

The image is a composite. The left half features a woman with dark hair, wearing a light-colored top, holding a mobile phone to her ear. She is smiling slightly. The right half shows a large, dark, lattice-structured telecommunications tower with multiple antennas and satellite dishes, set against a dark, starry night sky. The tower is illuminated from below, creating a silhouette effect. The overall composition suggests a connection between human communication and telecommunications infrastructure.

SYRIATEL CUSTOMER CHURN ANALYSIS

BUSINESS UNDERSTANDING

Overview

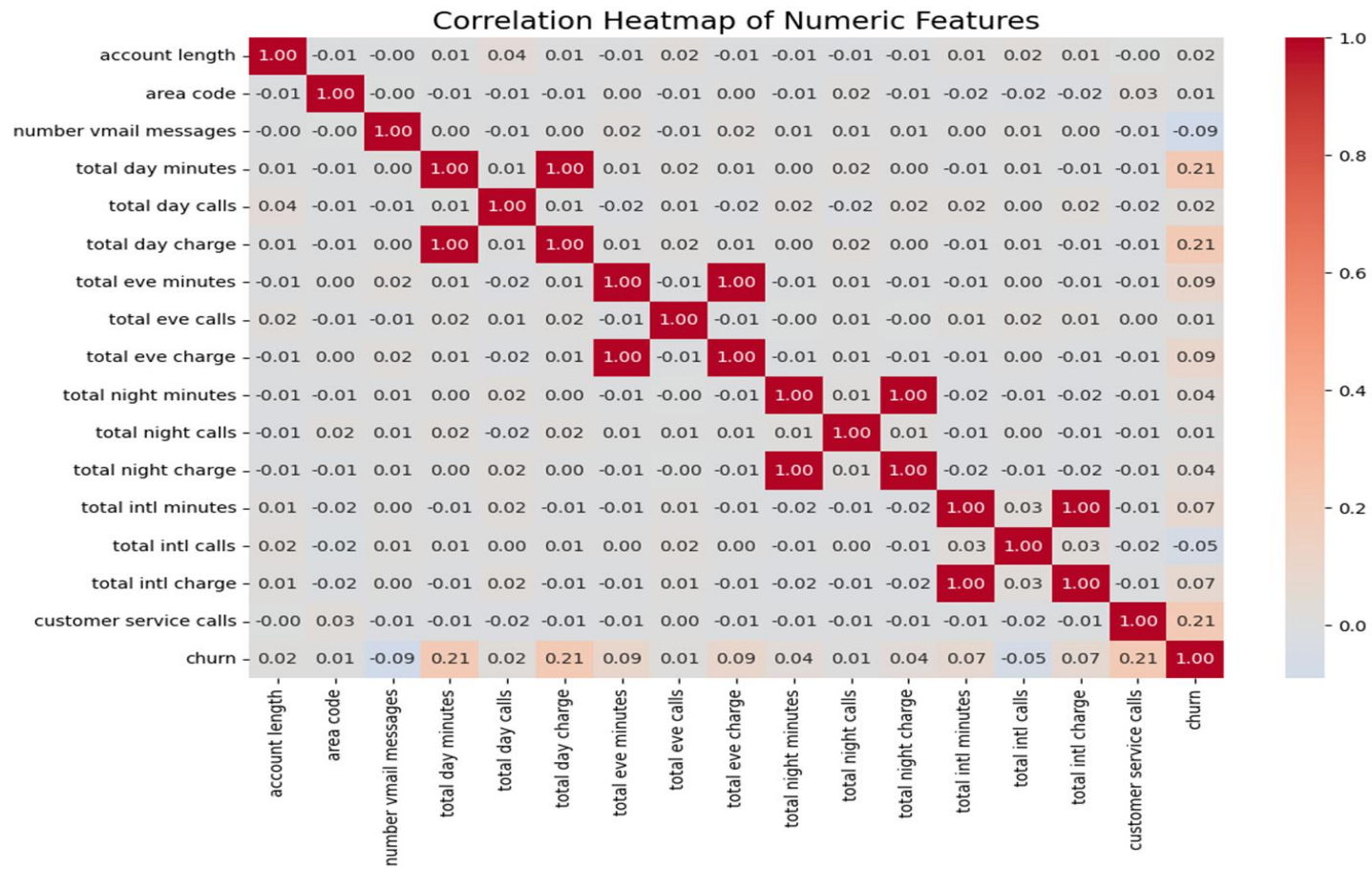
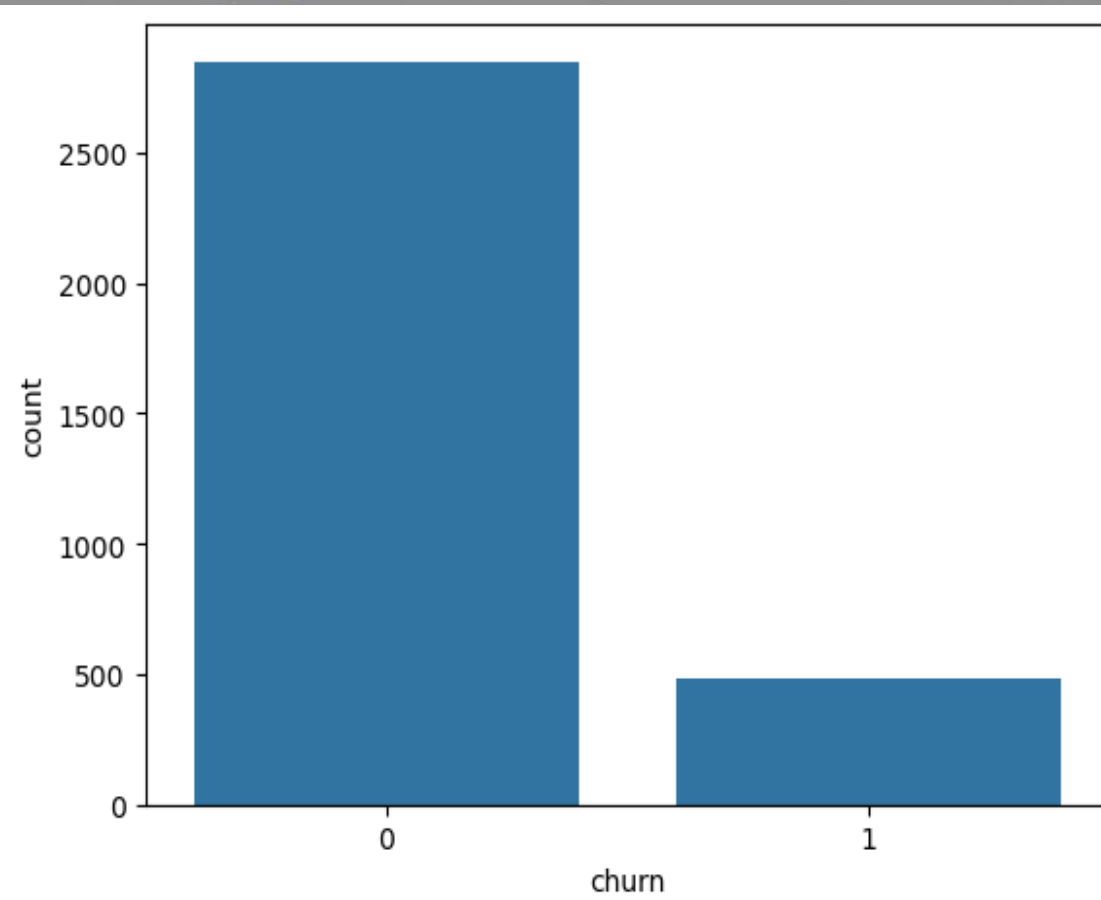
- Problem: SyriaTel is losing customers (churn).
- Why it matters: Keeping existing customers is cheaper than finding new ones.
- Our Goal: Use data to identify customers at risk of leaving and suggest ways to keep them.

DATA UNDERSTANDING

- The SyriaTel dataset includes 3,333 customer records with details on usage, service plans, and interactions.
- Churn is linked to having an international plan, frequent customer service calls, and high daytime usage.
- The data is clean but imbalanced, requiring careful handling. Key insights guide understanding of customer behaviour and churn.

What We Investigated

- What are the top churn factors driving customer churn?
- How much revenue is lost due to customer churn over a given period?
- Can a baseline machine learning model accurately predict whether a customer will churn?
- Which machine learning model performs best in predicting churn based on classification metrics?
- How does pricing impact customer retention, and what pricing strategies can be implemented to reduce churn without significantly impacting revenue?

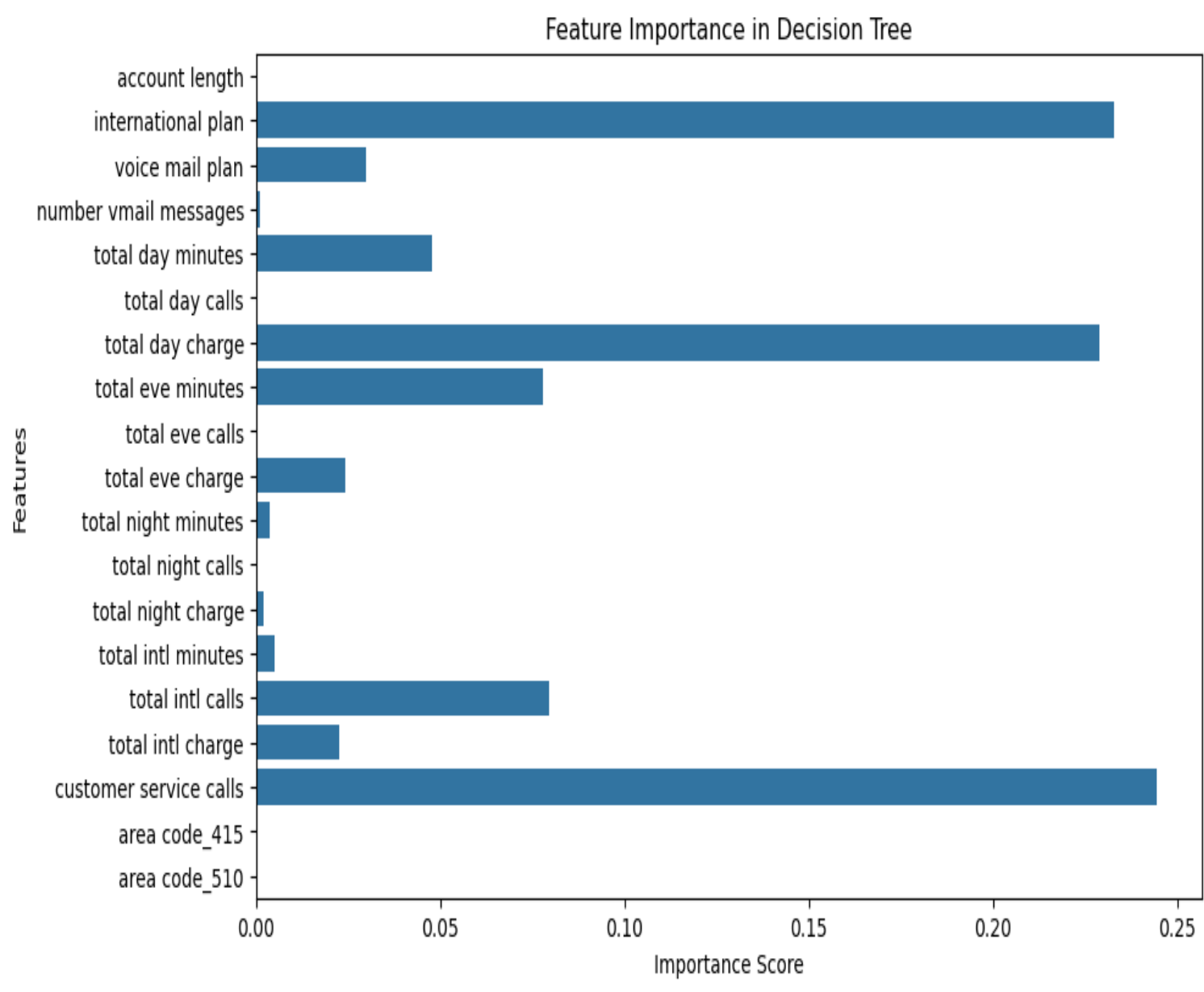


Churn is the target variable .

- Stayed(0)
- Churned(1)

2,850 (85.5%) customers stayed while 483 (14.5%) customers churned.

•The top churn factors are; customer service calls, total day minutes and total day charge since they are highly correlated.



- *Customer service calls are the strongest churn indicator, with frequent calls signaling dissatisfaction.*
- *International plan status and high total day charges also significantly influence customer churn.*
- *Evening minutes, international calls, and day minutes have a moderate impact on churn behavior.*
- *Night usage, account length, and area codes contribute minimally to churn decisions*

MODELING

- We tested three prediction methods to identify customers likely to leave:
 1. **Logistic Regression** (simple yes/no)
 2. **Decision Tree** (flowchart-like rules)
 3. **Random Forest** (many decision trees working together).
- To handle fewer churn cases, we used **SMOTE** to balance the data for better model learning.

EVALUATION

- We measured model performance using **accuracy** (overall correctness), **precision** and **recall** (how well the model finds actual churners), and the **F1 score** (balance of precision and recall).
- The **Random Forest** performed best, with high recall and F1, making it the most reliable for churn prediction.

MODEL PARAMETER	LOGISTIC REGRESSION	RANDON FOREST CLASSIFIER	DECISION TREE CLASSIFIER
Accuracy	78%	94%	94%
Recall Precision	77% 39%	83% 79%	81% 78%
F1- Score	52%	81%	80%

RECOMMENDATIONS

1. SyriaTel should integrate the Random Forest model into its CRM (Customer Relationship Management) to identify customers likely to churn.
2. Insights from the Decision Tree model should guide management decisions.
3. Retention efforts must target customer segments: prioritize quick issue resolution for frequent callers, offer discounts to heavy daytime users, and provide flexible plans for international customers.
4. Models should be regularly updated to maintain accuracy.
5. Management should track revenue saved from retention to measure and support ongoing investment in data-driven churn strategies.

NEXT STEPS

1. Deploy the Random Forest churn model in the CRM to identify and flag high-risk customers automatically.
2. Use Decision Tree insights in management dashboards to support strategic, data-driven decision making.
3. Implement targeted retention strategies for key customer segments (frequent callers, heavy users and international plan holders)
4. Regularly retrain and monitor the model, and track revenue saved from retention to measure impact and justify continued investment.



THANK
YOU