Telecom Churn Case Study

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Problem Statement

- In the telecom industry, customers are able to choose from multiple service providers and actively switch from one operator to another. In this highly competitive market, the telecommunications industry experiences an average of 15-25% annual churn rate. Given the fact that it costs 5-10 times more to acquire a new customer than to retain an existing one, **customer retention** has now become even more important than customer acquisition.

Business Objectives:

- *Retaining high profitable customers is the number one business goal.*

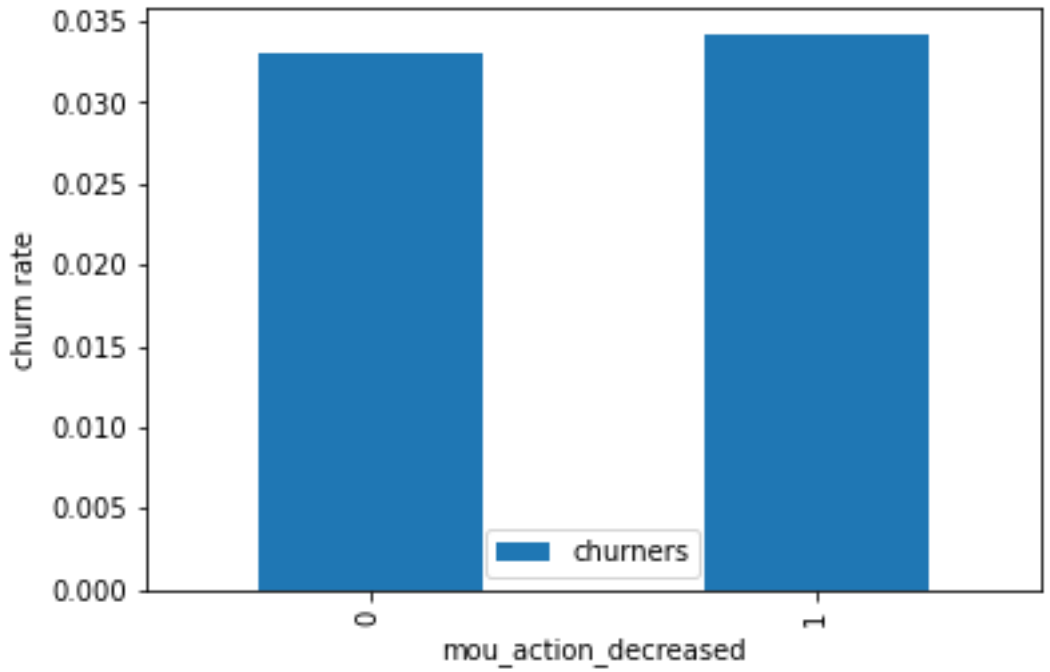
- *To reduce customer churn, telecom companies need to* ***predict which customers are at high risk of churn.***

- *Will analyse customer-level data of a leading telecom firm, build predictive models to identify customers at high risk of churn and identify the main indicators of churn.*

Steps:

- *Data cleaning by handling missing values*
- *Exploratory Data Analysis*
- *Data preparation for different model building*
- *Splitting of data set into train and test data set in 70:30 ratio*
- *Building models with PCA and without PCA*
- *Calculation of VIF and P values*
- *Finding of optimal probability cut-off*
- *Checking the model performance over train and test set*

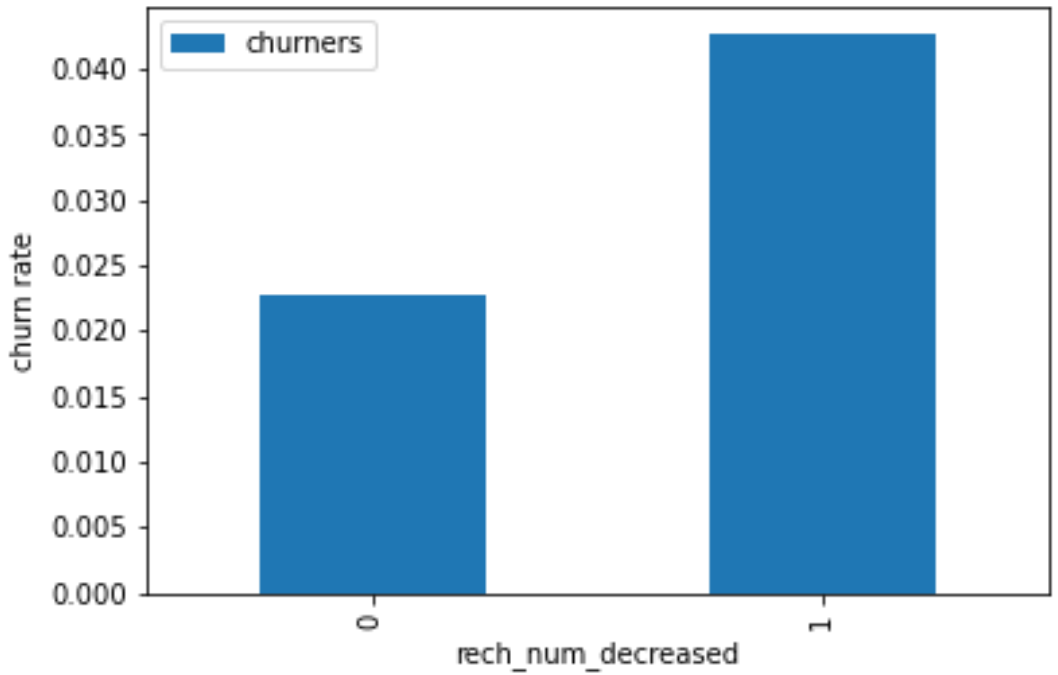
Analysing relationship between churn rate and ‘mou_action_decreased’



Insight:

The churn rate is more for the customers whose minutes of usage decreased in the action phase than the good phase

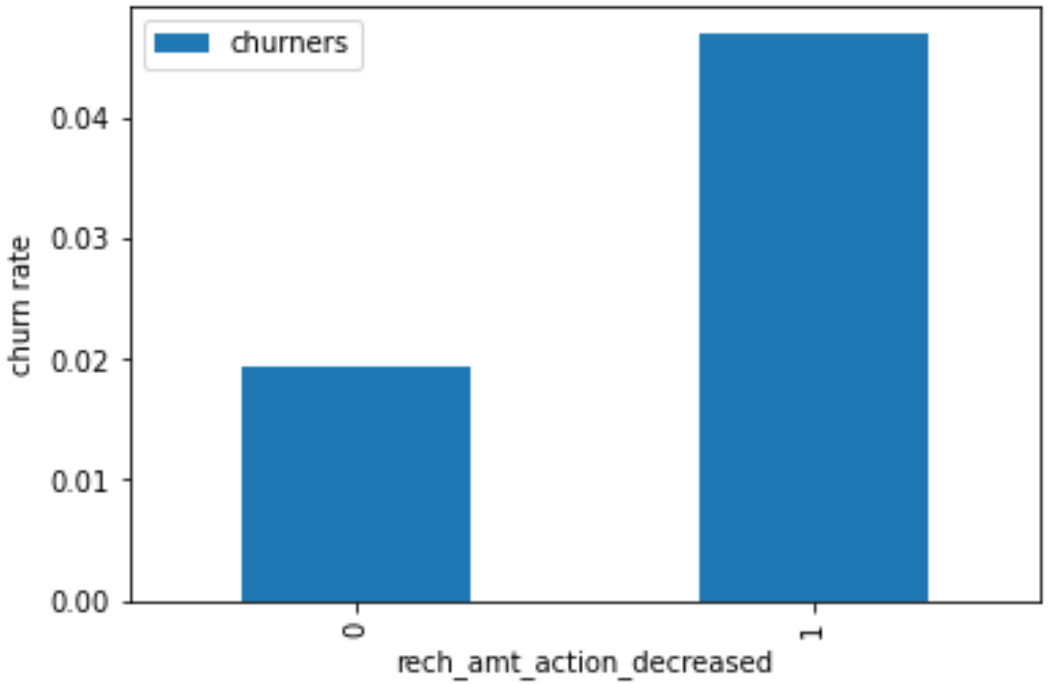
Analysing relationship between churn rate and ‘rech_num_decreased’



Insight:

The churn rate is more for the customers whose number of recharge in the action phase is lesser than the number in good phase.

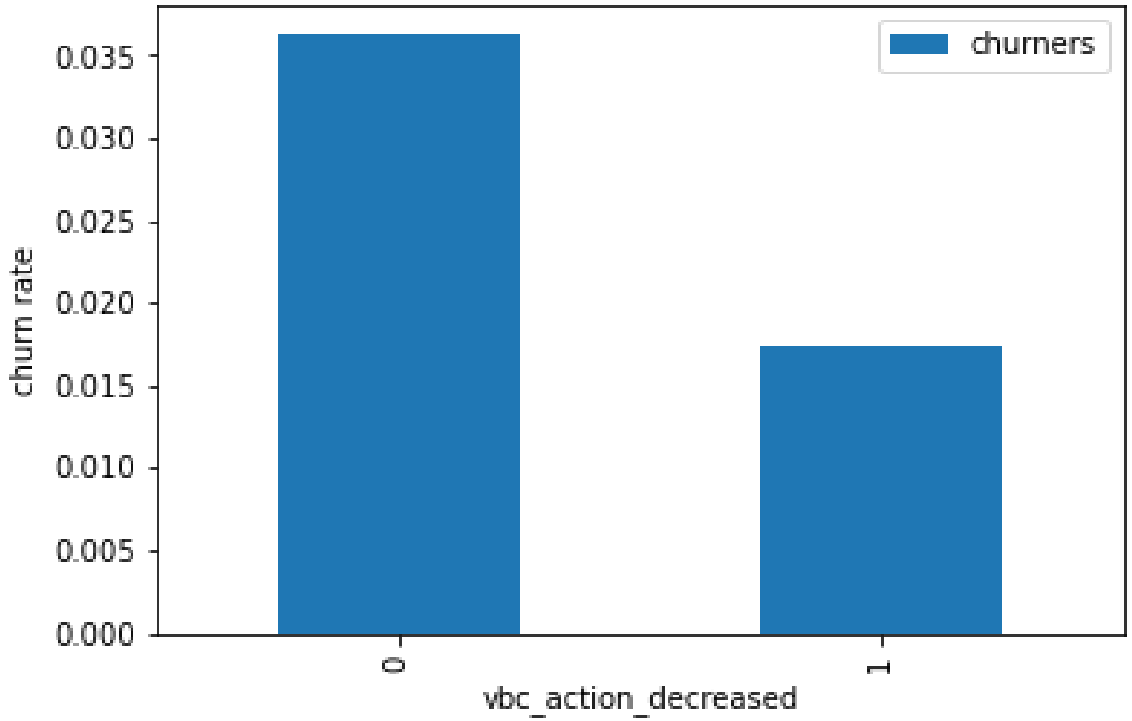
Analysing Relationship between ‘churn rate’ and ‘rech-amt_action_decreased’



Insight:¶

The churn rate is more for the customers whose amount of recharge in the action phase is lesser than the amount in good phase

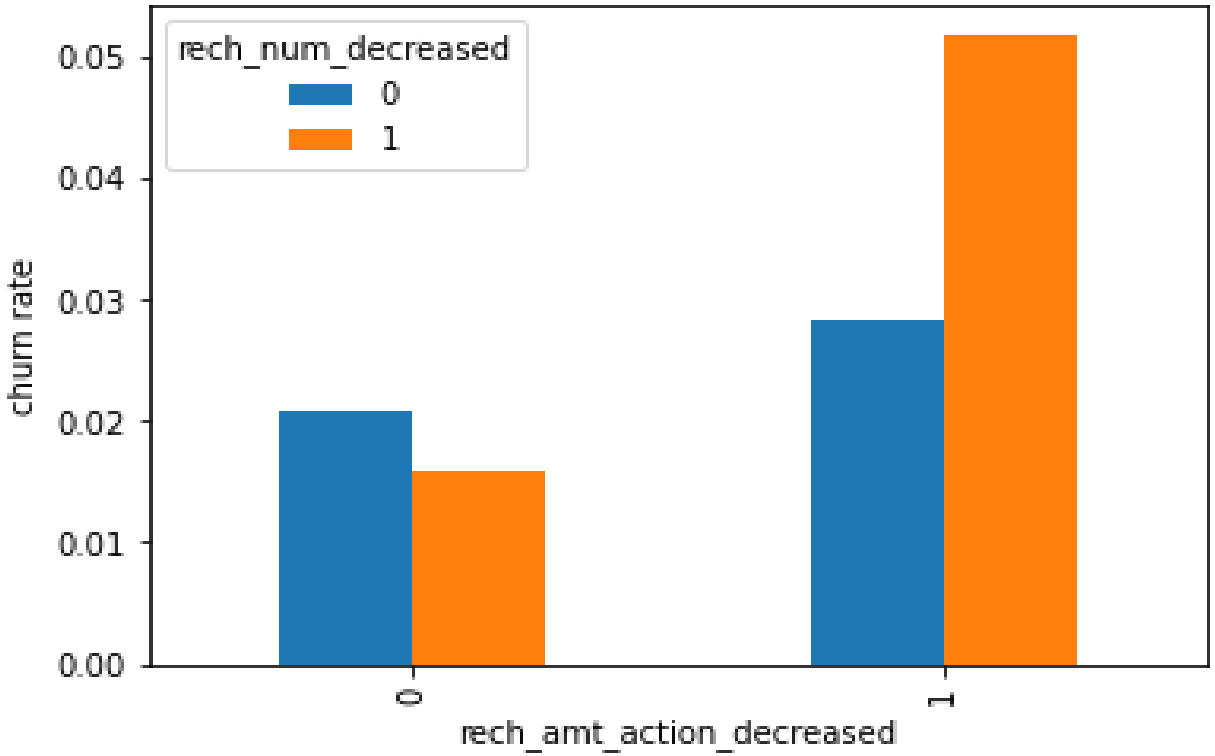
Analysing relationship between churn rate and ‘vbc_action_decreased’



Insight:

The churn rate is more than for the customers whose volumn based cost in action month is increased.That means in action phase customers do not do more monthly recharges

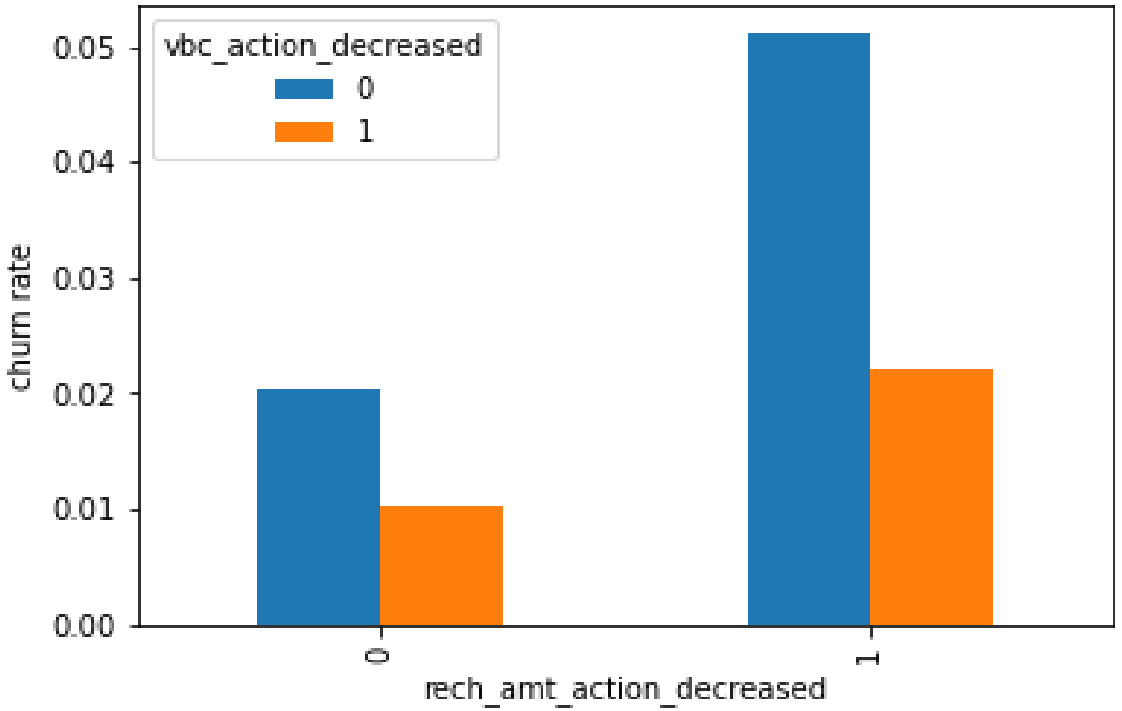
Analysis of churn rate by the decreasing number of recharge and recharge amount in the action phase



Insight:

The churn rate is more for the customers whose number of recharge and amount of recharge have decreased in the action phase than the good phase.

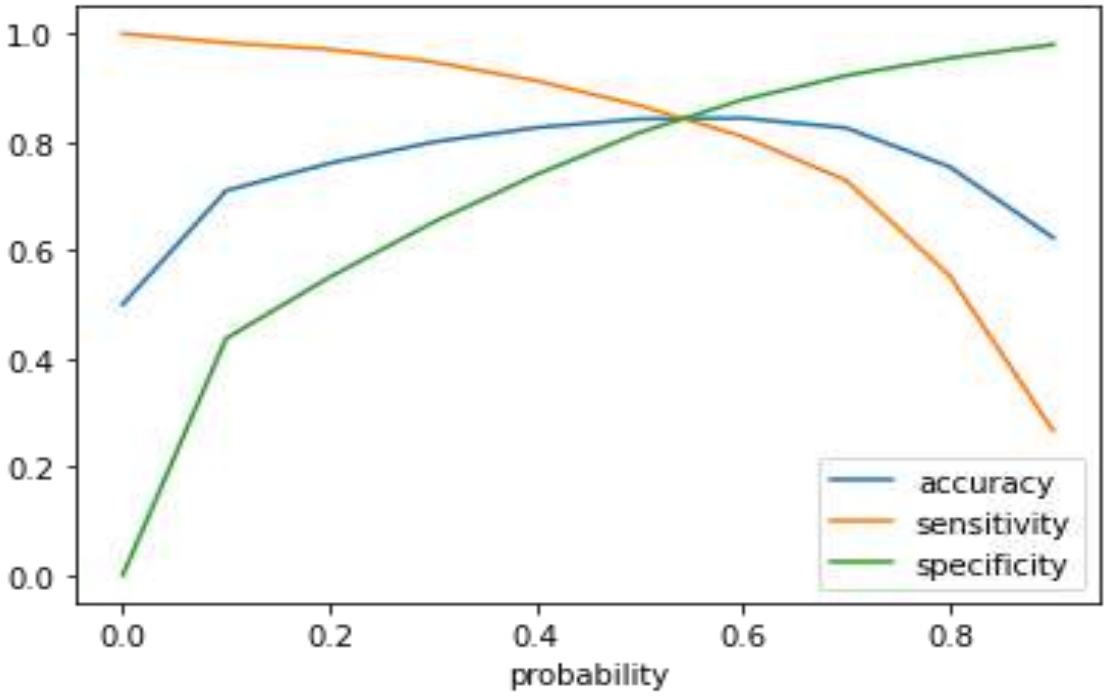
Analysis of churn rate by the decreasing recharge amount and volume based cost in the action phase



Insight:¶

The churn rate is more for the customers whose recharge amount is decreased along with the volume based cost is increased in the action phase.

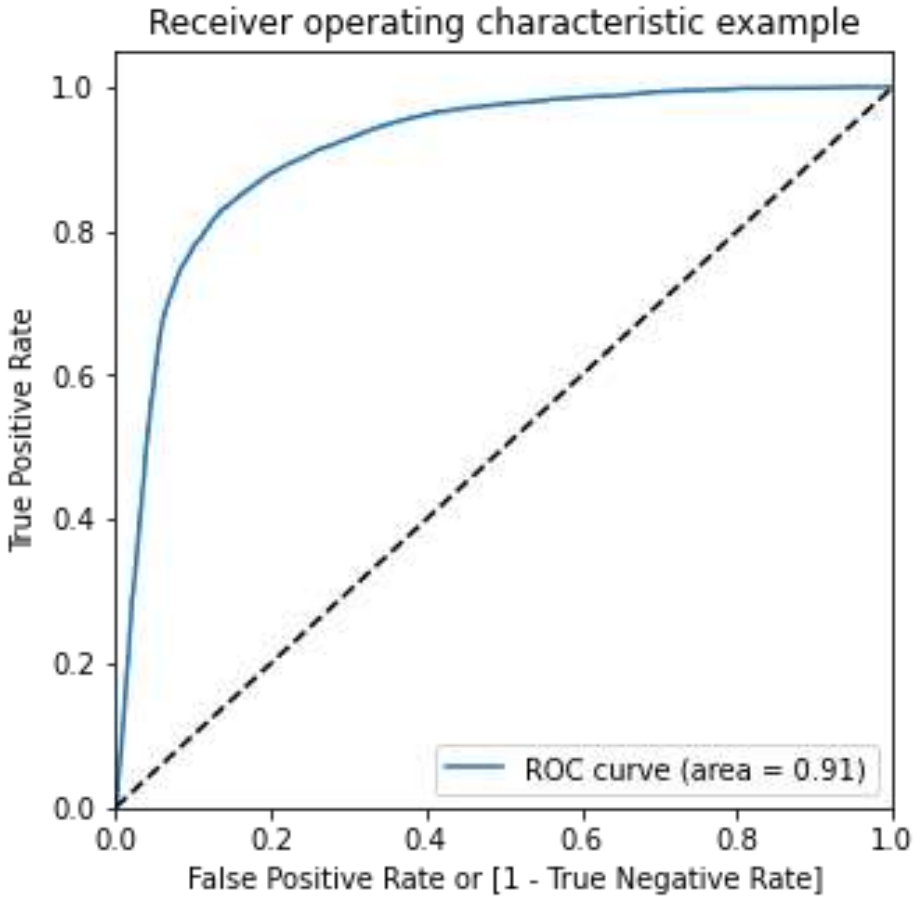
Finding optimal cut-off



Insight:

At point 0.5 where the three parameters cut each other, we can see that there is a balance bethween sensitivity and specificity with a good accuracy.

Plotting ROC curve:



Insight:

We can see the area of ROC curve is closer to 1

Model Performance of final model

- Train set:
- Accuracy = 0.84
- Sensitivity = 0.86
- Specificity = 0.81

- Test set:
- Accuracy = 0.81
- Sensitivity = 0.78
- Specificity = 0.81

Top predictors identified in final model

Variables	Coefficients
arpu_8	-2.01
roam_og_mou_8	1.61
loc_ic_t2t_mou_8	-2.07
loc_ic_t2f_mou_8	-1.72
ic_others_8	-2.73
monthly_2g_8	-1.08
arpu_action_decreased	-1.15
vbc_action_decreased	-1.60

Insight:

Most of the variables have negative coefficients which means variables are inversely correlated with churn probability

Business Recommendations:

- 1.Target the customers whose average revenue in the month of August(arpu_8) have been decreased
- 2.The customers whose roaming outgoing minutes of usage(roam_og_mou_8) is increasing are more likely to churn.
- 3.Customers whose local incoming calls between same operator and fixed lines in the month of August(loc_ic_t2t_mou_8 & loc_ic_t2f_mou_8) have been decreased are more likely to churn.
- 4.Target the customers whose incoming calls from other operators in August(ic_others_8) have been decreased.
- 5.Cutomers decreasing monthly 2g usage for August(monthly_2g_8) are most probable to churn.
- 6.Customers whose average revenue in the action phase(arpu_action_decreased) have been decreased are more likely to churn.
- 7.The customers having value based cost in the action phase(vbc_action_decreased) increased are more likely to churn than the other customers. Hence, these customers may be a good target to provide offer.

THANK YOU