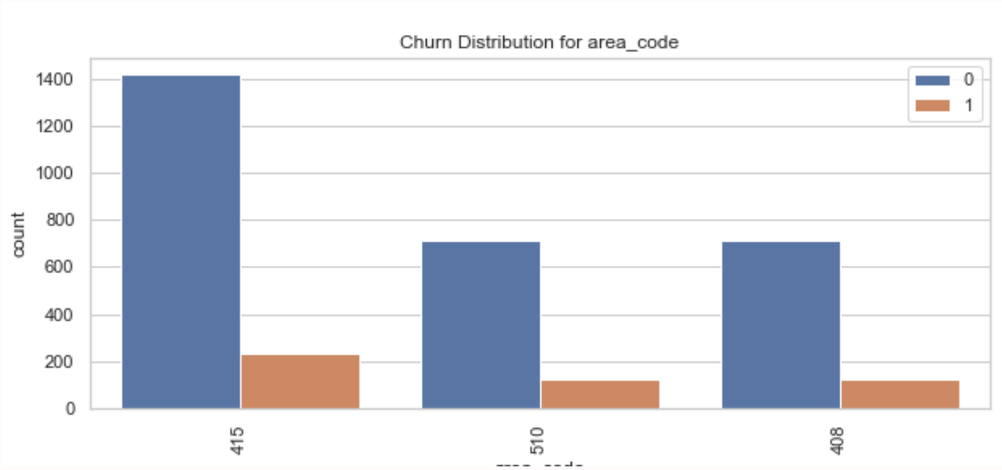
DATA EXPLORATION CNTD.

CATEGORICAL FEATURES DISTRIBUTIONS









MODELLING AND EVALUATION

1. LOGISTIC REGRESSION MODEL RESULTS

ACCURACY
79.1%

F1 SCORE
40.6%

RECALL
62.1%

PRECISION
30.1%

MODELLING AND EVALUATION

2. DECISION TREE MODEL RESULTS

ACCURACY
85.5%

F1 SCORE
45.8%

RECALL
53.0%

PRECISION
40.2%

MODELLING AND EVALUATION

3. RANDOM FOREST MODEL RESULTS

ACCURACY
92.9%

F1 SCORE
68.7%

RECALL
68.2%

PRECISION
69.2%

MODELLING AND EVALUATION

4.KNN(K-Nearest Neighbours) MODEL RESULTS

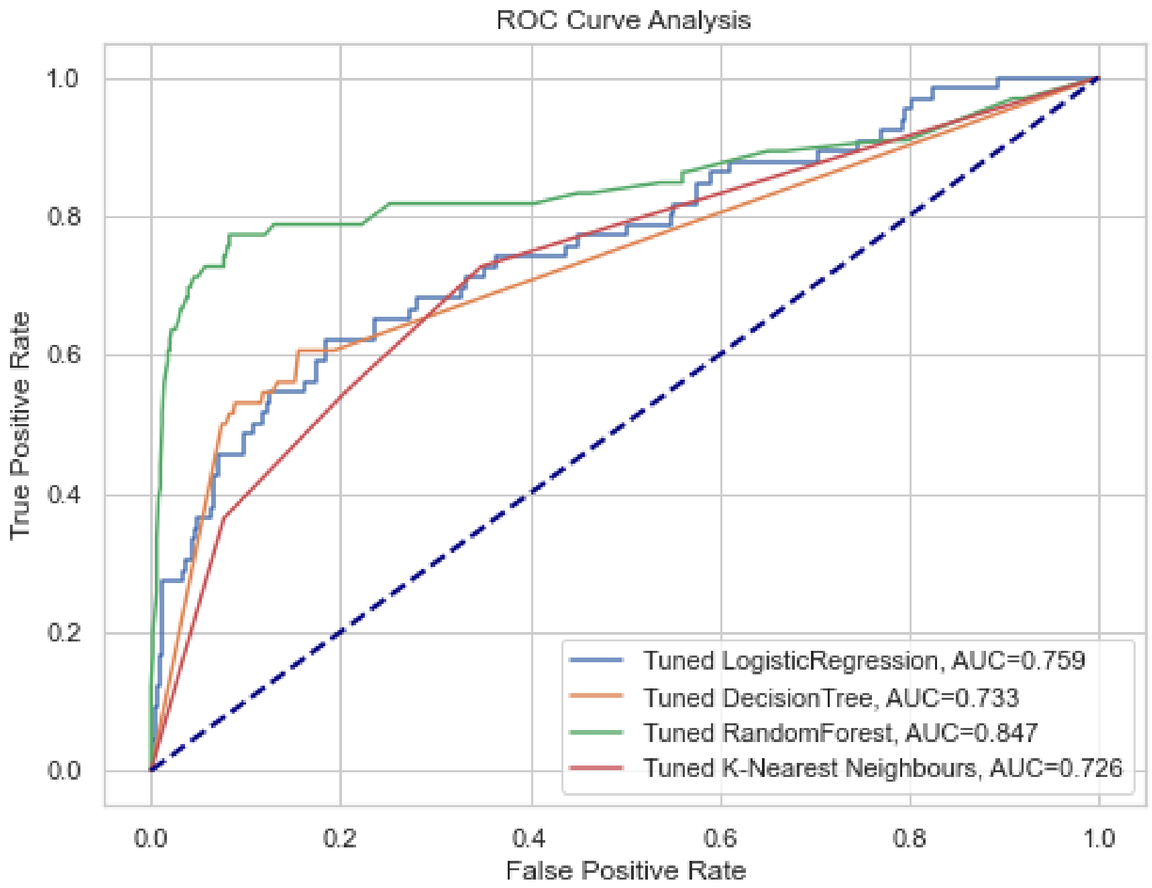
ACCURACY
76.7%

F1 SCORE
35.0%

RECALL
54.5%

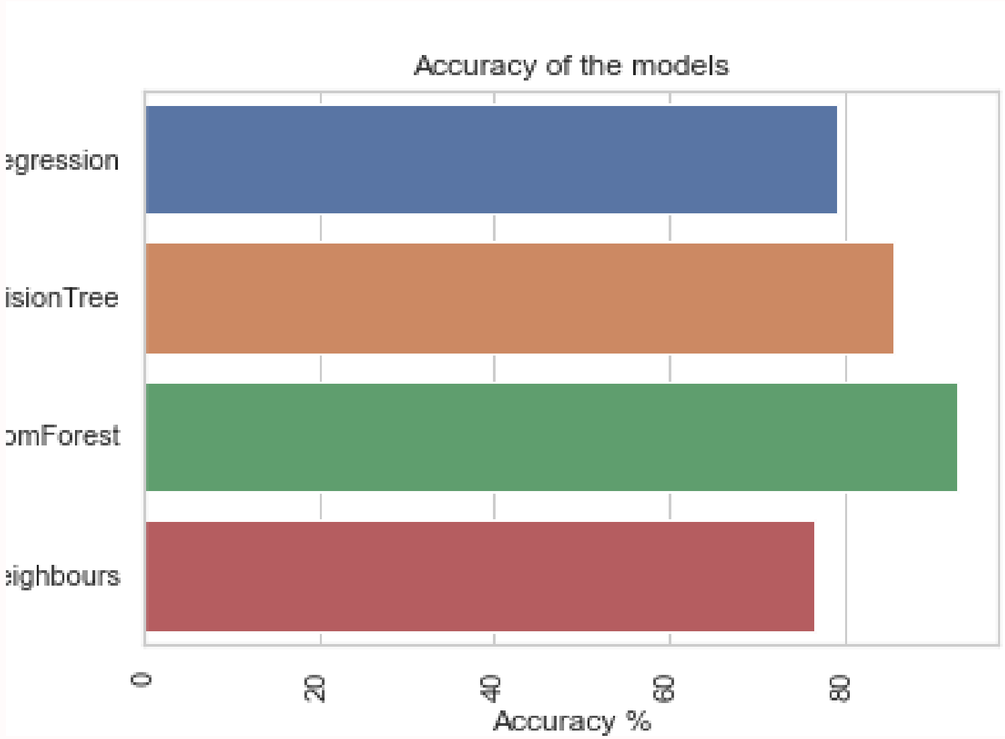
PRECISION
25.7%

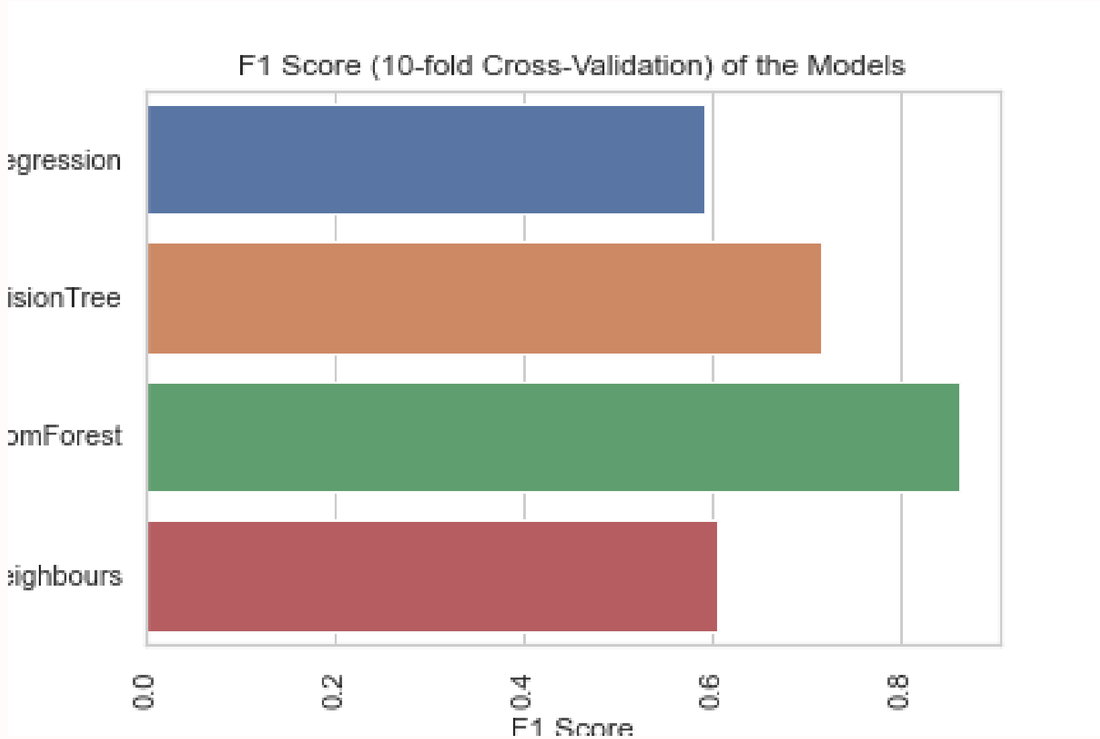
ROC CURVE ANALYSIS



A model with a higher ROC curve that is closer to the top-left corner indicates better predictive accuracy. The area under the ROC curve (AUC) is also calculated. A higher AUC indicates better discrimination power. The model with the highest AUC is the Random Forest.

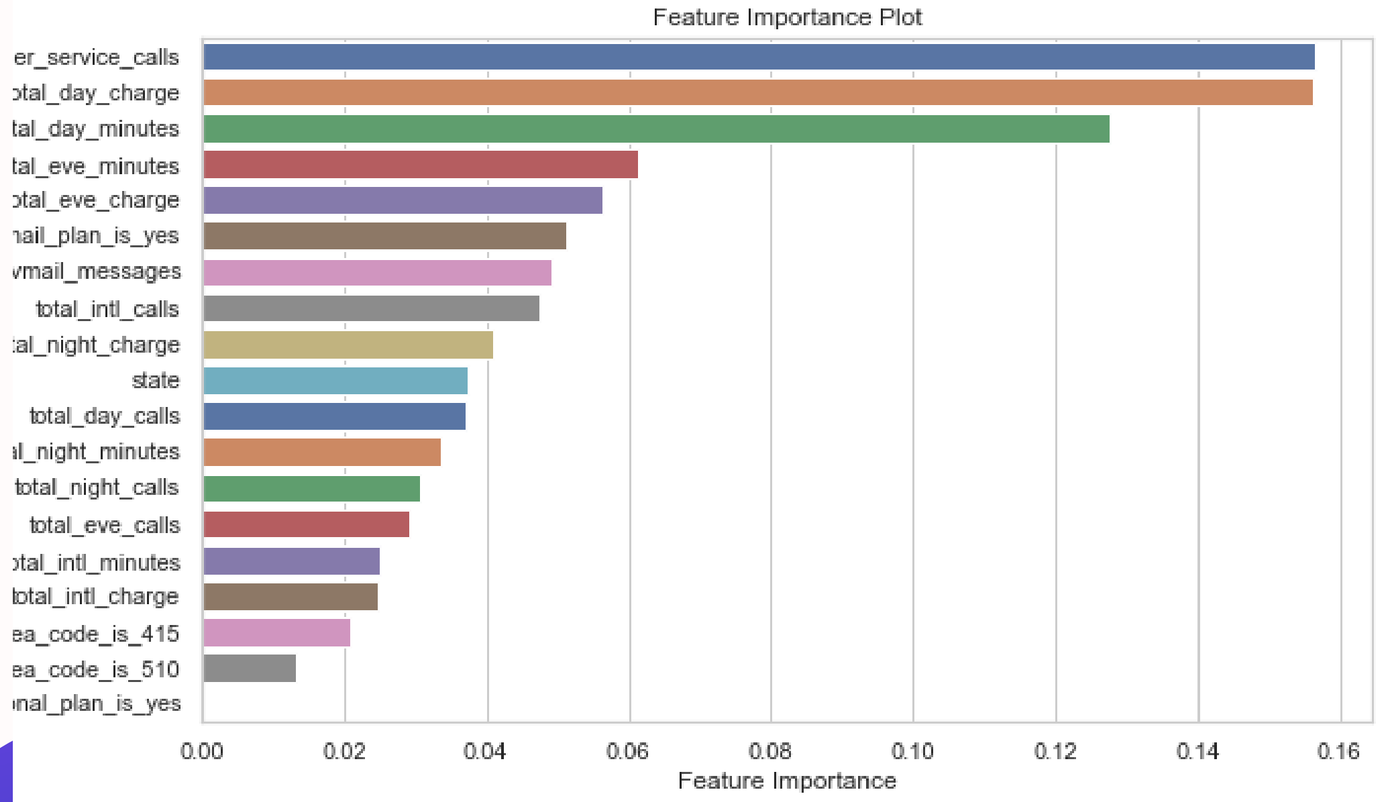
ACCURACY AND F1 SCORES COMPARISON





The Random forest model stands out as the top choice boasting exceptional accuracy of 92.857143% and an impressive F1 score of 86.1548%. This means it excels at precisely classifying instances while maintaining a balanced trade-off between precision and recall.

FEATURE IMPORTANCE ACCORDING TO THE RANDOM FOREST MODEL



- **TOP 10 MOST IMPORTANT FEATURES** :
- customer service calls
- total day charge
- total day minutes
- total eve minutes
- total eve charge
- voice mail plan
- number of voice mail messages
- total international calls
- total night charge
- state

RECOMMENDATIONS

- **Customer Service Calls:** Improve service quality and response times for prompt issue resolution. Proactive outreach can prevent issues from leading to churn.
- **Total Day Charge & Minutes:** Offer competitive pricing and transparent billing for day calls. Create cost-effective day call packages for price-sensitive customers.
- **Total Evening Minutes & Charge:** Ensure reasonable evening call pricing. Consider offering evening call packages for customer preferences.
- **Number of Voicemail Messages:** Encourage voicemail use through promotions. Ensure user-friendly voicemail services.
- **Total International Calls**: Review international rates and quality. Offer calling plans or discounts for international callers.
- **Voice Mail Plan**: Promote voicemail benefits. Bundle with other services for increased adoption.
- **Total Night Charge**: Leverage nighttime usage with specific plans or benefits. Ensure quality meets expectations.
- **State**: Analyze regional churn differences and tailor marketing efforts. Improve service quality in high-churn regions.

NEXT STEPS

01

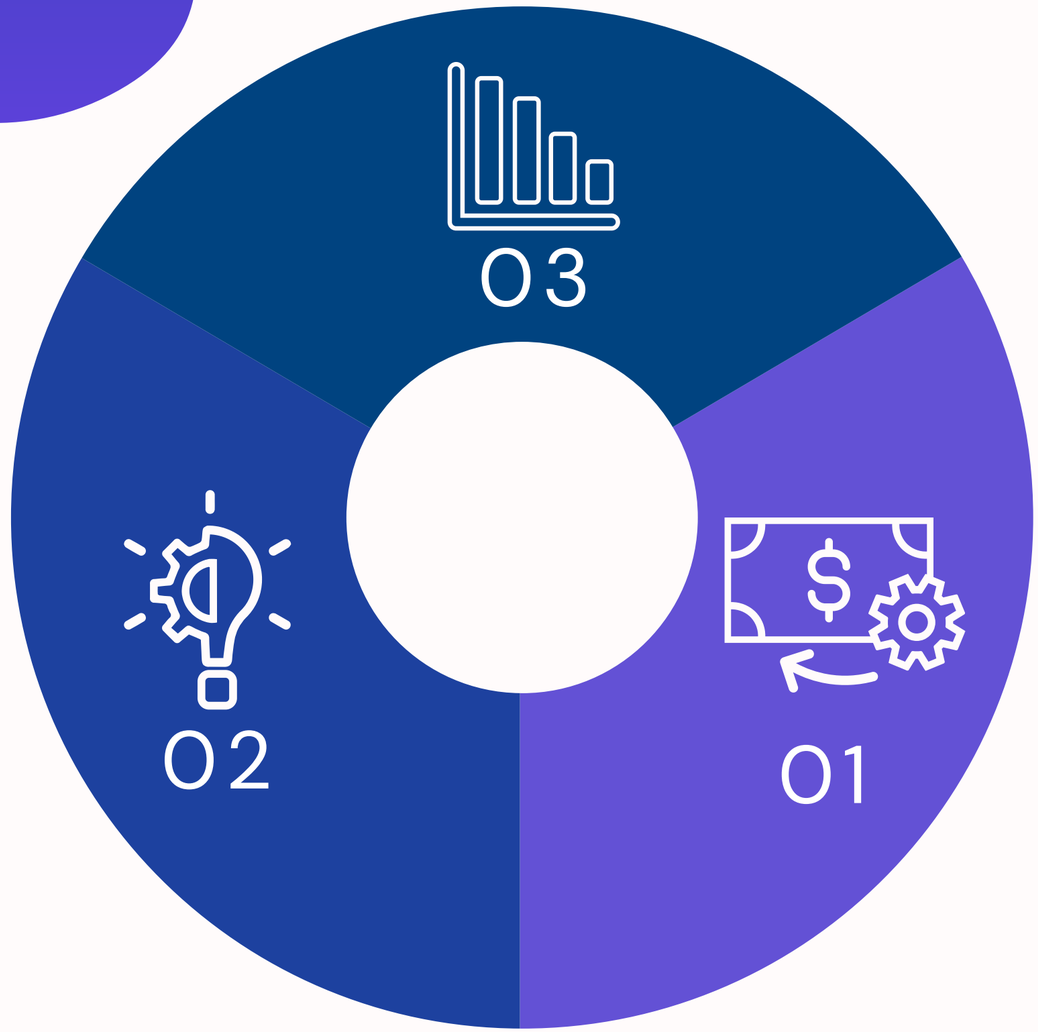
Iterative Model Enhancement: Continuously enhance the predictive model by incorporating new data and refining its algorithms to adapt to changing customer behaviors and market dynamics.

02

Personalized Customer Engagement: Tailor marketing and retention efforts based on the model's insights, ensuring that customers receive individualized communications, offers, and support, which can increase their loyalty.

03

Feedback Loop Implementation: Establish a feedback loop with customers to gather their insights, preferences, and concerns, which can be used to fine-tune the model and create more customer-centric strategies for reducing churn.



THANK YOU!

EMAIL:
MATILDA.ODALO@STUDENT.MORINGASCHOOL.COM
GITHUB: @STARRINGMATILDA