



Domain Oriented-Telecom Churn Case Study

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Agenda

Summary of case study:

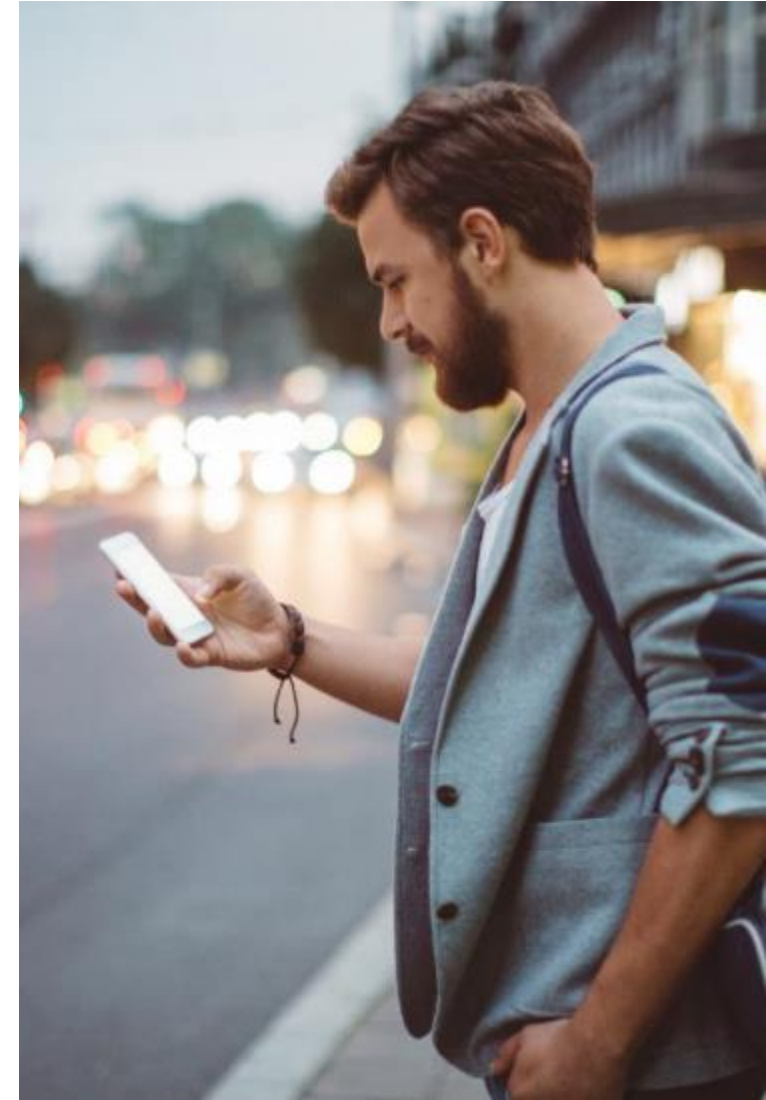
1. Problem Statement
2. Dataset Description
3. Data Preparation
4. Approach for data analysis

Recommendations:

1. Important Features related to churn
2. Recommendations on the basis of findings

Business implications of findings from analysis

1. Findings and Implications





1. Problem Statement



In the competitive telecom industry, customers frequently switch between service providers, leading to an annual churn rate of 15-25%. With customer acquisition costing 5-10 times more than retention, retaining profitable customers has become a top priority for operators. To address this, telecom companies must predict high-risk customers and understand key churn drivers. This project involves analyzing customer data from a leading telecom firm, building predictive models to identify churn-prone customers, and uncovering the primary factors contributing to churn.

2.Dataset Description

Customer Churn dataset has 226 Columns & 99999 rows

This dataset has mobile numbers of customers. It has all the transactional data i.e. activities like calls, recharges, types of calls, & data usage etc. for different months. The dataset contains customer-level information for a span of four consecutive months - June, July, August, and September. The months are encoded as 6, 7, 8 and 9, respectively.

Along with dataset, data dictionary is also provided. By understanding dataset and preparing it for further analysis we can work on Problem Statement.





3. Data Preparation

Key Steps for Data Preparation:

1. Derive new features:

Use business insights to create meaningful indicators that capture customer behavior and potential churn patterns.

2. Filter high-value customers:

Identify customers whose recharge amount exceeds the 70th percentile of the average recharge during the first two months (good phase).

3. Tag churners:

Mark customers as churned (1) if they made no calls (incoming or outgoing) and used no mobile internet in the fourth month.

4. Remove churn phase attributes:

Exclude data specific to the churn phase (e.g., month 9 activity metrics) to focus on actionable predictors.

5. Improve Data Quality of dataset:

Remove unwanted columns having:

1. Same value for entire rows
2. Most of the rows have null values
3. Drop columns that are not required since new columns are derived
4. Columns that are not useful in analysis

Improve data quality by:

1. Imputing the null values in columns
2. Adding new calculated/derived columns for analysis

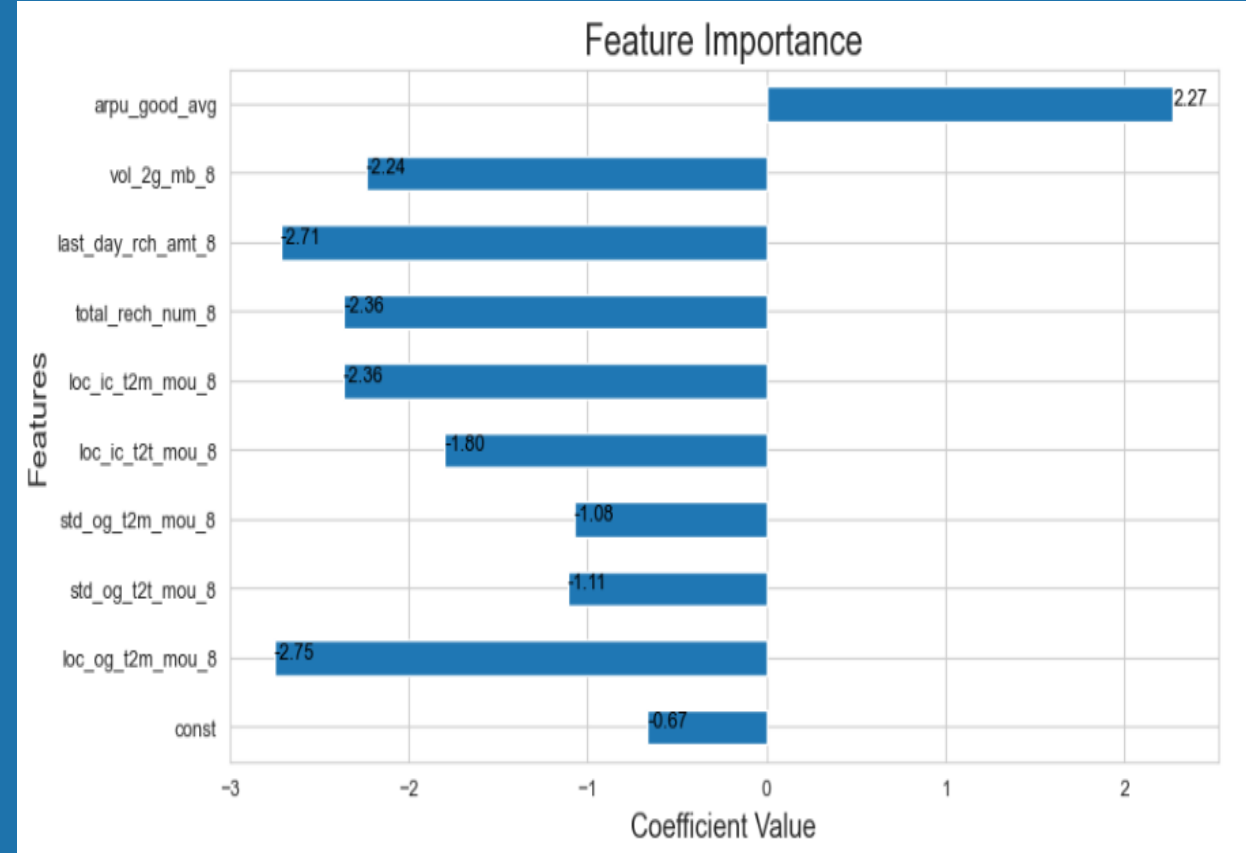


Recommendations

Important Features related to churn

The top three most significant features influencing churn are:

Sr. No.	Features	Coefficients
1	loc_og_t2m_mou_8	-2.75
2	last_day_rch_amt_8	-2.71
3	total_rech_num_8	-2.36



Recommendations

Recommendations on the basis of analysis and significant features related to churn

1. Interpretable Model Creation:

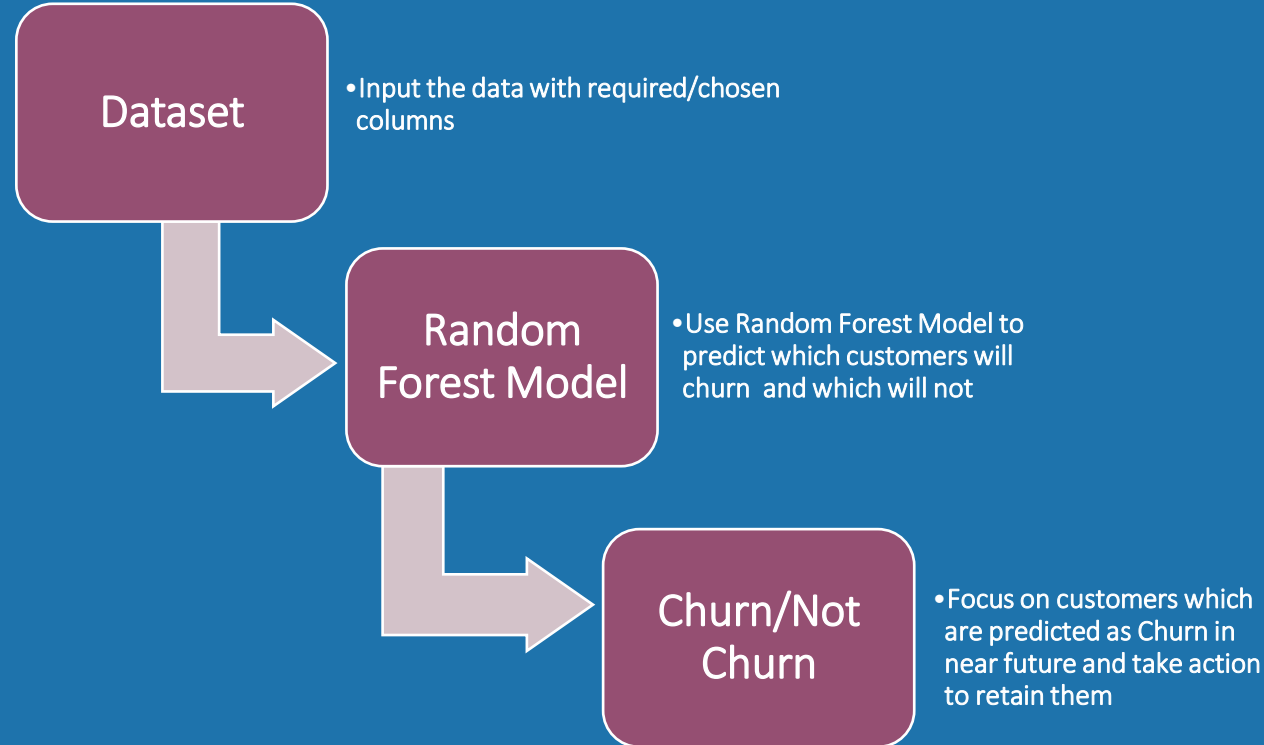
1. An interpretable model was built to identify the key factors influencing a customer's decision to churn.

2. High-Performance Models:

1. Three high-performance models were developed using:
 1. Logistic Regression
 2. Random Forest
 3. XGBoost
2. All three models demonstrated high accuracy on both training and test datasets.

3. Best Performing Model:

1. The **Random Forest** model performed the best for the given data and is recommended for predicting potential future customer churn.
 1. **Accuracy on Training Set:** 95%
 2. **Accuracy on Test Dataset:** 91%
2. This model not only achieved high accuracy but was also computationally less expensive compared to others.



Recommendations

Recommendations on the basis of analysis and significant features related to churn

Sr. No.	Features	Functional Meaning of features	Recommendations
1	loc_og_t2m_mou_8	Local outgoing Operator T to other operator mobile Minutes of usage - voice calls in 8 th month	Check if local outgoings are decreasing. It may increase the probability of churn. Connect with customer to check pain point and on the basis of it offer solution. If there is network issue then try to resolve issue and if it is about price then try to offer some recharge package which suffice his/her needs in lower cost.
2	last_day_rch_amt_8	Last day recharge amount in 8 th month	If amount is lesser means it is a possibility that customer is planning to churn soon. Provide him/her an offer on the basis of his/her pain point.
3	total_rech_num_8	Total number of recharges in 8 th month	Reduction in number of recharges in 8 th month shows lack of interest in using the service. Try to connect with customer and know his/her pain point and provide solution accordingly.
4	Arpu_good_avg	Average revenue per user good average	If revenue generated from consumer is getting reduced try to provide him offer on the basis of his past usage. If he is using internet and now he has stopped then try to provide him some package where internet is better. Offer him/her 5G free for few days if service is there. We can provide free subscriptions to OTT platforms for month.
5	loc_ic_t2m_mou_8	Local incoming Operator T to other operator mobile Minutes of usage - voice calls in 8 th month	Check if local incomings are decreasing. It may increase the probability of churn. Connect with customer to check pain point and on the basis of it offer solution. If there is network issue then try to resolve issue and if it is about price then try to offer some recharge package which suffice his/her needs in lower cost. Since this is a an incoming compare it with outgoing calls. If both are affected then there is some issue.

Findings and Implications

Sr. No.	Features	Recommendations	Findings and Business Implications from analysis
1	loc_og_t2m_mou_8	Check if local outgoing calls are decreasing. It may increase the probability of churn. Connect with customer to check pain point and on the basis of it offer solution. If there is network issue then try to resolve issue and if it is about price then try to offer some recharge package which suffice his/her needs in lower cost.	<ul style="list-style-type: none"> It is important to check actual pain point of customer. Provide an offer to customer or try to find out solution on the basis of it. Perform SWOT analysis and compare prices vs services analysis if this is happening for many customers in certain region. Try to find out new incentives like OTT subscriptions to block the customer
2	last_day_rch_amt_8	If amount is lesser means it is a possibility that customer is planning to churn soon. Provide him/her an offer on the basis of his/her pain point.	
3	total_rech_num_8	Reduction in number of recharges in 8 th month shows lack of interest in using the service. Try to connect with customer and know his/her pain point and provide solution accordingly.	
4	Arpu_good_avg	If revenue generated from consumer is getting reduced try to provide him offer on the basis of his past usage. If he is using internet and now he has stopped then try to provide him some package where internet is better. Offer him/her 5G free for few days if service is there. We can provide free subscriptions to OTT platforms for month.	
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Thank You
