TELECOM_CHURN --- DOMAIN ORIENTED CASE STUDY

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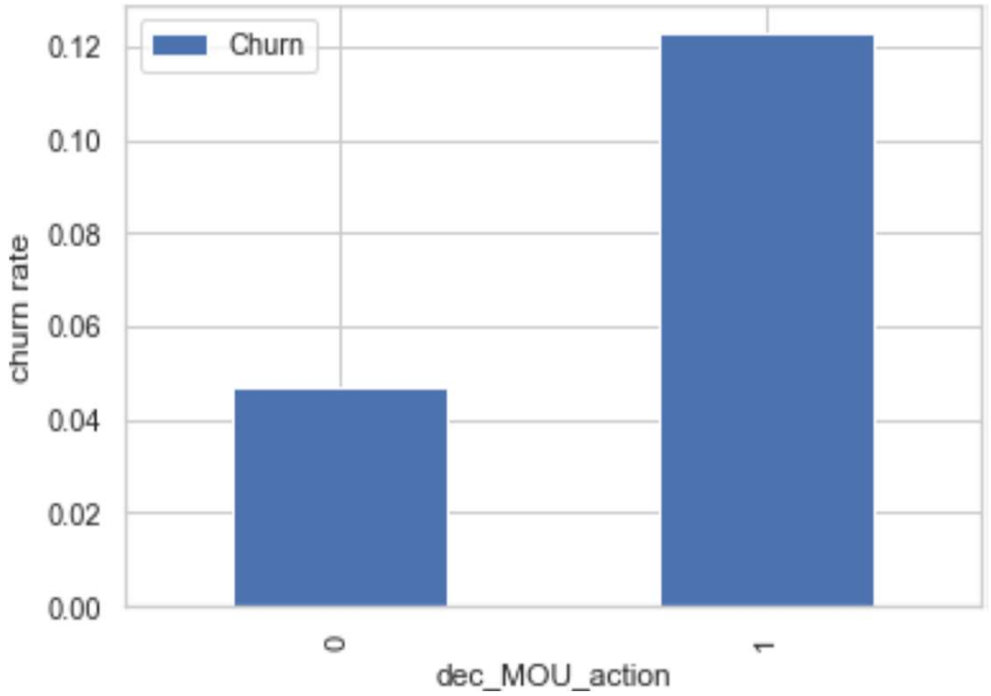
Problem Statement

- 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, 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.

Goal

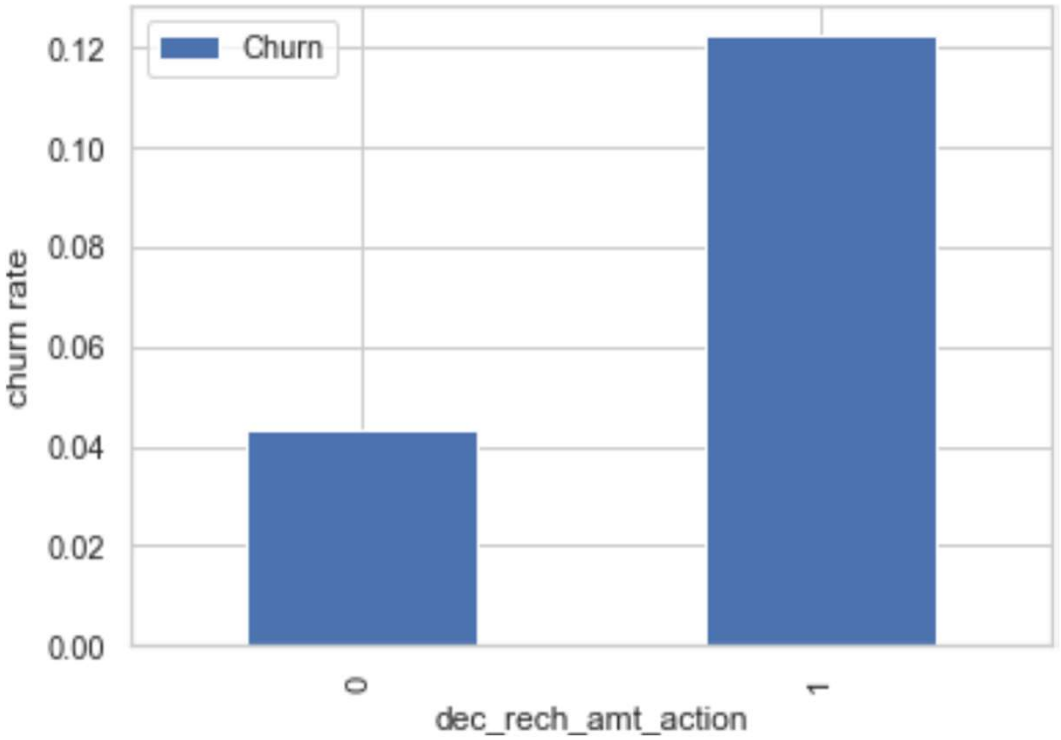
- To predict the churn in the ninth month using the data (features) from the first three months

Churn rate influenced by a customer's reduction in MOU during the action month



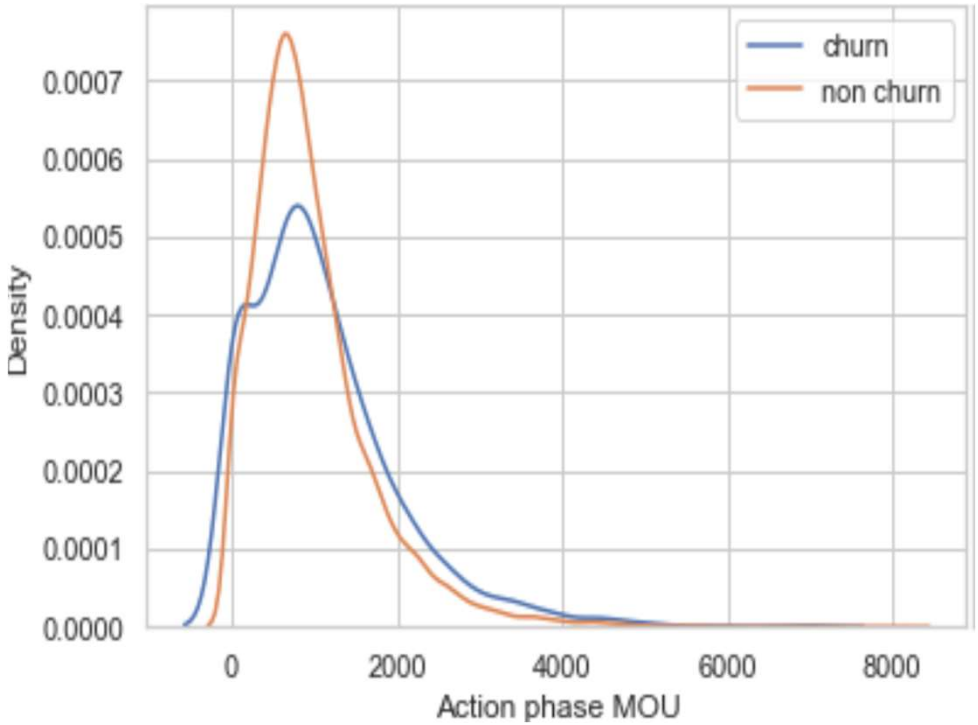
Insight: The churn rate is higher for customers whose minutes of usage (MOU) decreased during the action phase compared to the good phase.

Churn rate if the customer decreased his/her amount of recharge in action phase



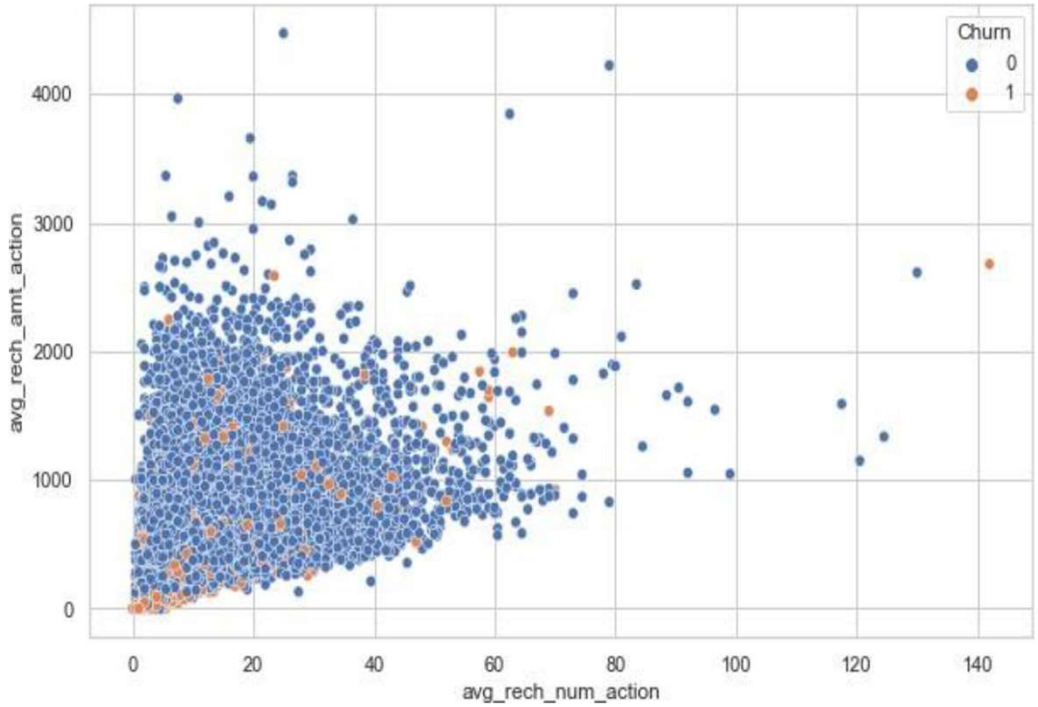
Insight: Similarly, we observe that the churn rate is higher for customers whose recharge amount during the action phase is lower than during the good phase.

Analysis of the minutes of usage MOU (churn and not churn) in the action phase



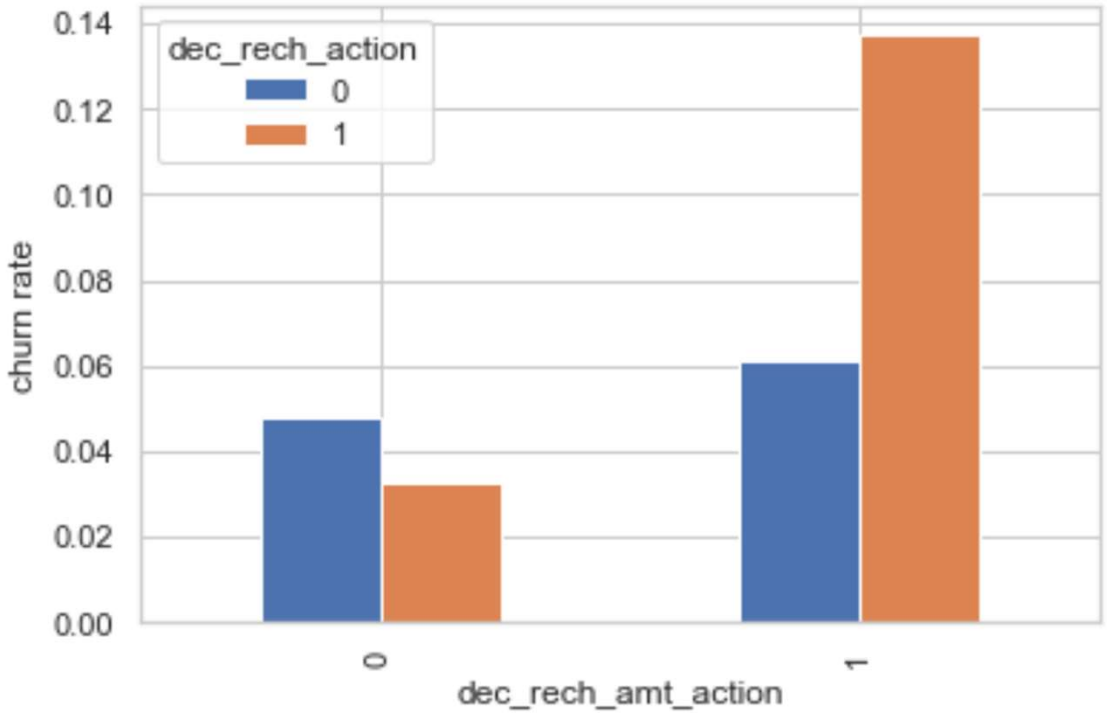
Insights: Customers that churn tend to have minutes of usage (MOU) that range from 0 to 2500. Higher the MOU, the lesser the churn probability

Analizing recharge amount and number of recharge in action month



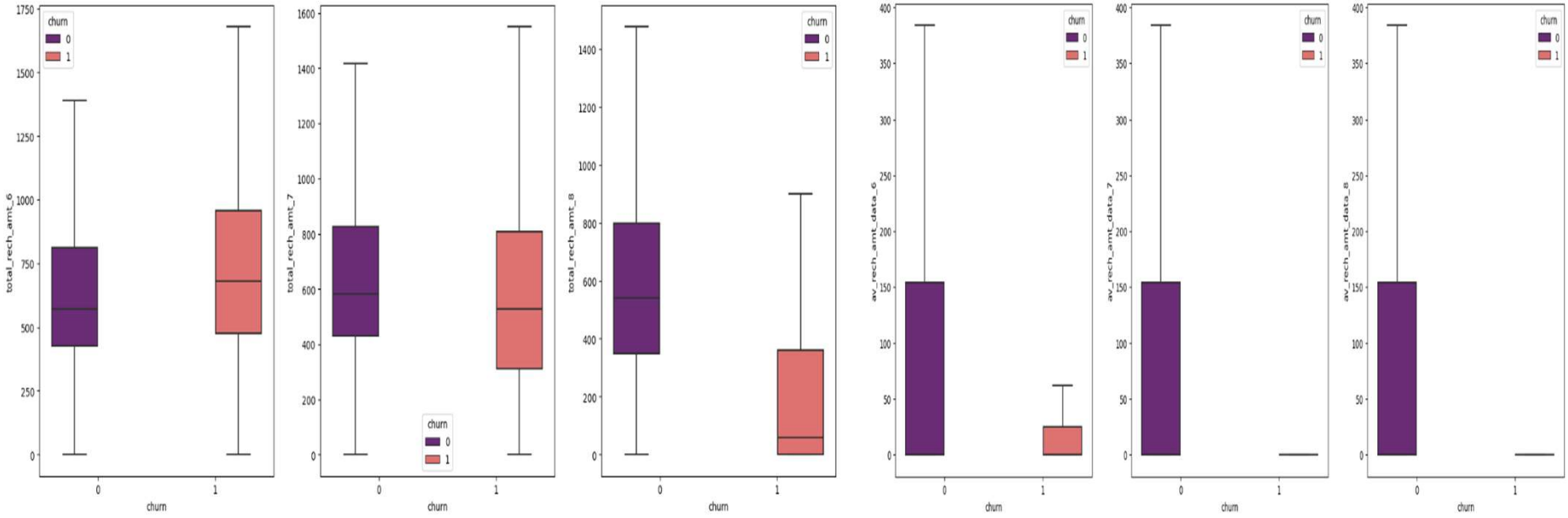
Insight: The pattern shows that the number of recharges and the recharge amount are nearly proportional: the higher the number of recharges, the higher the total recharge amount.

Analyzing churn rate in relation to the decreasing recharge amount and number of recharges during the action phase.



Insight: The plot indicates that the churn rate is higher for customers whose recharge amount and number of recharges have decreased during the action phase compared to the good phase.

Analyzing Box Plot for month 6,7 and 8



Plots, clearly indicated that both the total and maximum recharge amounts began to decline in month 8, which is close to the churn phase.

Insights from EDA

- During our exploratory data analysis, we identified several outliers in the numeric features. As a result, we decided to use Robust Scaling, which leverages median and quantile values, instead of Standard Scaling, which uses mean and standard deviation.

Complete Model Statistics

	Model	Recall	Test accuracy	Roc_au_score
1	Decision Tree with PCA	0.89	0.83	0.77
0	Logistic Regression with PCA	0.87	0.83	0.88
3	Logistic without PCA	0.82	0.79	0.76
2	Random Forest with PCA	0.70	0.87	0.88

Conclusion

1. During the exploratory data analysis (EDA), we identified a significant decline in recharge amounts, call usage, and data consumption in the 8th month, referred to as the Action Phase. The key features influencing this phase include:

- loc_og_t2m_mou_7
- total_og_mou_6
- loc_og_t2t_mou_7
- roam_ic_mou_7
- onnet_mou_7
- arpu_7
- loc_og_t2c_mou_7
- onnet_mou_8
- roam_og_mou_8
- arpu_6

Conclusion

2. The Average Revenue Per User (ARPU) in the 7th month is critical in predicting customer churn. A sudden drop in ARPU may indicate that a customer is considering leaving, and timely actions should be taken to retain them.
3. Local outgoing minutes of usage are one of the most influential factors impacting customer churn.
4. Roaming minutes of usage (both incoming and outgoing) also significantly affect customer churn.
5. Additionally, the total outgoing minutes of usage is another key factor contributing to churn.

Strategies

- Here are some strategies that can be implemented to reduce customer churn:

1. A sudden decline in local minutes of usage might signal dissatisfaction due to poor customer service, network issues, or unsuitable plans. Focusing on enhancing network quality and improving customer service could help retain these customers.
2. Routine feedback calls should be conducted based on factors such as usage patterns, recent recharges, and onnet usage. These calls can help understand customer grievances and expectations, allowing for timely intervention to prevent churn.
3. Offering attractive deals and promotions to customers who exhibit a sudden drop in spending on calls and data recharges during the action phase can entice them to stay.
4. Providing customized plans tailored to the needs of customers who show signs of potential churn can help retain them by offering better value or more suitable options.
5. Promotional offers targeting customers who display reduced engagement can serve as an effective tool in reducing churn.