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.

For many incumbent operators, 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.

In this project, we analysed 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.

Objectives

- For many incumbent operators, 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.
- In this project, you 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

- Reading, understanding and visualising the data
- Preparing the data for modelling
- Building the model
- Evaluate the model

Observations-

- There are just **8.09% churn** cases.
- This indicated an **highly imbalanced** data set where the churn cases are the minority(8.14%) as opposed to the non-churners who are the majority(91.91).
- **Minimum Age** on network is 180 days.
- **Average age** on network for customers is 1200 days (3.2 years).
- 27% of the **HV users are in their 2nd year** with the network.
- Almost 71% users have Age on network **less than 4 years.**
- 15% users are with the network from **over 7 years.**

Observations-

- the roaming usage of churners is way higher than those of non-churners across all months
- People who are making/reciving more roaming calls during their tenure are more likely to churn.
- This might suggest that the operators roaming tariffs are higher than what are offered by its competitor, thus forming one of the reasons of churn.
- The avg. last recharge amount for churners is less than half the amount of that of the non-churners.

Model Building

Now we starting to build Model based upon train data set. For we find VIF in different different way to minimise P-value to better outcomes.

Evaluation Of Model(Test)

- The roc curve is lying in the top left corner which is a sign of a good fit.
- 0.45 is the optimum point(ROC Curve).
- **train sensitivity :** 86.47%, **train roc auc score :** 82.1%
- **test sensitivity :** 84.40%, **test roc auc score :** 81.21%
- Random Forest after selecting optimal cut-off also is resulting in a model with-
  Train Recall : 88.70% and **Train Roc_auc_score : 85.60**
  Test Recall : 77.57% and **Test Roc_auc_score : 79.65**

Outcomes

From above it is clear that the factors affecting the churn are total_ic_mou_8 (Total incoming call: Minutes of usage in the action phase), total_rech_amt_diff (Total recharge amount difference), total_og_mou_8 (Total outgoing call: Minutes of usage in the action phase), arpu (Average revenue per user), roam_ic_mou_8 (Roaming incoming call: Minutes of usage in the action phase), roam_og_mou_8 (Roaming outgoing call: Minutes of usage in the action phase), std_ic_mou_8(STD incoming call: Minutes of usage in the action phase), std_og_mou_8 (STD outgoing call: Minutes of usage in the action phase), av_rech_amt_data_8(average recharge amount in the action phase.

Recommendations-

- Churners show higher roaming usage than non-churners.
- The Network operators must futher investigate their roaming tariffs, and quality of service.
- Might be that the roaming tariffs offered are less competitive than their competitor.
- Telecom company needs to pay attention to the roaming rates. They need to provide good offers to the customers who are using services from a roaming zone.
- It might be that the customer is not getting good quality of service while roaming. In this case, quality of service guarantees with roaming partners and network quality need to be investigated.

Thank You