



CUSTOMER CHURN

IN

TELCO COMPANY

ANNISA DITASILA





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COMPANY PROFILE

GSM

Data

Telco

Telco

C



Telco Communications specializes in providing comprehensive telecommunications services. We focus on delivering seamless connectivity solutions to individual consumers.

Problem finding



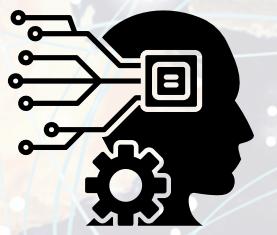
Telco Communications confronts challenges centered on maintaining customer satisfaction through innovation and personalized service approaches.

GOALS AND OBJECTIVES



Goal

Predict customer churn accurately to reduce losses and retain customers.



ML Objective

Achieve **high recall** to identify and prevent as many churn cases as possible.



Action

Implement targeted strategies like personalized offers and improved services to retain at-risk customers.



Final Result

Decrease churn rates, increase customer satisfaction, and enhance company profitability through proactive retention efforts.

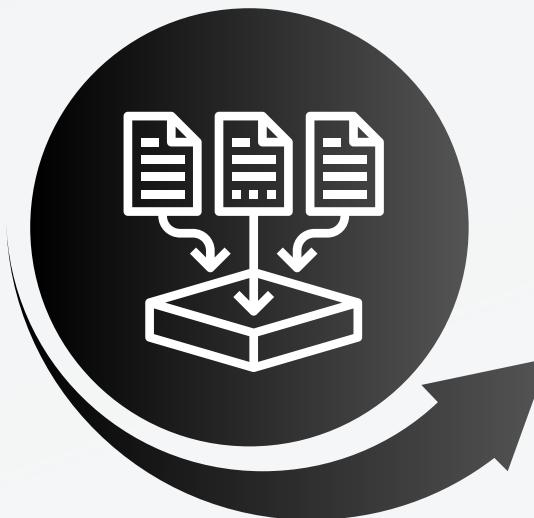
DATA UNDERSTANDING

Problem	Condition	Treatment
Null Values	No Null Values	-
Duplicates	77 data are duplicates	Delete all duplicates
Numerical Data Distribution	Tenure (right skew) Monthly Charges (right skew)	-
Outlier	No outlier for numerical features	-
Multicollinearity	Low VIF value for numerical features	-
Cardinality	Low cardinality for all categorical features	-
Data Imbalance	73% Negative Class (Not Churn) 27% Positive Class (Churn)	Resampling

Pre-processing & Engineering

Data types defining

Explicitly specifying variable types (numeric, categorical) to ensure correct data handling.



Feature selection

evaluates numerical features using F-test and categorical features using Chi-square with the target variable,



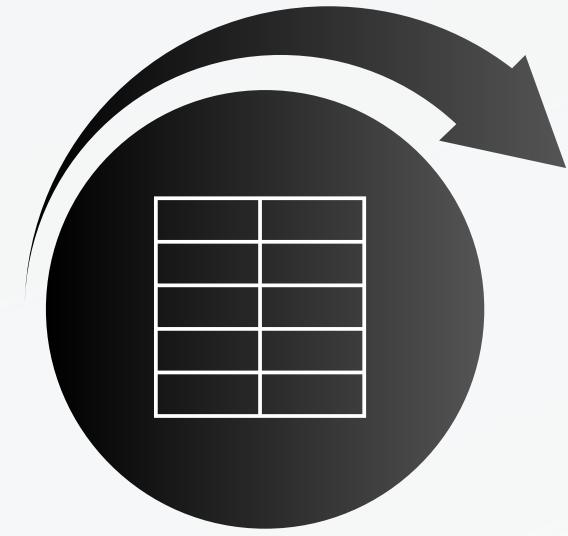
Splitting dataset

Dividing the dataset into subsets for model training (80%) and testing (20%).



Column transformer

Sequentially applies preprocessing steps like filling missing values (**imputation**), **encoding** categorical variables (one hot encoding), and **scaling** numerical features.

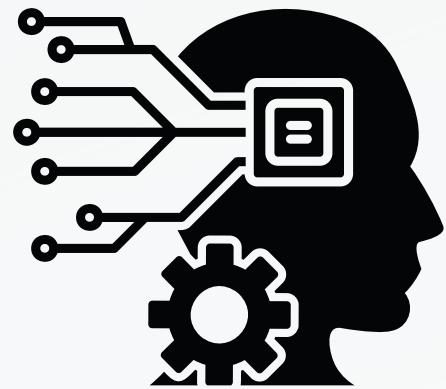


Pipeline

Chaining together preprocessing steps and machine learning models into a unified workflow for easier deployment and maintenance.



Modelling



MODEL BENCHMARKING

identify the strengths and weaknesses of each model

Based Model

Model	Test score	Train score
Logistic Regression	0.55	0.52
Ada Boost	0.53	0.49
XGBC	0.51	0.53
Gradient Boosting	0.50	0.51

Resampling model

Model	Resample	Test score	Train score
Logistic Regression	ROS	0.82	0.80
Gradient Boosting	RUS	0.82	0.80
Logistic Regression	RUS	0.81	0.80
Gradient Boosting Classifier	ROS	0.81	0.78

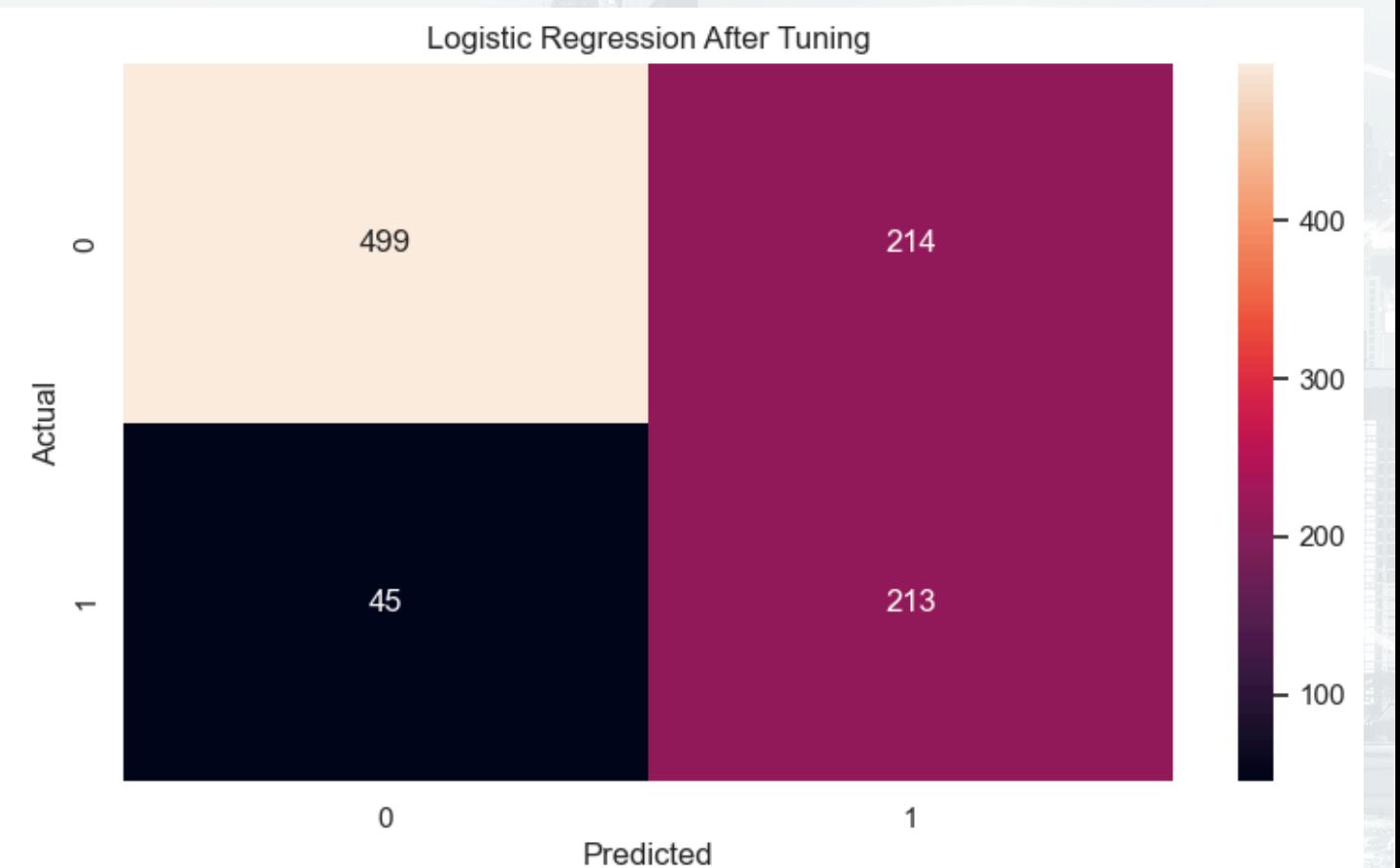
Resampling + Tomek links

Model	Resample	Test score	Train score
Logistic Regression	ROS	0.82	0.80
Gradient Boosting	RUS	0.82	0.75
Logistic Regression	RUS	0.81	0.74
Gradient Boosting Classifier	ROS	0.81	0.77

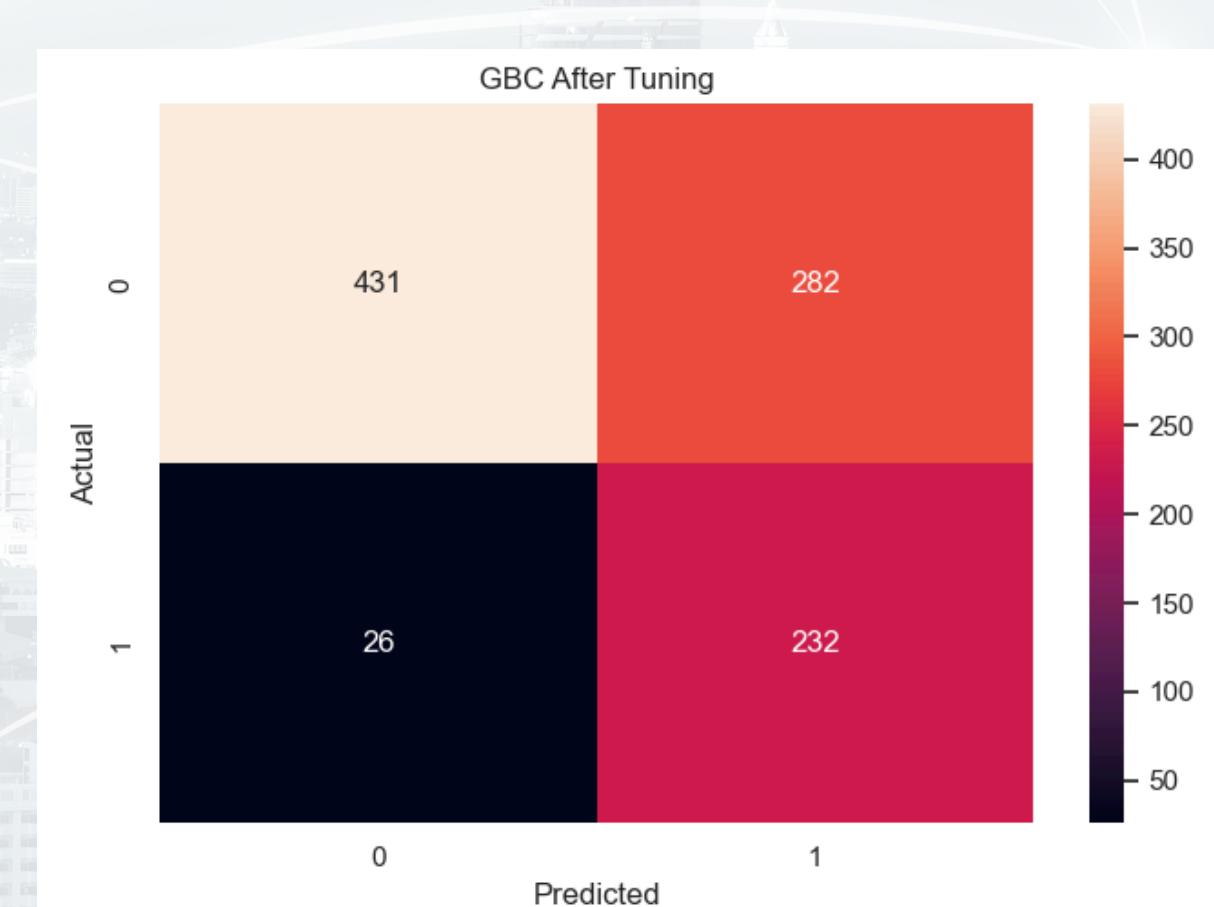


COMPARING MODEL

Logistic Regression

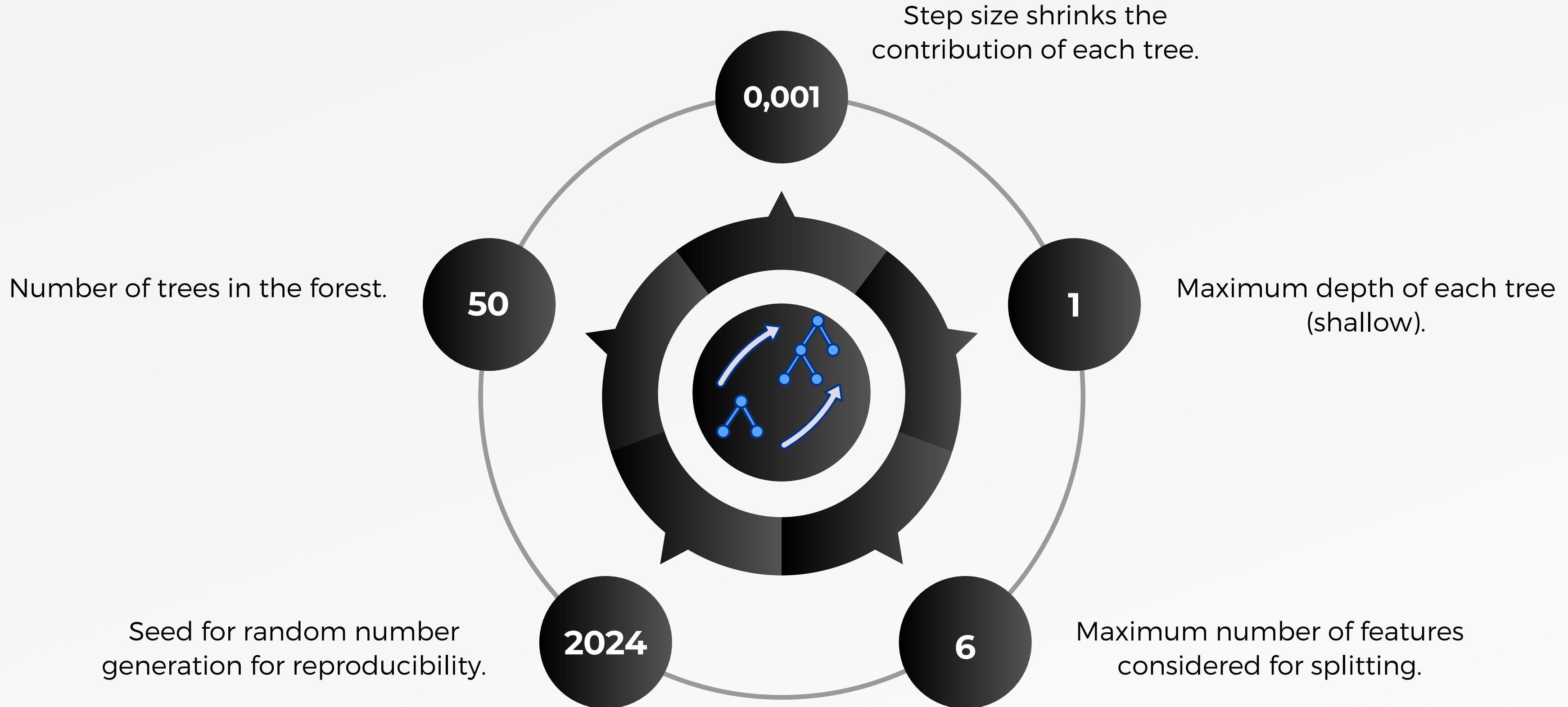


Gradient Boosting



FINAL MODEL

Gradient Boosting Classifier



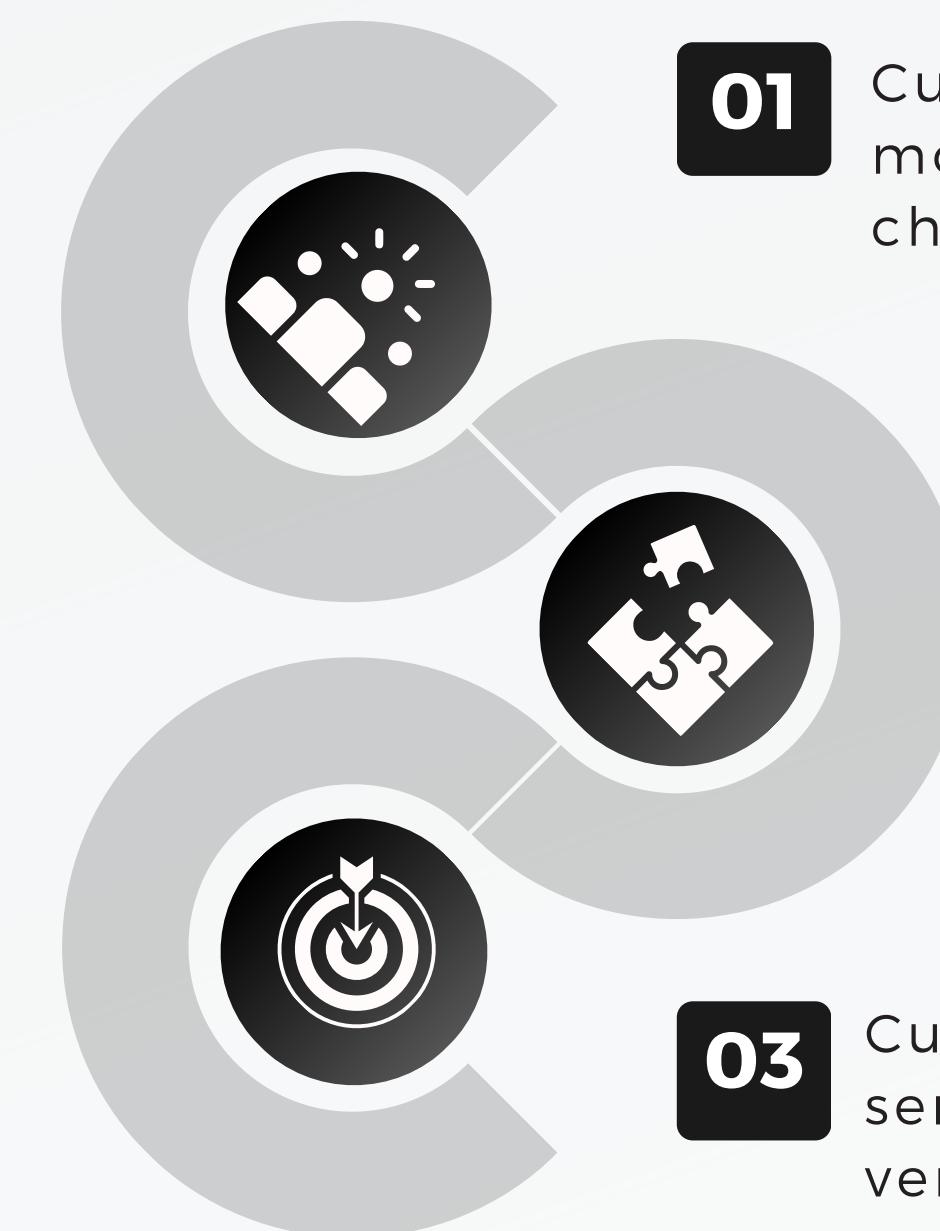
FEATURES IMPORTANCE

- 01 Contract = month-to-month
- 02 Tenure
- 03 Monthly Charges
- 04 Internet Service: Fiber Optic
- 05 No Online Security

CUSTOMER SEGMENTATION ANALYSIS

Customer using Fiber Optic
highly to churn

02



01

Customer with contract:
month-to-month highly to
churn

03

Customers who are not using our
service (no internet service) are
very unlikely to churn.

CONCLUSION

Achieving **84% recall** minimizes missed opportunities to retain revenue from undetected churn, enhancing overall detection accuracy.

IMPACTS

Revenue Retention

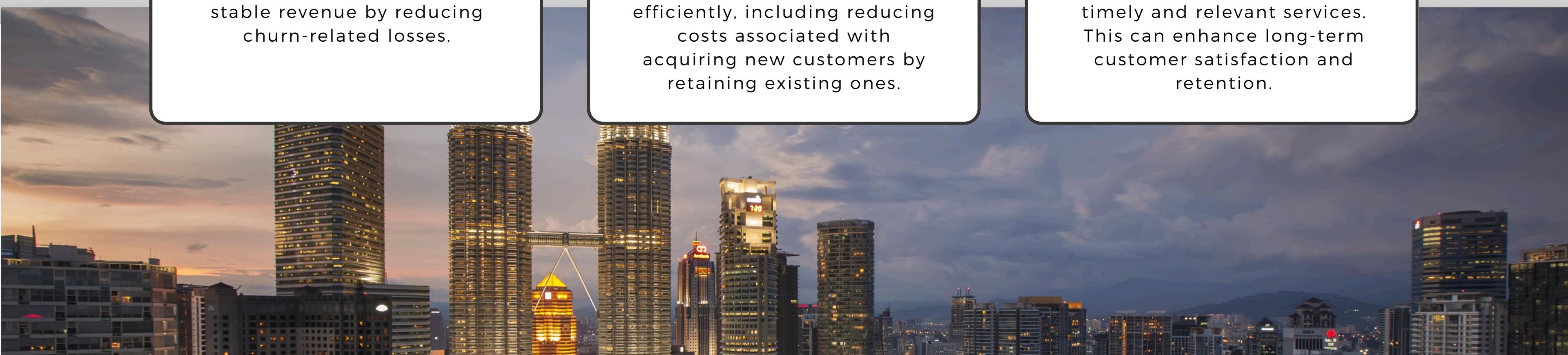
Identify churning customers to implement retention strategies effectively and also maintain stable revenue by reducing churn-related losses.

Resource Utilization

By minimizing undetected customer churn, businesses can allocate resources more efficiently, including reducing costs associated with acquiring new customers by retaining existing ones.

Customer Satisfaction

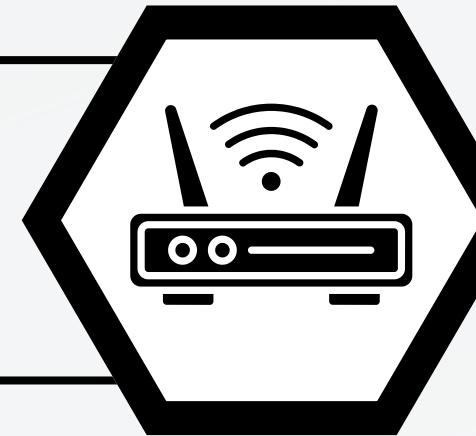
With more accurate predictions of customer behavior, businesses can provide more timely and relevant services. This can enhance long-term customer satisfaction and retention.



RECOMMENDATIONS

Enhance service quality for fiber optic users:

address service quality issues like frequent disconnections or slow speeds experienced by fiber optic users to reduce churn rates.



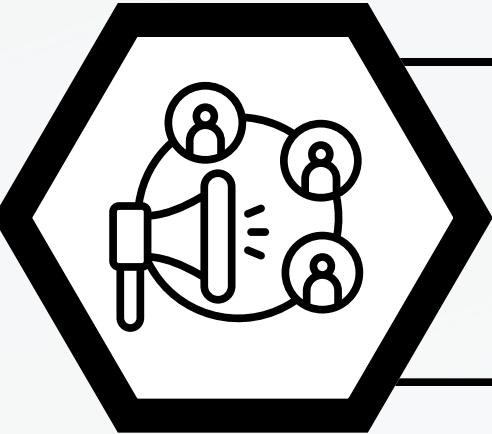
Offer incentives for long-term contracts: encourage customers to opt for longer contract durations by offering incentives or discounts, thus potentially reducing churn rates associated with month-to-month contracts.



Improve the initial customer experience: focus on enhancing the initial customer experience to mitigate early dissatisfaction and reduce churn among customers with short tenure periods.



Promote additional services: increase awareness and utilization of additional services such as online security, tech support, and online backup to enhance perceived value and reduce churn rates among customers who do not currently use these services.





**THANK'S FOR
WATCHING**

