Telecom Customer Churn Prediction

TELECOM CHURN

Data Analysis, Model Development & Business Recommendations

Present By:[MUKULIKA BASAK] Date: [03/02/25]

Business Problem

- Telecom companies face a **15-25% annual churn rate**.

- **Customer retention** is more cost-effective than acquisition.

- Goal: **Predict high-value customer churn** and identify key indicators.

Understanding Churn

- **Churn Definition:** Customers who **stopped using calls & mobile internet** in month 9.

1.Phases of Churn:

- Good Phase (Months 6-7) – Normal usage

- Action Phase (Month 8) – Behavior change.

- Churn Phase (Month 9) – No activity detected.

Data Overview

Key attributes include **call usage**

- Dataset includes customer records for **four months (June–Sept)**.

- Key attributes include **call usage, recharge amount, and internet data consumption**.

- Focus: **High-value customers (top 30% by recharge amount in months 6-7).**

Data Preprocessing & Feature Engineering

Handling missing values and incorrect data types.

Created new features based on usage trends.

Removed redundant or highly correlated features.

Final dataset prepared for modeling.

Exploratory Data Analysis (EDA)

Churn rate:

- **Key patterns:**

- Drop in recharge amount in Month 8 for churners.

- Decline in call & data usage before churn.

~5-10% among high-value customers

- Higher churn rate among low-engagement users.

Model Development

- **Classification Models Used:**

- Logistic Regression

- Random Forest

- XG Boost

- **Handling Class Imbalance:** SMOTE (Synthetic Minority Oversampling Technique)

Model Performance Evaluation

- **Evaluation Metrics:** Accuracy, Precision, Recall, F1-Score, AUC-ROC.

- **Best Model:** XGBoost (Highest AUC-ROC & Recall).

- **Feature Importance Analysis:**

- Total outgoing minutes (Month 8)

- Recharge amount trend (Months 6-8)

- Data usage drop (Month 8)

Key Findings

Early indicators of churn:

- Reduced recharges in action phase.

- Declining call and data usage.

- High T2O (operator switching) calls before churn.

Churners

- **Churners tend to explore competitor offers in Month 8.**

: Business Recommendations

- **Proactive Customer Retention:** Offer special discounts & custom plans.

- **Engagement Campaigns:** Incentivize continued usage (bonus data, free minutes).

- **Service Improvement:** Address network issues identified from complaints.

- **Competitor Analysis:** Track competitive pricing & respond dynamically.

Conclusion

- **Predicting churn helps prevent revenue loss.**

- **Identified key customer behavior changes before churn.**

- **Strategic interventions can improve retention & profitability.**

Thank you