Telecom Churn Case Study: Insights and Recommendations

This case study analyzes telecom customer churn data, identifying key factors influencing churn , predicting churn and recommending strategies for customer retention.

by

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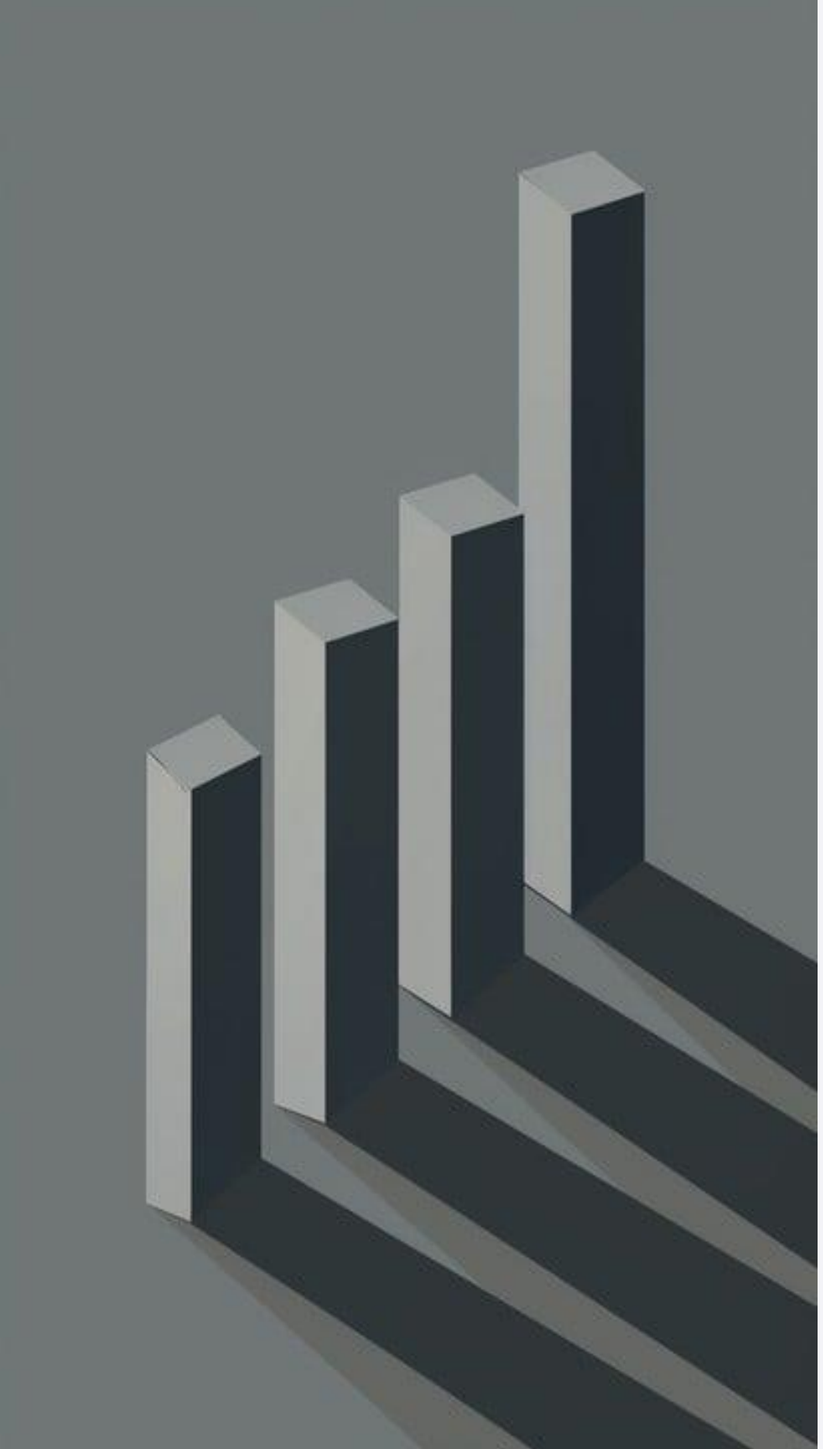
Model Building Workflow

- Import required libraries, Read data, view data, info, describe
- Data preparation - removing redundant columns, handling missing values, filtering high value customers (target customer segment), tagging churners.
- Exploratory data analysis (EDA),
- Data imbalance handling by SMOTE oversampling
- Logistic regression, future selection using RFE and VIF check, Prediction and evaluation Metrics, Feature importance
- Decision tree , evaluation Metrics
- Random forests, evaluation Metrics, Feature importance
- Comparison of models
- Insights and recommendations models



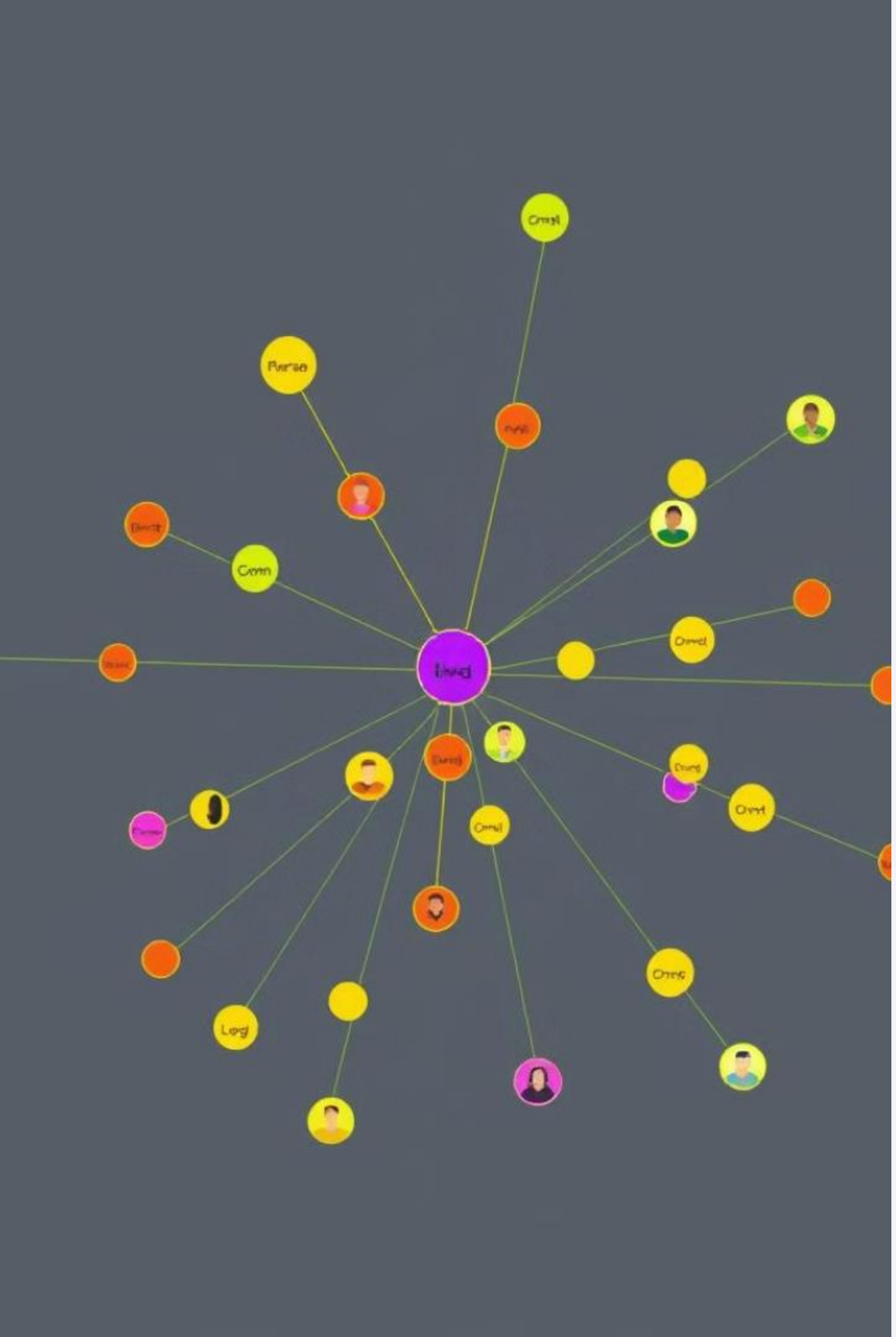
Model Performance Comparison

Evaluation Metrics	Logistic Regression	Decision Trees	Random Forests
Accuracy	0.82	0.89	0.93
Precision	0.29	0.4	0.55
Sensitivity (Recall)	0.79	0.71	0.68
Specificity	0.83	0.9	0.95
False Positive Rate	0.17	0.1	0.05
True Negative Prediction Rate	0.98	0.97	0.97
F-1 Score	0.42	0.51	0.61

Top influential features

The **Top features** which indicate that the customer is going to churn are -

1. Local incoming and outgoing MOU (to mobile and fixed line) during action phase.
2. Roaming incoming and Outgoing MOU
3. Special incoming MOU during action phase.
4. Average revenue per user.
5. Last day recharge amount.
6. STD incoming MOU (other operator)
7. Offnet MOU and Onnet MOU
8. Night pack user or not
9. Max recharge amount for calls and data.
10. Volume of 2G and 3G usage.



Insights and recommendations

1. **Age on Network** - Churn possibility is higher for users with less than 12 months. High value users with less than 12 months on network need to be carefully monitored. Special offers can be rolled out which will motivate the user to move on to second year.
2. **Average revenue per user(ARPU)** : A sudden sharp reduction in ARPU in subsequent months is a clear indicator of churn. Customers to be contacted and steps to be taken to retain the customer when such a behaviour is observed.
3. Similerly a suddent reduction in Minutes of usage **(MOU)-** calls within same network, calls outside network, local, incoming, outgoing, roaming - are also strong indicators of possibility to churn.
4. Similarly - Sudden reduction **Recharge amount** for talk time and data also indicate possibility to churn.
5. Sudden reduction in the usage of **3g data services** and usage of services with validity less than a month (for example 3g Sachets) indicate possibility to churn.
6. Users who are using more **Roaminng** in Outgoing and Incoming calls, are very likely to churn. Compnay can focus on them to retain them.