Telecom Churn Case Study

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Analysis Approach

01. Understanding Business Problem

02. Data Preparation

03. Feature Correlation

04. Top Feature affecting Customer Churn

05. Action Suggested

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# Understanding Business Problem

Problem Statement

- Predict whether the customer will churn or not in Churn Phase while analysis the Data of customer in Action Phase. Churn to be predicted of High Value Customer as 80% of the revenue is contributed by these 20% of total customer.

- High value Customers are those whose recharge value is greater then 70% of average recharge value Customer data is of period June to Sept, where sept period is of churn phase customers

Understanding customer behaviour during churn

- Customers usually do not decide to switch to another competitor instantly, but rather over a period of time (this is especially applicable to high-value customers). In churn prediction, we assume that there are three phases of the customer lifecycle :.

Good' phase: In this phase, the customer is happy with the service and behaves as usual.
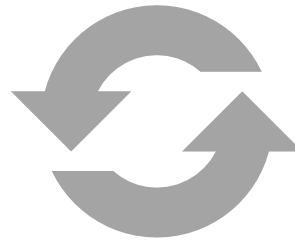
Action' phase: The customer experience starts to sore in this phase.In this phase, the customer usually shows different behaviour than in the 'good' months.

The **'Churn' phase:** In this phase, the customer is said to have churned.

Data Understanding

- 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.

- The business objective is to predict the churn in the last (i.e. the ninth) month using the data (features) from the first three months.

- To do this task well, understanding the typical customer behaviour during churn will be helpful.

- In this case, since you are working over a four-month window, the first two months are the 'good' phase, the third month is the 'action' phase, and the fourth month is the 'churn' phase.

- In this project, you will use the usage-based definition to define churn.

- In this project, you will define high-value customers based on a certain metric and predict churn only on high-value customers.

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Customer Impacting Business

Total Data Available – 99999 Customers
Total Columns - 226

High Value Customers (80% Revenue from 20% of the customer) **70th percentile** of the average recharge amount in the first two months (the good phase).

Data Features

Incoming and Outgoing calls

Roaming Calls

Mobile Internet Usage Volume

Different Service Schemes

Average Recharge Values

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October 3, 2023

Assumptions

- Dropping the Churn Phase Columns

```
Churn_Columns = HV_Data.columns[HV_Data.columns.astype('str').str.contains("_9")==True]
HV_Data=HV_Data.drop(labels=Churn_Columns,axis=1)
HV_Data.shape
```

- Dropping Column having Greater than 50% Missing Values

```
HV_Data=HV_Data.drop(columns=Null_count[Null_count[0]>50].index)
```

- Dropping the columns having only same values through the rows

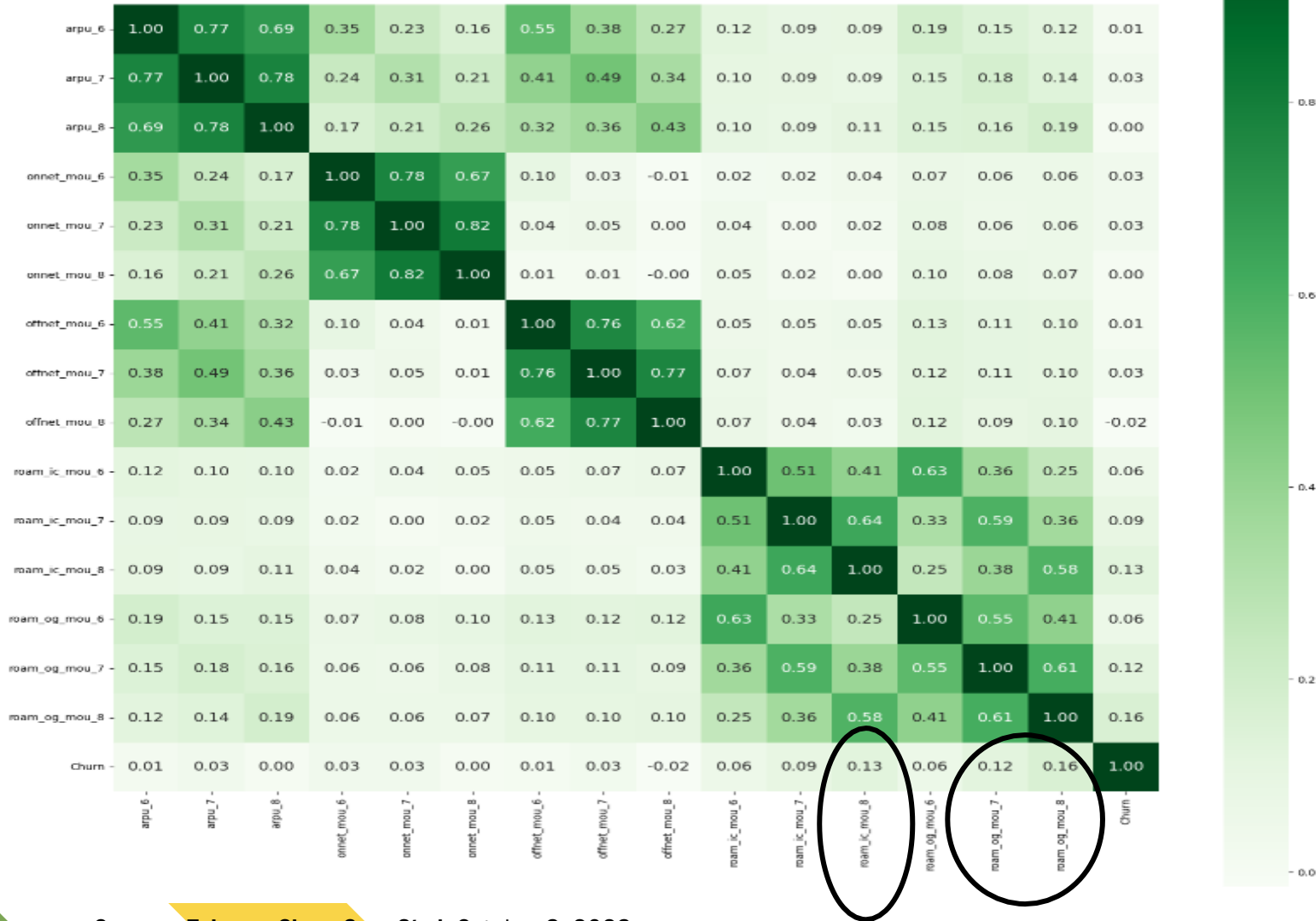- Dropping the Subset columns of Local, STD Incoming and Outgoing calls

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Analysis

Customer Churn Distribution

Class Distributions
(0: No Claim || 1: Claim)
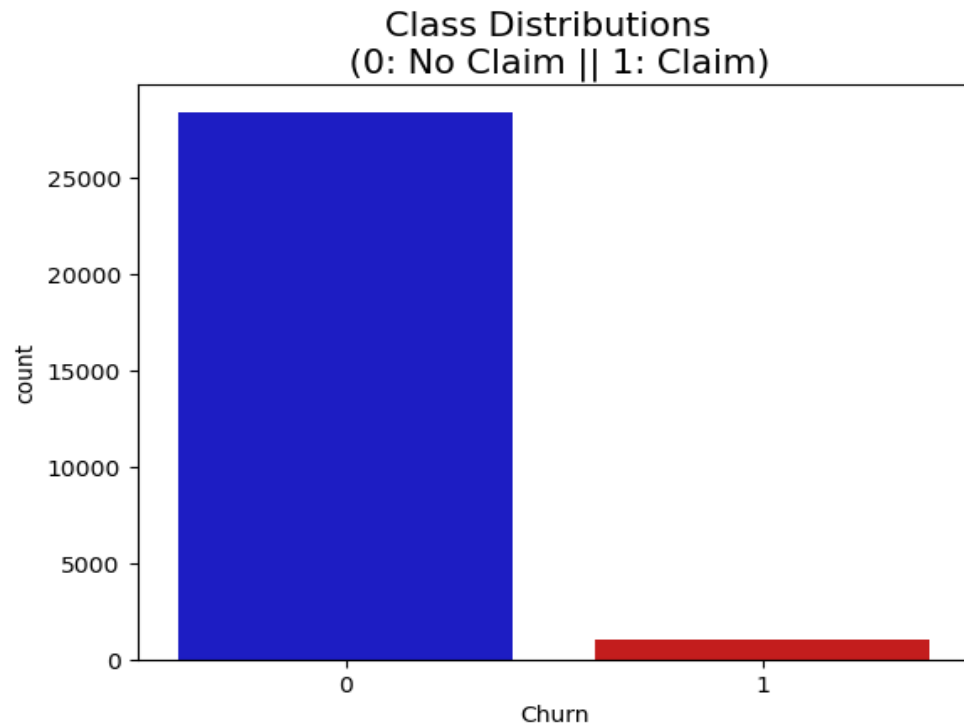
- We have 92% customers belong non-churn and 8% customers belong to Churn type.

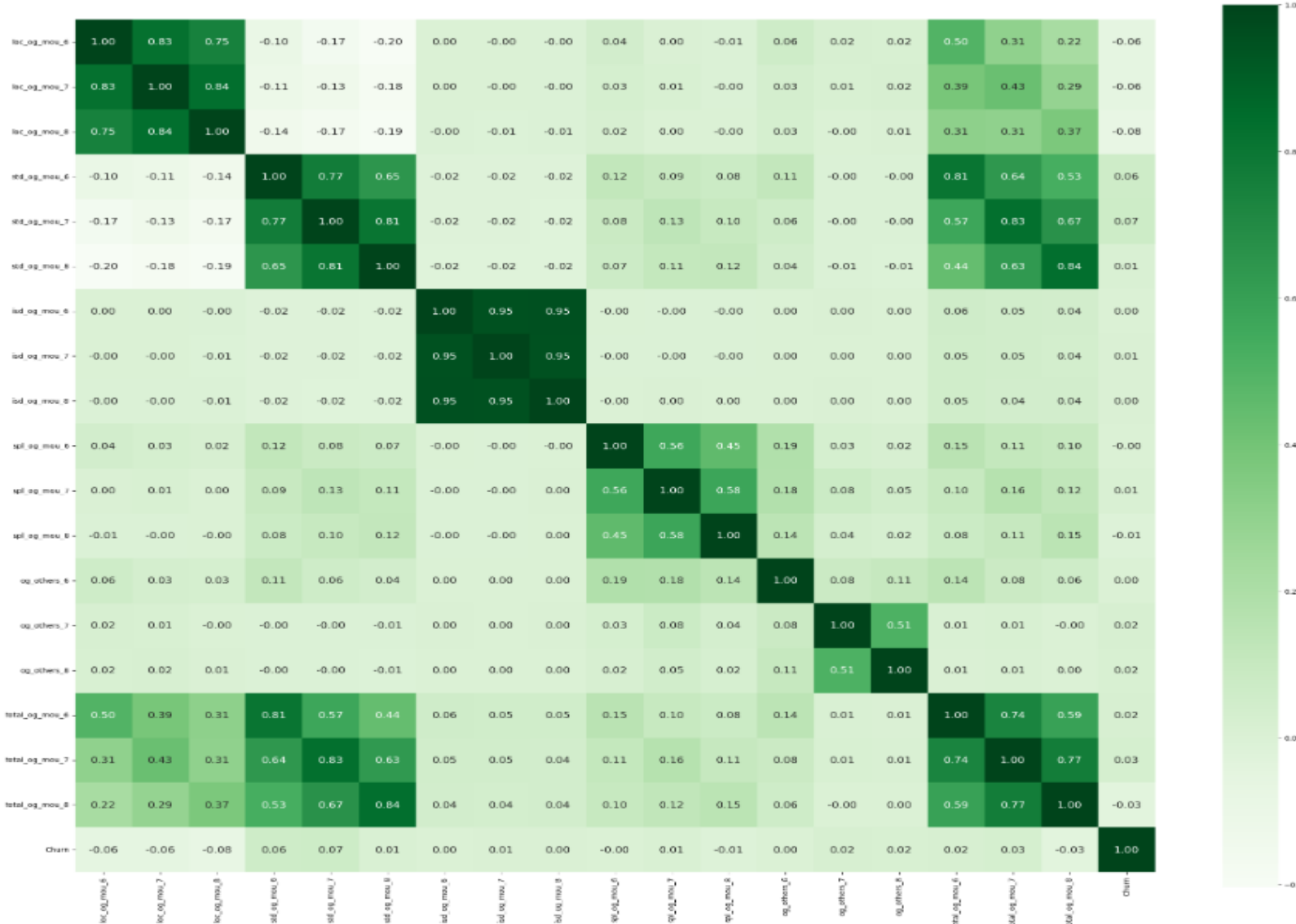- 3.5% Customer Churn in the Month of September

Feature Correlation

Correlation for ARPU,ONNET,OFFNET,ROAM

- Features impacting Churn
  - roam_ic_mou_8
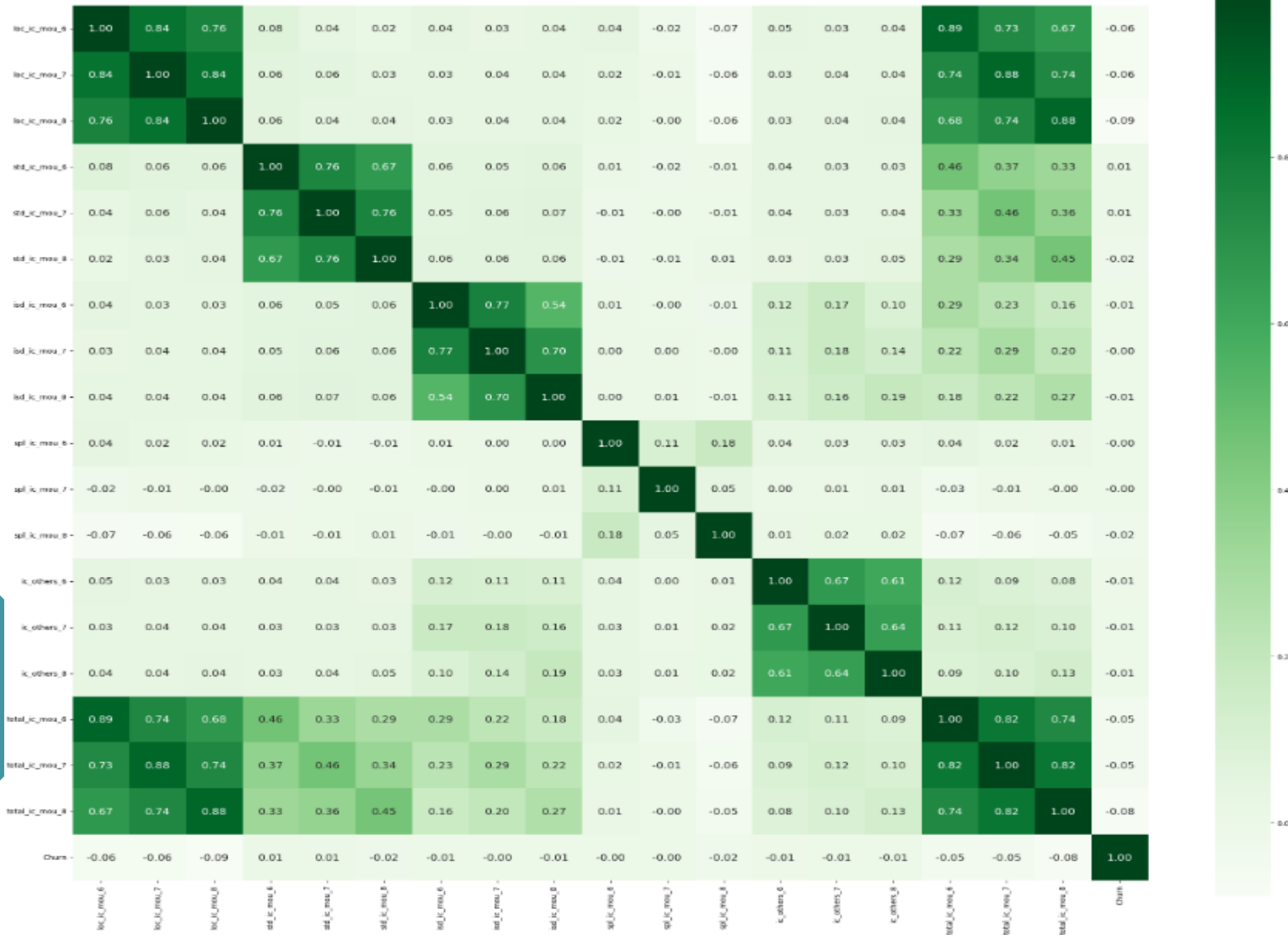 - roam_og_mou_7
  - roam_og_mou_8

Feature Correlation

Correlation for Outgoing Calls

- No Features are impacting Churn in this heatmap

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Feature Correlation

Correlation for Incoming Calls

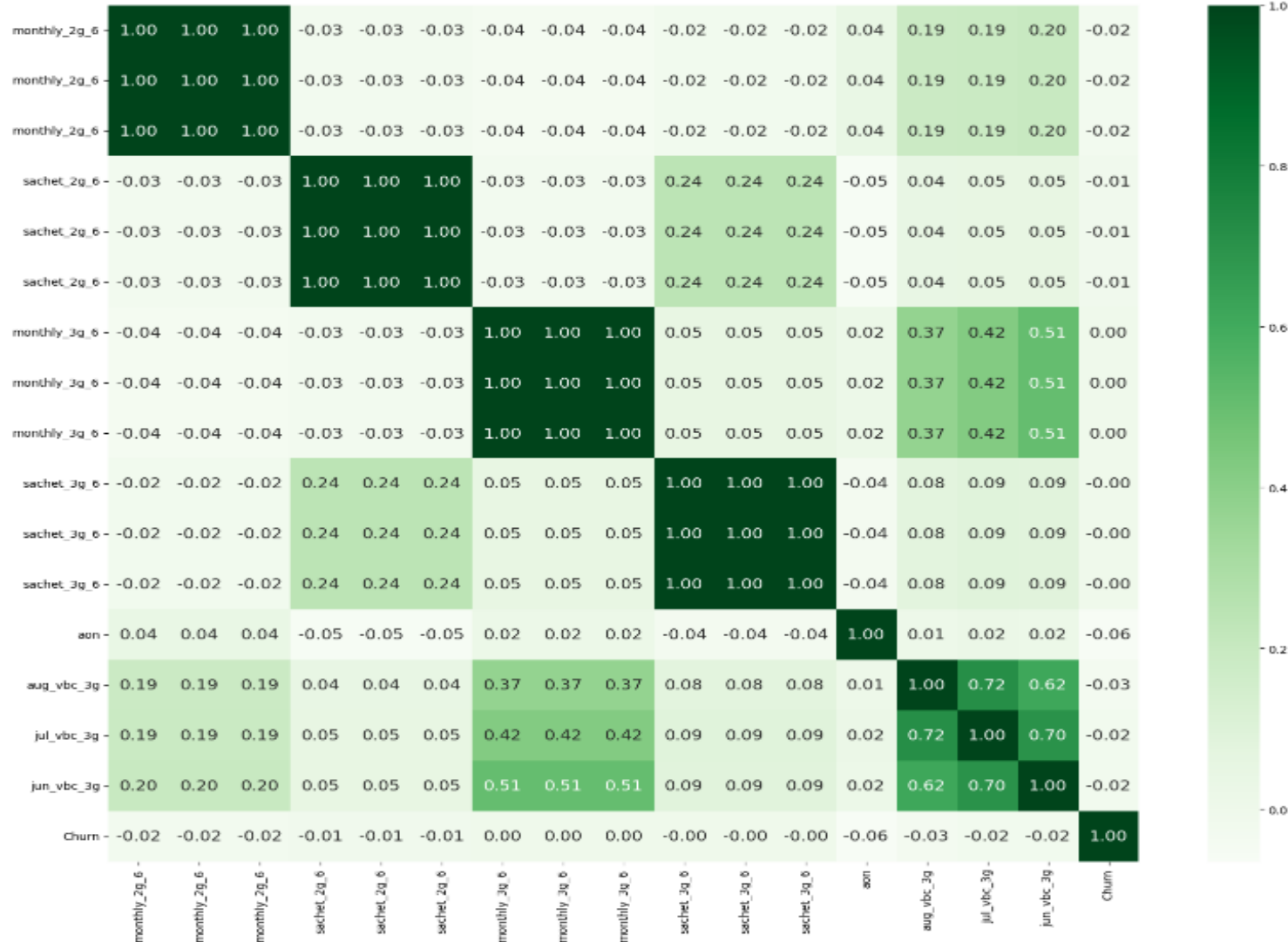- No Features are impacting Churn in this heatmap

Feature Correlation

Correlation for Recharge

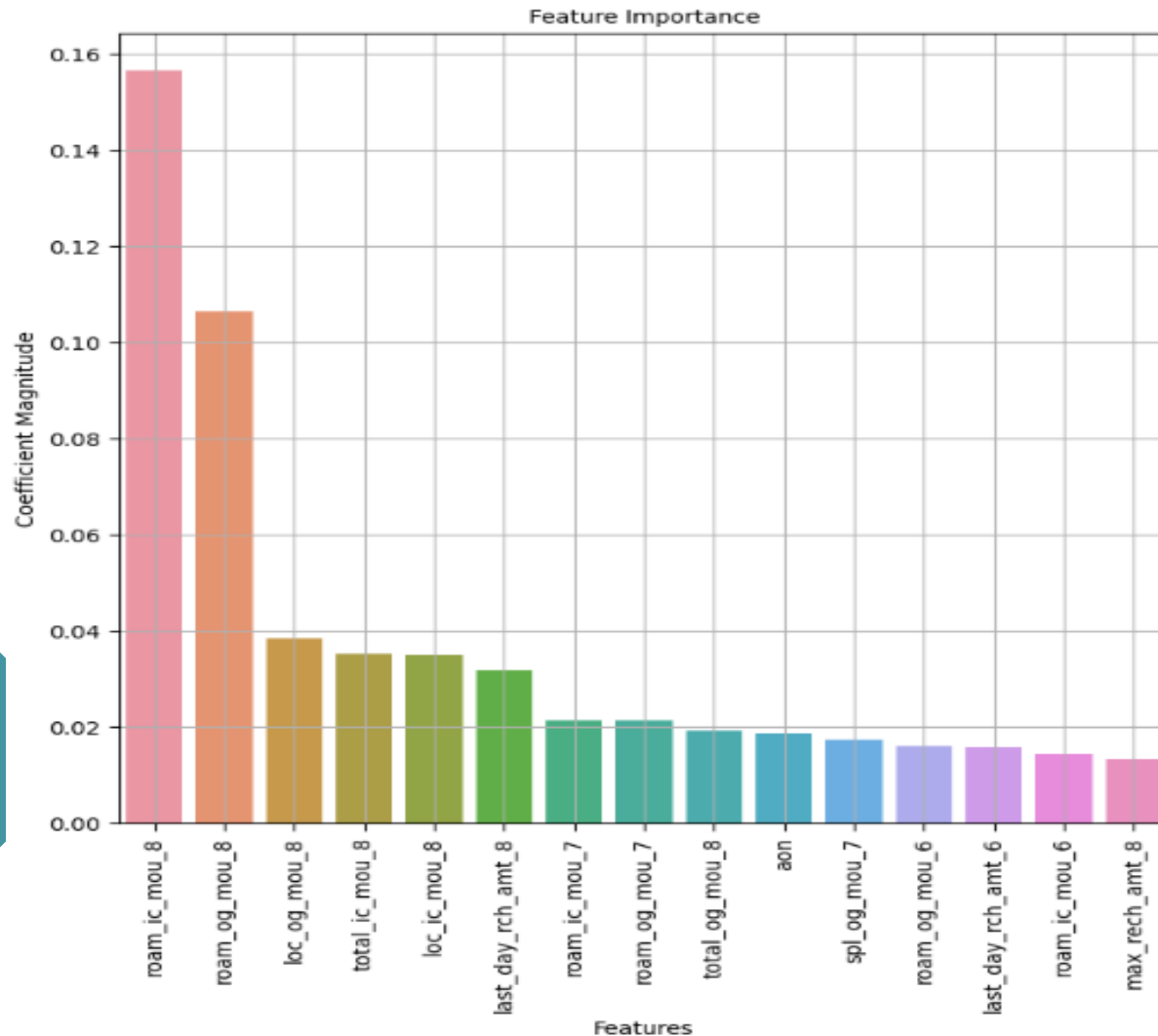- No Features are impacting Churn in this heatmap

Feature Correlation

Correlation for Package

- No Features are impacting Churn in this heatmap

Top Features Impacting Churn

Hyperparamter Tuning using Randomised Search CV

Random Forest produced the Best prediction results

Roaming Incoming calls in the month of Aug is the Top feature impacting churn.

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Conclusion

To reduce the Churn of customer

- Roaming calls to be monitored continuously and service provided

- In the Action phase only customer reducing the calls to be given attractive offer on their next recharges

- Last recharge amount to be compared to the last 3 months average

Conclusions from Random Forest

- Local Incoming for Month 8, Average Revenue Per Customer for Month 8 and Max Recharge Amount for Month 8 are the most important predictor variables to predict churn.

Factor Most affecting the Churn

- Roaming calls in the month of Aug

- Local Incoming and Outgoing calls in Aug

- Last recharge in Aug

- Max Recharge Amount is a strong feature to predict churn.

- Local calls minutes of usage has also impact on churn

Thank you

upGrad