AI-Driven Customer Retention & Pricing Optimization

Business Context

Customer retention is a critical driver of profitability for subscription-based businesses. Acquiring new customers is significantly more expensive than retaining existing ones, making churn reduction a key strategic priority.

This project applies machine learning and business analytics to predict customer churn, identify its key drivers, and design data-driven pricing and retention strategies aimed at improving long-term revenue performance.

Problem Statement

The objective of this project is to address the following business questions:

- Which customers are most likely to churn?

- What factors drive customer churn?

- Can customers be segmented based on behavior and value?

- How can pricing and retention strategies be designed to reduce churn and increase revenue?

Data Overview

The analysis uses a telecom customer dataset containing approximately 7,000 customers. The dataset includes information on:

- Customer tenure

- Monthly charges

- Contract type

- Payment method

- Services subscribed

- Churn status

The data was cleaned and prepared to ensure consistency and suitability for machine learning analysis.

Analytical Approach

The project followed a structured analytics workflow:

- Data cleaning and preprocessing

- Feature engineering and encoding of categorical variables

- Development of machine learning models to predict churn

- Model evaluation with a focus on identifying high-risk customers

- Explainable AI techniques to interpret churn drivers

- Customer segmentation to support pricing decisions

- Revenue impact simulation to evaluate business outcomes

This approach ensures that predictive insights are directly translated into actionable business recommendations.

Key Insights

Churn Prediction

Machine learning models were developed to estimate churn probability for each customer. The final model prioritized recall, ensuring that the majority of high-risk customers were correctly identified for targeted intervention.

Key Drivers of Churn

Analysis revealed several important churn drivers:

- Customers on month-to-month contracts exhibited significantly higher churn rates

- Higher monthly charges increased the likelihood of churn

- Longer-tenure customers were less likely to leave

- Customers without bundled services showed higher churn risk

These insights highlight the importance of pricing structure, contract duration, and perceived value.

Customer Segmentation

Customers were segmented based on behavioral and value patterns:

- **High-value loyal customers** – Low churn risk and high revenue contribution

- **Price-sensitive customers** – High churn risk driven by pricing

- **Low-usage customers** – Lower revenue and moderate churn

- **New customers** – Limited history and higher uncertainty

Segmentation enabled targeted pricing and retention strategies rather than a one-size-fits-all approach.

Pricing & Retention Recommendations

Customer Segment	Recommended Action

Price-sensitive customers	Offer flexible pricing or targeted discounts
High-value loyal customers	Introduce bundled services to increase lifetime value
Low-usage customers	Encourage adoption through tailored offers
New customers	Provide early engagement incentives to reduce initial churn

Estimated Business Impact

A revenue simulation was conducted to estimate the impact of targeted pricing and retention strategies. Results indicate that reducing churn among high-risk segments can lead to an estimated **10–12% annual revenue uplift**, driven by improved customer lifetime value and reduced attrition.

Conclusion

This project demonstrates how machine learning and business analytics can be combined to address real-world business challenges. By predicting churn, identifying its drivers, and translating insights into pricing and retention actions, data-driven strategies can directly influence revenue outcomes.

The project highlights the value of aligning technical analytics with strategic decision-making to create measurable business impact.