

Customer Churn Prediction - Machine Learning Case Study

Executive Panic Memo

"Our customers are ghosting us. Our Fiber users are fleeing. Someone just called our billing experience 'financial horror.' If we don't act now, I might have to start doing TikTok dances to retain users."

— Anonymous Stakeholder, Definitely Real

Business Objective: Predict churn and identify drivers to help the marketing team reduce customer loss and increase retention.

Dataset: Telco Customer Churn from Kaggle. 7,043 customer records including services, account info, and churn labels.

Model Summary:

Model	Accuracy	Precision	Recall	F1 Score	AUC
Logistic Regression	80.5%	0.65	0.57	0.61	0.84
Random Forest	78.9%	0.63	0.52	0.57	0.82

Top Drivers of Churn:

- High Total Charges, Monthly Charges and short tenure strongly predict churn.
- Fiber optic users and electronic check payments are high-risk segments.
- Customers with Online Security and Tech Support tend to stay longer.

Recommendations:

- Target new customers in their first 6 months with loyalty incentives during the first 6 months (e.g. cashback, support check-ins).
- Offer personalized plans or bundled discounts to high-spending customers to reduce perception of high cost.
- Investigate service quality, outage reports, or customer complaints related to Fiber.

- Encourage autopay or credit card options through reward points or small discounts.
- Upsell Online Security, Tech Support and Paperless Billing services during onboarding or renewal. Highlight their value.

Business Impact Estimate:

If 10,000 customers are predicted to churn, and the average Customer Lifetime Value (CLV) is £500:

- Saving 20% of them = 2,000 customers × £500 = **£1 million retention value**

Business Value:

By acting on model insights, retaining 20% of at-risk customers could save over £1 million in potential lifetime value by targeting high-risk churn segments