

Churn Prediction

BANANA CONDA

Final Project



OUR TEAM



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BACKGROUND

New costumer

+21Juta

Will continue
to use

99%

Source: Google-commissioned Kantar SEA e-Economy Research 2021

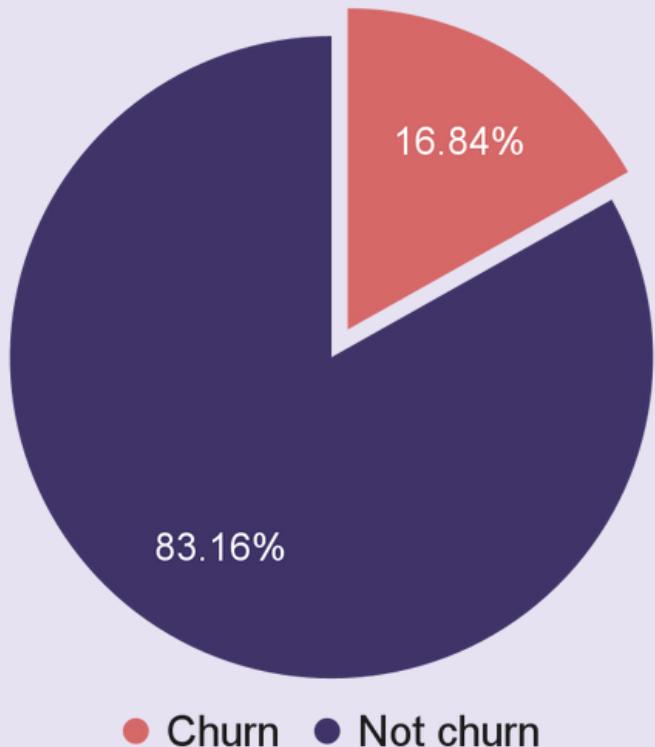
Alasan Konsumen masih menggunakan E-Commerce



Source: Google-commissioned Dynata SEA-6 Digital Merchant Survey 2021

PROBLEM STATEMENT

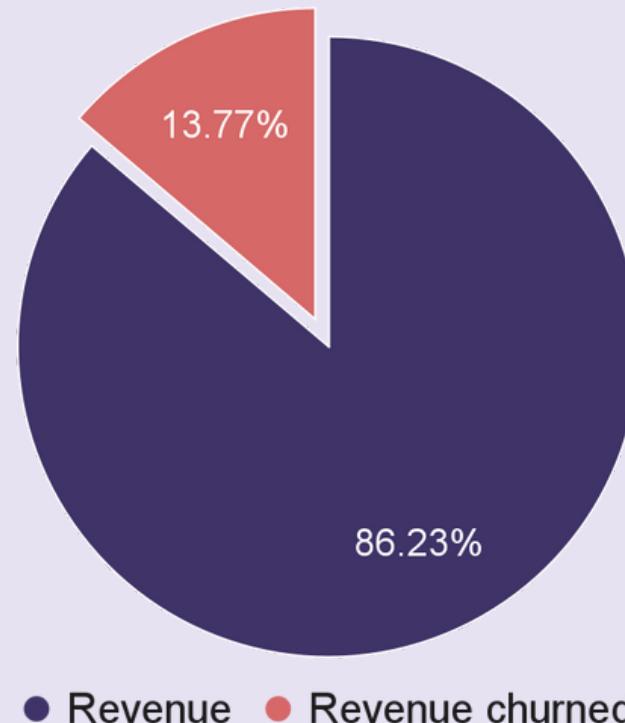
Customer Churn Rate



948

Total Customer Churn

Revenue Churn Rate



The churned revenue obtained was 13.77%, with a total order count of 2,626 churned customers or 3 orders from each churned customer.

To reduce the percentage of Revenue Churn Rate from 13.77% to 5%, the Customer Churn Rate must be reduced by 8.5%.

Objective, Goal & Business Metric

Goal
Reduce customer churn rate and revenue churn rate

Customer Churned
Customer Churn Rate : $x 100$
Total Customer

Revenue Churned
Revenue Churn Rate : $x 100$
Total Revenue



Objective

- Create predictive models to reduce customer churn rates
- Provide business recommendations to reduce customer churn rate and revenue churn rate

Business Metric

- Customer Churn Rate
- Revenue Churn Rate

Exploratory Data Analysis



Data Overview



5630 rows | **20** columns

Customer Profile Data

- CustomerID
- CityTier
- WarehouseToHome
- Gender
- MaritalStatus

Customer Transaction Data

- Tenure
- PreferredLoginDevice
- PreferredPaymentMode
- HourSpendOnApp
- NumberOfDeviceRegistered
- PreferedOrderCat
- SatisfactionScore
- NumberOfAddress
- Complain
- OrderAmountHikeFromlastYear
- CouponUsed
- OrderCount
- DaySinceLastOrder
- CashbackAmount

Target

- Churn
- Not Churn

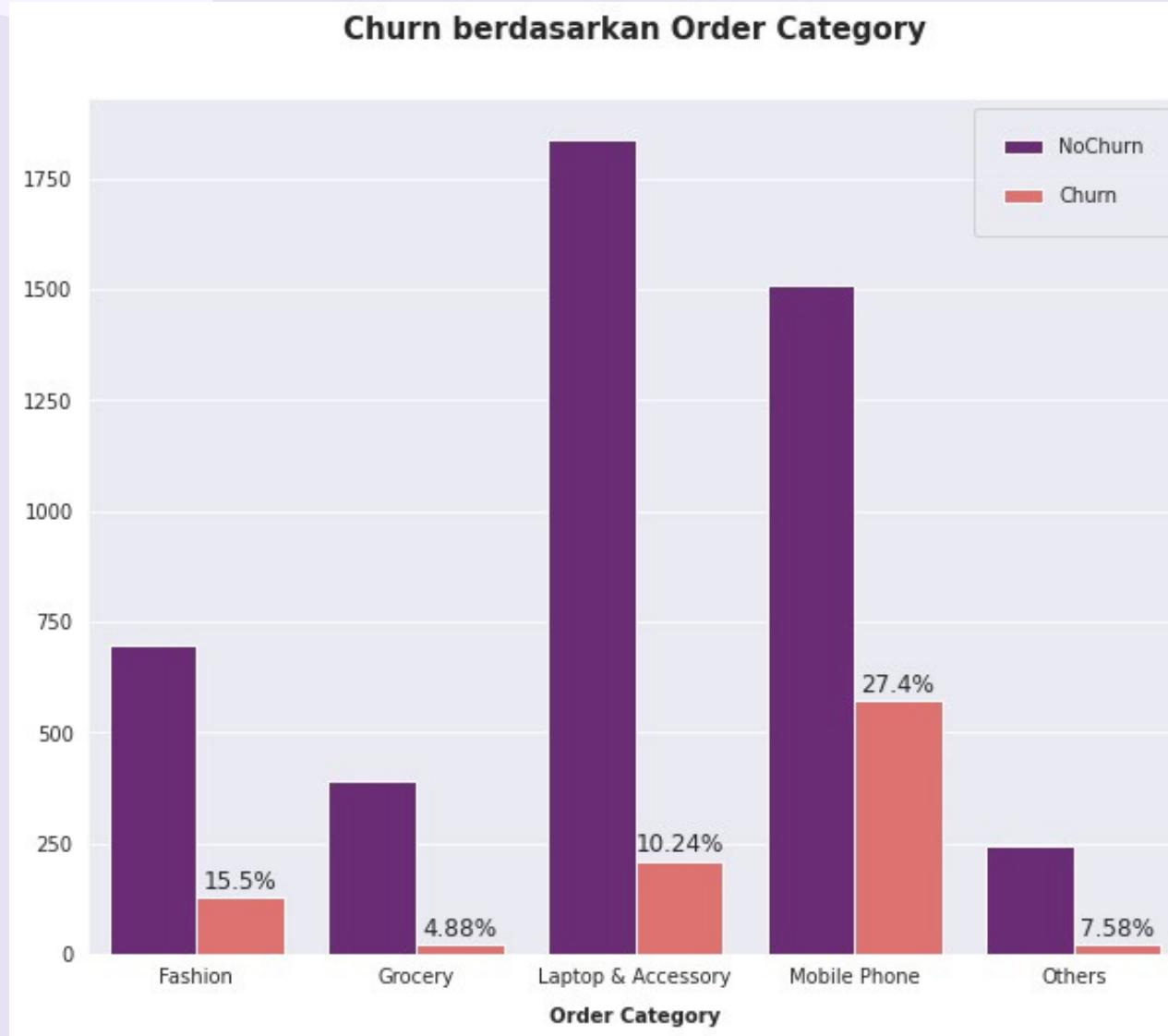


Exploratory Data

Customers who
tend to churn
have a short
tenure.



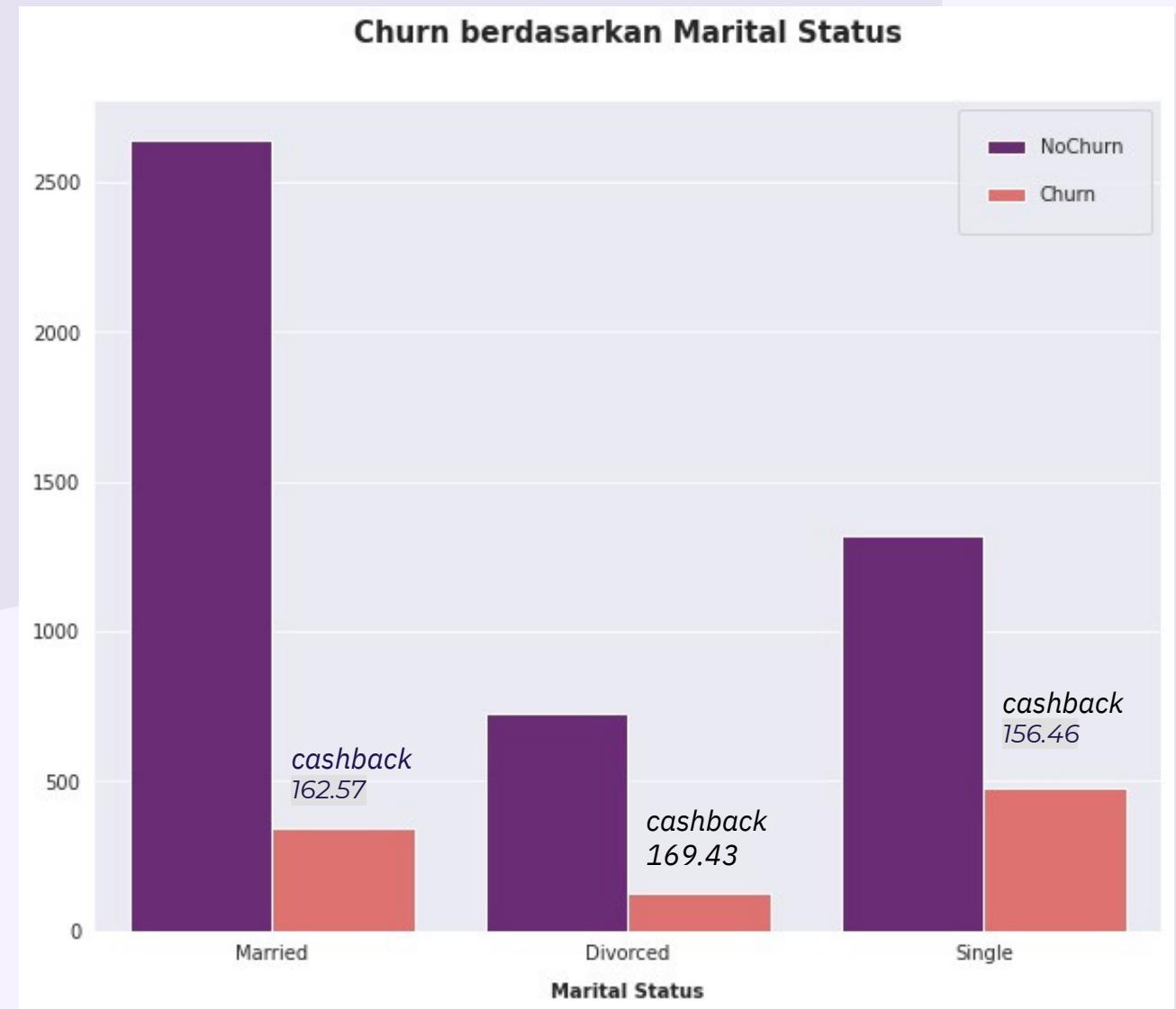
Exploratory Data



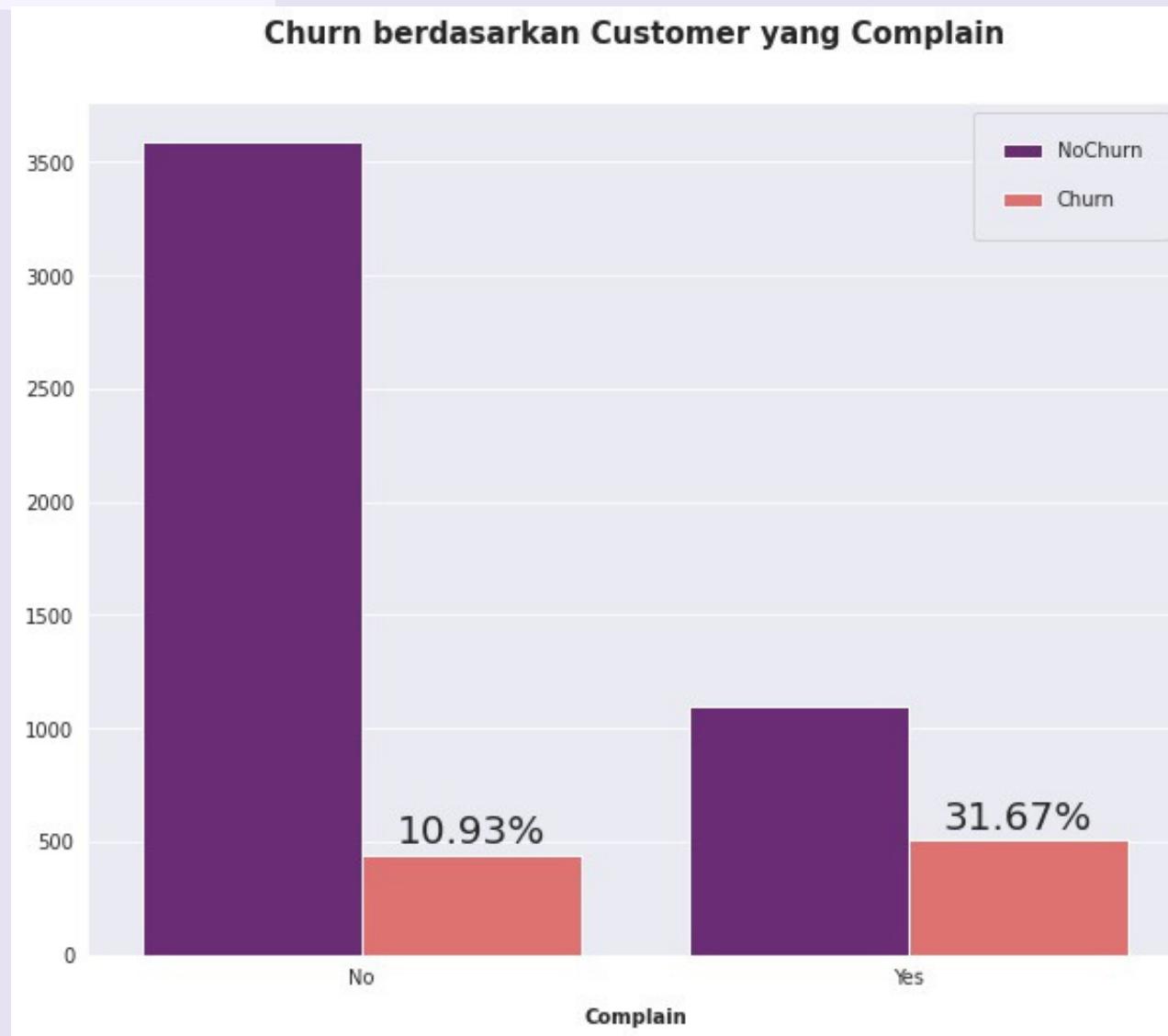
Customers who **tend to churn** are customers who **buy mobile phones**.

Exploratory Data

Churned customers are dominated by **single status** customers, where these customers get the **lowest cashback**.



Exploratory Data



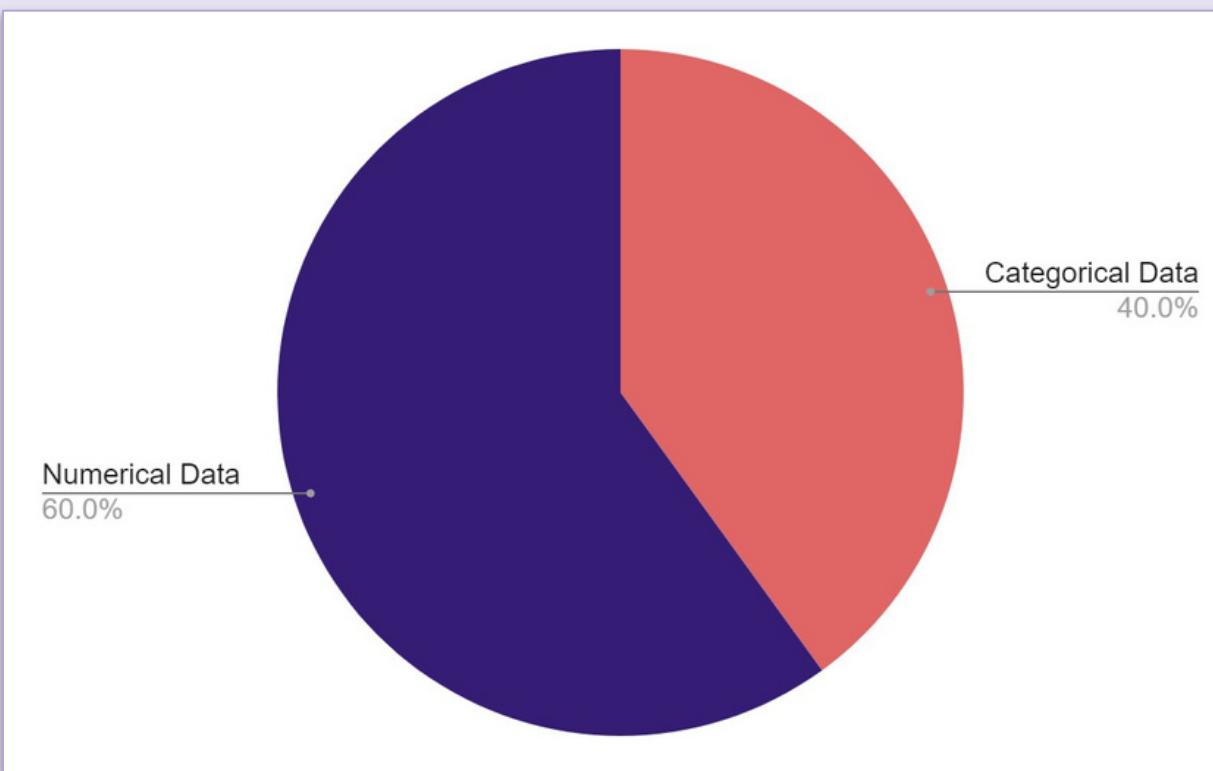
31,67%

Customers who **complain** decide to **churn**.

DATA PREPROCESSING



Data Preprocessing



Categorical Data

PreferredLoginDevice, CityTier, PreferredPaymentMode, Gender, PreferredOrderCat, MaritalStatus, Complain, SatisfactionScore

Numerical Data

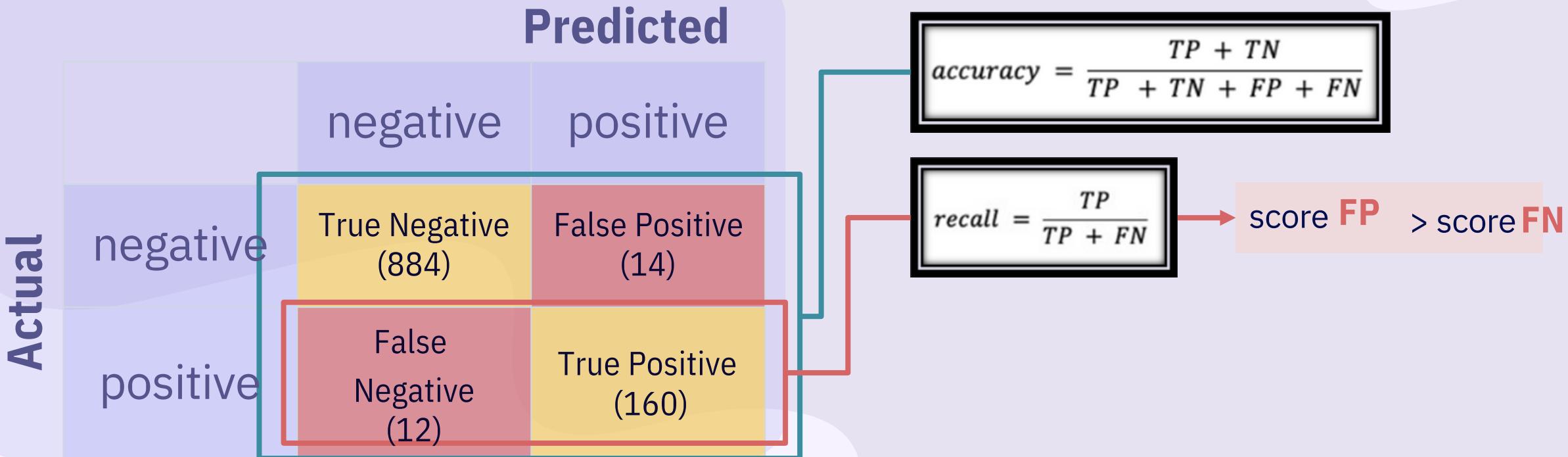
CustomerID, Churn, Tenure, WarehouseToHome, HourSpendOnApp, NumberOfDeviceRegistered, NumberOfAddress,
OrderAmountHikeFromlastYear, CouponUsed, OrderCount, DaySinceLastOrder, CashbackAmount

Missing Values	7 Columns
Duplicate Data	None
Handling Outliers	From 5630 -> 5350 Rows
Log Transformation	3 Columns
Normalization	3 Columns
Standardization	4 Columns
Feature Encoding	From 22 -> 30 Rows
Feature Selection	28 Columns
Feature Extraction	1 Column



MODEL EVALUATION

Confusion Matrix



FP = Predicted customers will experience churn, but in reality they did not.
FN = Customer predictions will not churn, but in fact churn.



Model Evaluation

Model	Accuracy	Recall	Precision	F1	Train Score	Test Score
XGBClassifier	99.5%	98.6%	98.3%	98.4%	100.0%	96.9%
ExtraTreesClassifier	99.4%	96.4%	99.9%	98.1%	100.0%	95.9%
RandomForestClassifier	99.2%	95.7%	99.4%	97.5%	100.0%	96.2%
DecisionTreeClassifier	98.9%	97.6%	95.9%	96.7%	100.0%	96.1%
BaggingClassifier	98.5%	93.6%	97.4%	95.5%	99.8%	96.5%
MLPClassifier	95.0%	79.7%	89.9%	84.5%	96.6%	93.3%
KNeighborsClassifier	92.1%	62.9%	87.5%	73.2%	92.9%	88.0%
GradientBoostingClassifier	91.8%	64.4%	84.0%	72.8%	93.5%	92.5%
AdaBoostClassifier	89.6%	58.8%	74.5%	65.7%	89.1%	90.5%
LogisticRegression	89.4%	51.2%	79.1%	62.0%	88.9%	89.8%
SVC	88.4%	35.1%	91.3%	50.5%	87.9%	87.8%
GaussianNB	80.1%	68.5%	44.8%	54.0%	79.4%	81.4%

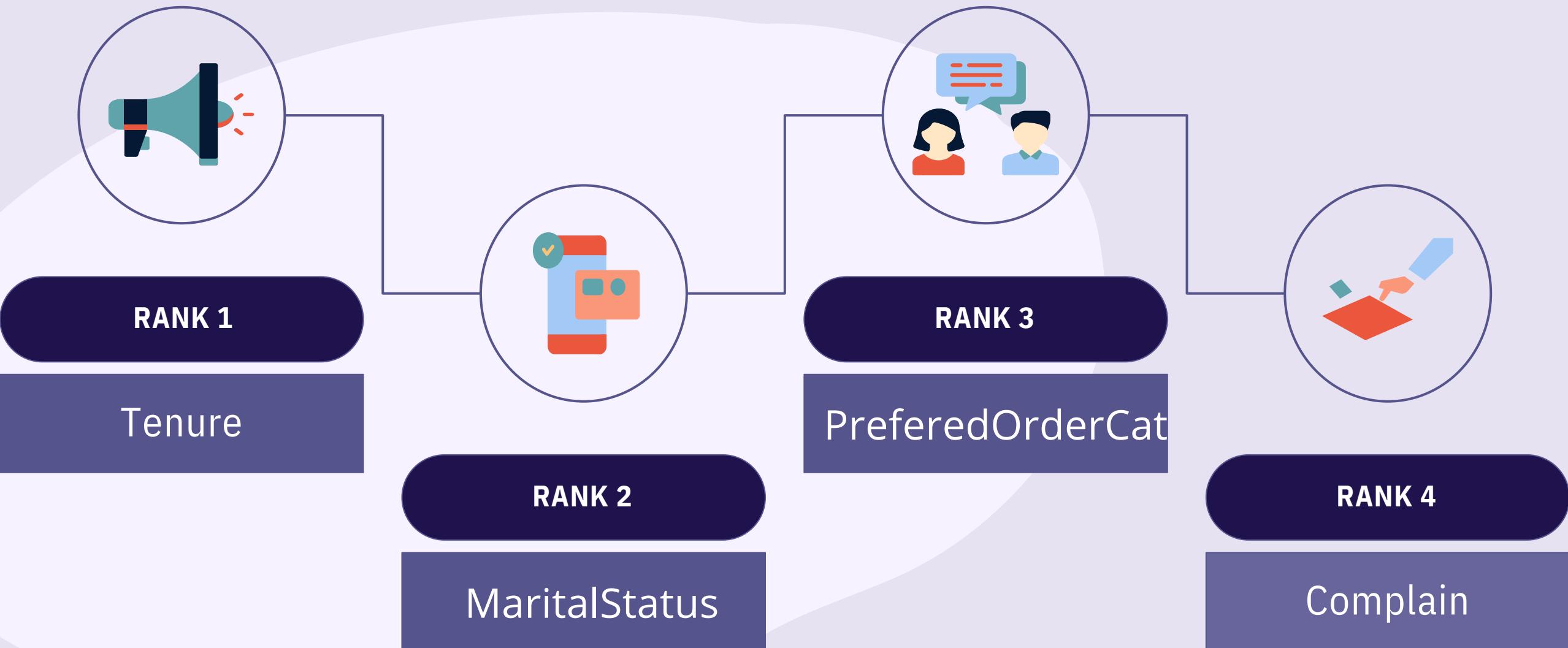
Train Data = 70% Test

Tset Data = 30%

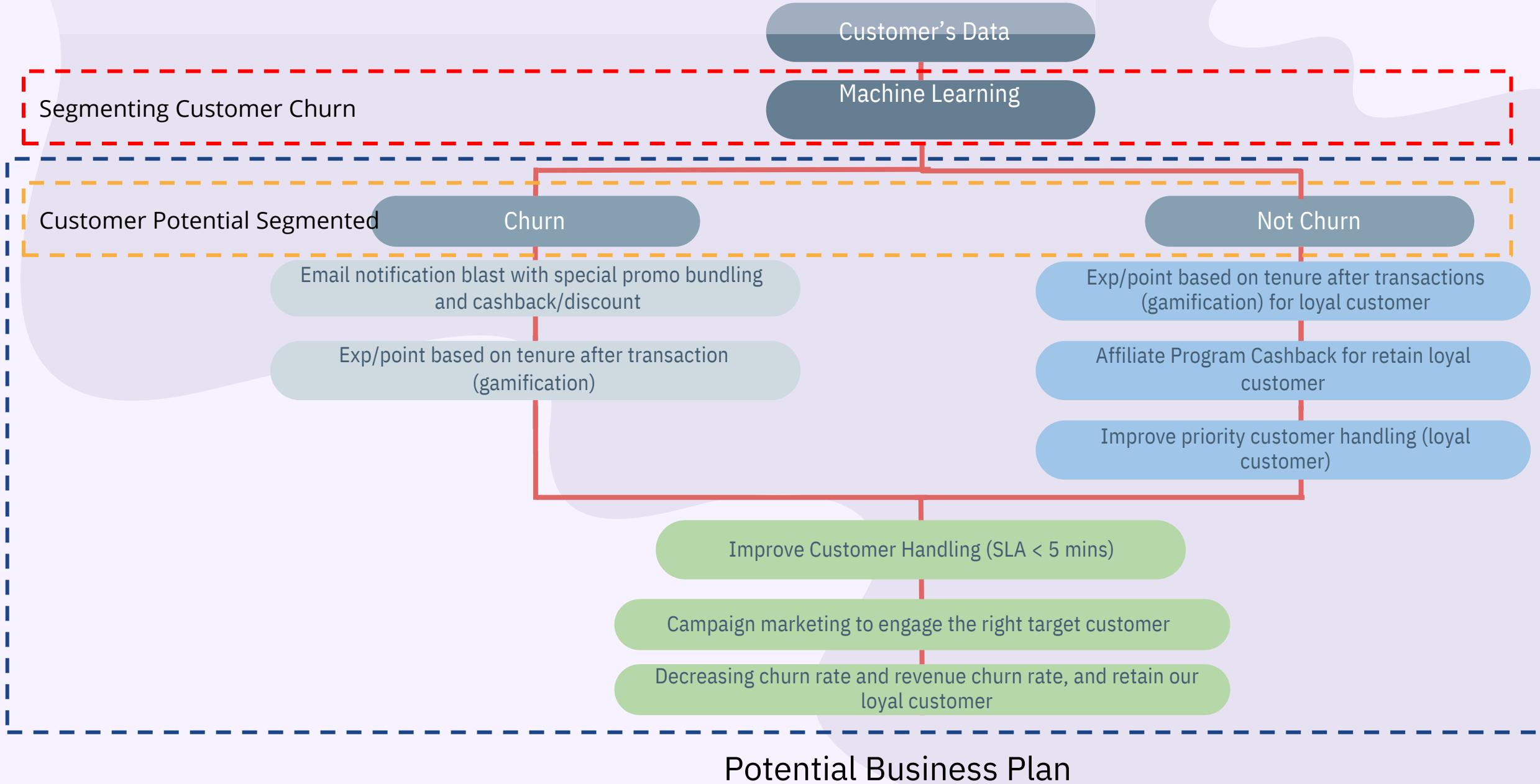
Model `XGBClassifier` has the highest **Accuracy** and **Recall** values.

Top Rank Feature Importance

There are 4 types of features that have the greatest influence on triggering customer churn, so we focus on providing business recommendations for these 4 features.



BUSINESS RECOMENDATIONS AND FLOW



Business Recommendation



Tenure

Gathering system exp/points based on the tenure. Provision of email notifications for customers who have not ordered in the last 1 month.



Order Category

Running attractive cashback/discount promos for every Mobile Phone bundling purchase.



Marital Status

Provision of 50% cashback vouchers for each group of transactions where the customer has a single status.



Complain

Feedback service (service) (response time <5 minutes), provide solutions comprehensive and do evaluation using Customer Satisfaction method Scores (CSAT)

Business Recommendations

Action:

Gives exp/points with that amount different for each target customer based tenure and number of transactions

Area of Improvement:

- To attract potential customers churn after 2 months and increase more than 3 transactions in all categories.
- To prevent customers from becoming passive by giving more points.

Mechanism:

- Customer tenure 0-12 months : +100 points per transaction and +10 points per 10 transactions
- Customer tenure 13-24 months : +75 points per transaction and +10 points per 10 transactions
- Customer tenure >24 months : +50 points per transaction and +10 points per 10 transactions

Points can be exchanged for promos and cashback with value starting at 500 points.

Action:

Memberikan email notifikasi berupa promo/cashback untuk pembelian bundling mobile phone dan untuk segmen customer single

Area of Improvement:

Ensuring bundling promo targets or cashback according to the customer segment recommended (in this case customer segmentation in question is customers who buy mobile phones and single status customer).

Mechanism:

- An agreement between the marketing team and the merchant to provide 50% cashback vouchers for users who are predicted to have the potential to churn who buy mobile phone bundling with a minimum purchase transaction value.
- Special promo for single customers at certain times.

Action:

Improve response service and handling complain

Area of Improvement:

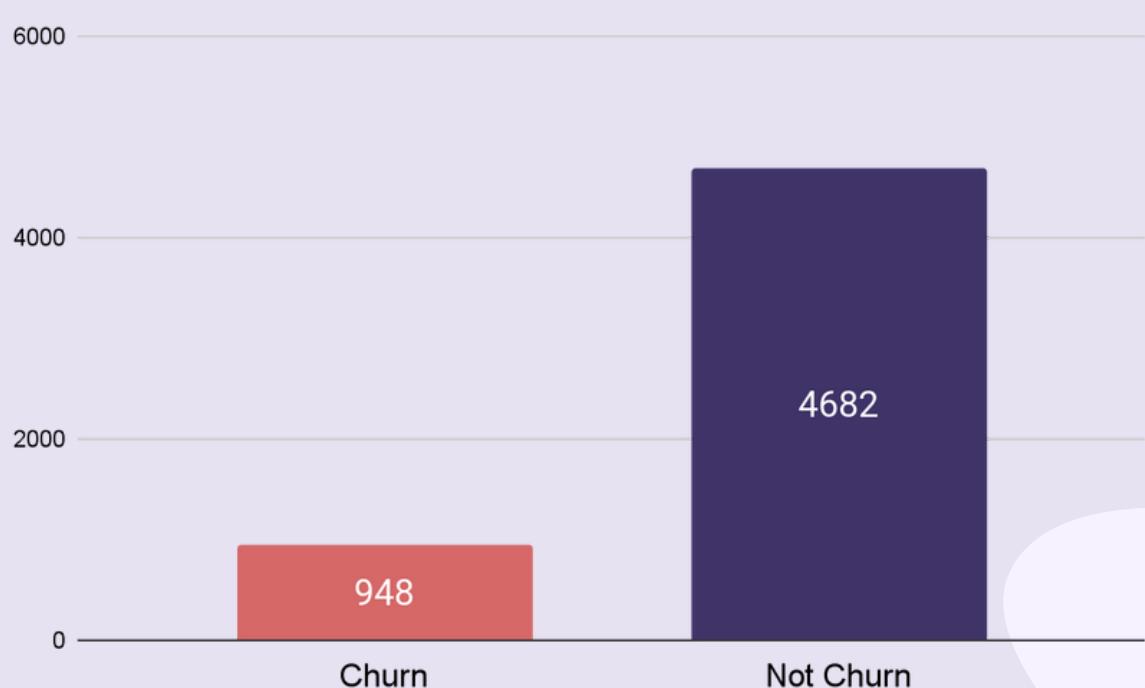
Increase the satisfaction score for customers who complain, both those with the potential to churn and those who do not.

Mechanism:

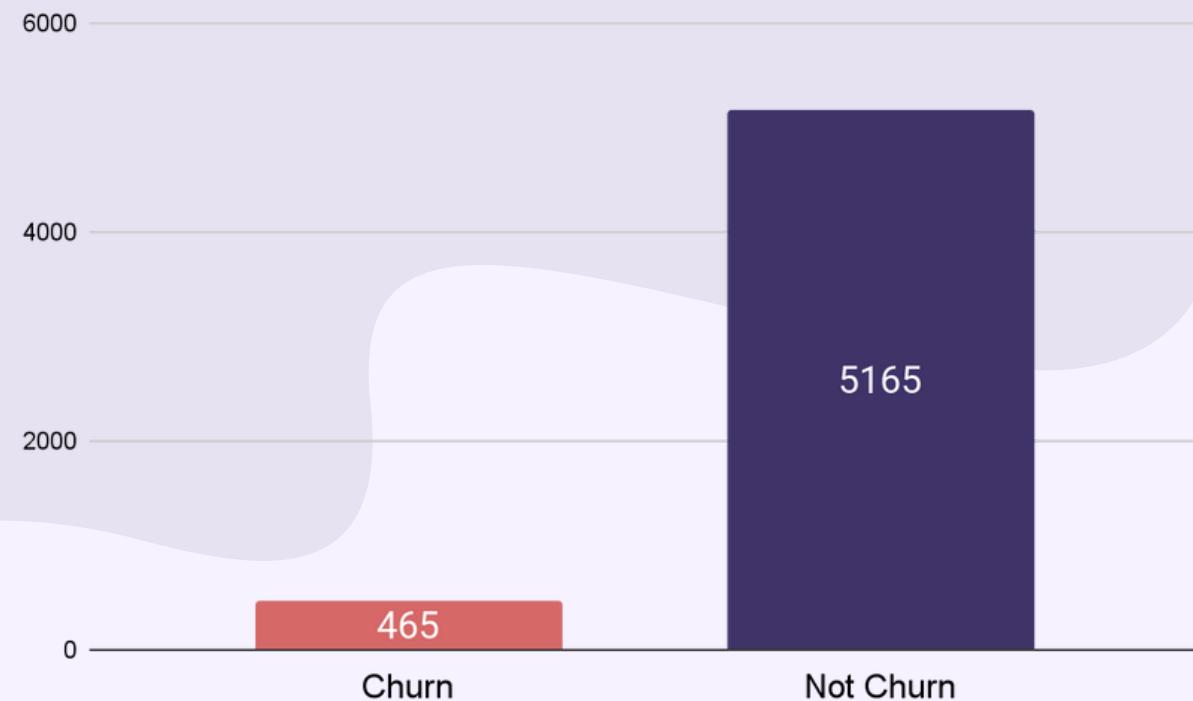
- Responding to complaints based on the queue of problem categories with SLA < 5 minutes.
- Identify parts of the customer journey that need improvement and provide solutions to complaints.
- Measuring customer satisfaction with the Customer Satisfaction Score (CSAT) method.

RESULT

Customer Churn Modelling



After Modelling



Based on modeling results and with business recommendations, PT ABC can reduce the number of customers who are predicted to churn by around 50%. With these results, PT ABC can increase the number of customers retained and reduce the revenue churn rate. Based on the modeling results and business recommendations, PT ABC can reduce the number of customers predicted to churn by around 50%. With this result, PT ABC can increase the number of retaining customers and reduce the revenue churn rate.

THANK YOU!

