Customer Retention Risk Prediction in Telecom

# Introduction

Customer retention is a critical challenge in the Indian telecom industry, where leading players like Jio, Airtel, and Vi face high churn rates. Research indicates annual churn rates between 20-30% in emerging markets like India. Acquiring new customers can cost up to five times more than retaining existing ones, making churn reduction a priority.

# Problem Understanding

Customer churn refers to the discontinuation of services by users, either through cancellation or switching providers. The impact is substantial, affecting revenue, profitability, and brand reputation. With over 1.15 billion wireless subscribers in India, reducing churn by even a small percentage can translate into significant financial benefits.

## Quantified Insights

* Annual churn rates: 20-30% in Indian telecom.
* Customer acquisition cost: 5x retention cost.
* Jio, Airtel add ~1 million subscribers monthly, while Vi faces losses exceeding 2 million subs
* A 20% churn rate in a company with 1 million customers paying $50 monthly can result in $120 mi

# Identification of Problem

The Indian telecom market is highly competitive, with factors such as service quality, pricing, and customer experience influencing churn. The main challenges include:

* Market Competition: The presence of multiple strong competitors with attractive offers.
* Network Quality: Poor network coverage leading to customer dissatisfaction.
* Tariff and Pricing Strategies: Customers shifting to providers with better cost-benefit plans.
* Customer Service: Poor support increasing the likelihood of churn.

Recent trends indicate:

* Jio and Airtel's growth due to network expansion and better pricing models.
* Vi's decline attributed to financial instability and lack of competitive infrastructure.
* Prepaid dominance (95% of Indian market) leading to easier switching.

# Hypothesis Formulation

To predict churn, we propose:

1. Longer tenure reduces churn risk.
2. Higher monthly charges within the first year increase churn likelihood.
3. Poor network quality and lack of value-added services correlate with higher churn.

## Key Data Points for Validation

* + Demographic Factors: Age, gender, income level, education.
  + Service Usage Factors: Tenure, call frequency, data usage.
  + Service Quality Factors: Network quality, customer service ratings.
  + Competitor Factors: Competitive pricing, service comparisons.
  + Economic Factors: Consumer spending trends.

# Evaluation & Machine Learning Models

Machine learning is crucial for churn prediction. Studies show Random Forest models, with techniques for data balancing, can achieve high accuracy.

## Predictive Model Insights

* + Random Forest & Decision Trees: Best accuracy.
  + Neural Networks: Suitable for complex patterns but less interpretable.
  + Regression Analysis: Useful for understanding feature importance.

## Surprising Findings

* + High churn occurs in customers with low total charges but high monthly charges within the first

Year

* + Month-to-month contracts exhibit higher churn (~30%) compared to long-term contracts (~10%).

# Practical Implications & Implementation

## Expected Outcomes

* + Reduction in churn rates from 25% to 15%.
  + Revenue savings in millions through retention efforts.
  + Optimized marketing targeting at-risk customers.

# Conclusion

Predicting and mitigating churn is crucial for Indian telecom operators. A combination of data analytics and targeted interventions can lead to significant financial and operational benefits.

# Key References

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