

Customer Churn Analysis Report

Project Title: Improving Customer Experience through Root Cause Analysis in a Subscription Business

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Objective:

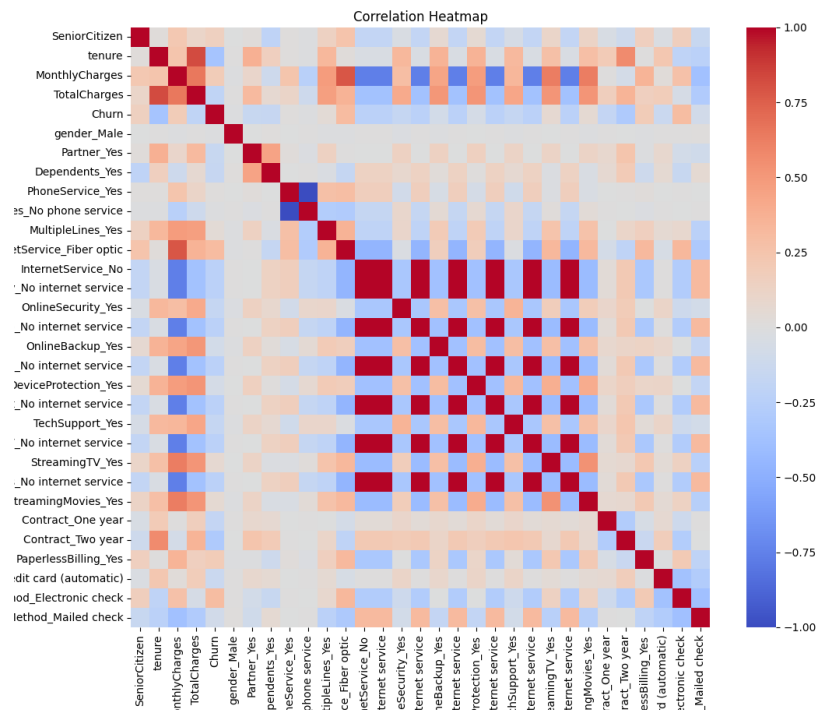
The goal of this project is to identify the key drivers of customer churn in a subscription-based business. Churn is when a customer leaves a service, and understanding why it happens helps businesses reduce revenue loss and improve customer retention.

Why This Matters:

Subscription businesses like Netflix or Spotify depend on long-term customer retention. Churn directly impacts revenue and growth. Identifying what causes customers to leave helps improve service, pricing, and user experience.

Python Insights:

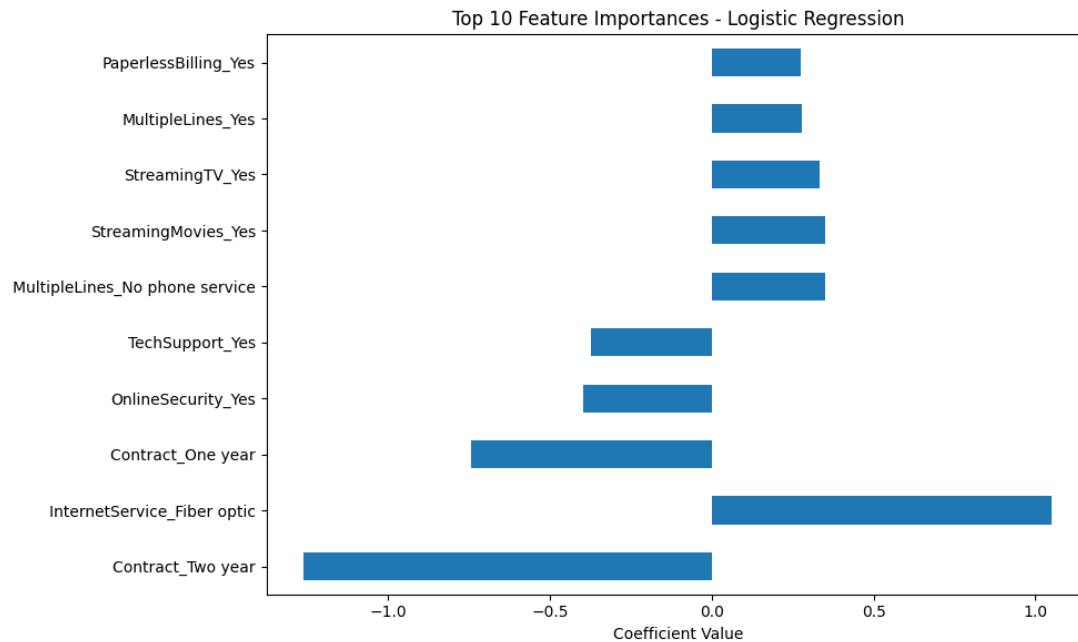
1. Correlation Heatmap:



- What it is: Shows how variables relate to each other.

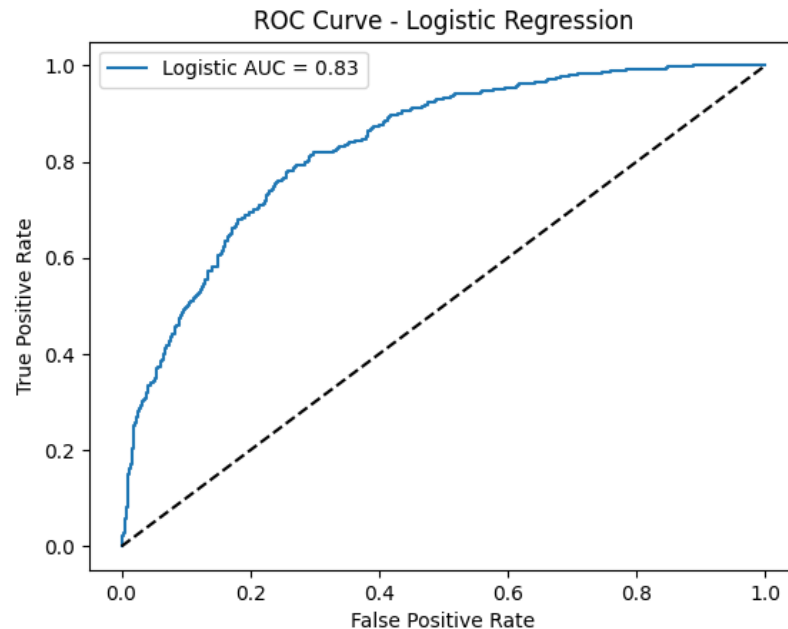
- Why it matters: Helps us see which features (like contract type or tenure) have strong relationships with churn.
- Key Insight: Contract type, tenure, and services like tech support have significant correlation with churn.

2. Feature Importance (Logistic Regression):



- What it is: Top features that influence churn probability.
- Why it matters: These features guide business decisions.
- Key Insight: Customers with month-to-month contracts or fiber optic internet are more likely to churn.

3. Model Performance (ROC Curve):



- What it is: Evaluates model prediction ability.
- AUC Score: 0.83
- Why it matters: Higher AUC means better performance in distinguishing churned vs retained customers.

4. Model Comparison (Logistic Regression vs Random Forest):

Model	AUC Score
Logistic Regression	0.832027
Random Forest	0.816021

- Logistic Regression AUC: 0.8318
- Random Forest AUC: 0.8457
- Insight: Random Forest performs slightly better, but both models are useful.

Power BI Dashboard Insights:

Total Customers: 7043

Churned Customers: 1869 (26.54%)

Revenue Loss: \$139.13K

Key Visuals:

- Churn by Contract Type: Customers on month-to-month contracts churn the most.
- Tech Support Impact: Customers without tech support churn more.

- Internet Service: Fiber optic users have higher churn rates.
- Tenure Trend: Newer customers churn more.

Key Insights

- Month-to-Month contracts have the highest churn rate.
- Fiber optic internet users are more likely to churn.
- Lack of tech support and online security are strong churn drivers.
- Shorter tenure customers show higher churn.
- Customers using electronic payment methods are more likely to leave.

Recommendations

Incentivize Long-Term Contracts

- Why: Customers on Month-to-Month plans are the most likely to churn.
- What it helps: Locks in customers longer and reduces churn probability. Incentives such as discounts or added benefits for switching to annual or bi-annual contracts can boost retention.

Upgrade Internet Infrastructure & Improve Experience for Fiber Users

- Why: Fiber optic users show higher churn, potentially due to service reliability or pricing issues.
- What it helps: Improving service quality, pricing packages, or value-added services (e.g., higher speed tiers or bundle offers) can retain this high-risk group.

Strengthen Technical Support

- Why: Users without tech support have significantly higher churn.
- What it helps: A strong support system reassures users when problems arise. Introduce proactive support, live chat, or 24/7 helplines to reduce frustration.

Enhance Onboarding for New Users

- Why: Short tenure is strongly linked to higher churn.
- What it helps: A smoother, guided onboarding experience can make new customers feel valued and supported early, reducing churn in the first few months.

Re-evaluate Electronic Payment Methods

- Why: High churn is seen among users using electronic checks.
- What it helps: Introduce frictionless payment options or promote auto-pay features to increase commitment and prevent accidental cancellations.

Conclusion

By leveraging Python and Power BI, we've identified critical churn indicators and created a predictive framework for anticipating customer loss. The recommendations, if implemented, will enhance customer experience and reduce churn effectively contributing directly to sustainable growth and profitability in a subscription-based business.