

Customer Churn Analysis – Data-Driven Retention Strategy

1. Introduction

Customer churn is one of the most critical challenges for subscription-based businesses. Retaining existing customers is significantly more cost-effective than acquiring new ones. This project focuses on analyzing customer churn patterns to identify the key factors influencing customer attrition and to provide actionable insights for improving customer retention.

2. Objective

The main objectives of this project are:

- To understand churn behavior using historical customer data
 - To identify key drivers contributing to customer churn
 - To provide data-backed business recommendations to reduce churn
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3. Dataset Overview

The dataset contains over **440,000 customer records** with the following attributes:

- Demographics: Age, Gender
 - Usage Behavior: Tenure, Usage Frequency, Last Interaction
 - Support & Service: Support Calls
 - Billing & Payments: Payment Delay, Total Spend
 - Subscription Details: Subscription Type, Contract Length
 - Target Variable: Churn (0 = Active, 1 = Churned)
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4. Data Cleaning & Preparation

- Removed fully null corrupted rows

- Corrected data types for numeric columns
 - Standardized column names for consistency
 - Ensured no missing values in critical fields
 - Prepared dataset for analysis and visualization
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5. Exploratory Data Analysis (EDA)

Churn Distribution

The dataset shows a **high churn rate**, indicating a serious retention issue that needs immediate attention.

Churn by Gender

Female customers show a relatively higher churn rate, suggesting potential experience or product fit issues.

Churn by Subscription Type

Churn is almost equally distributed across subscription types, indicating that pricing tiers are not the primary cause of churn.

Churn by Contract Length

Monthly contract users exhibit significantly higher churn, while long-term contract users show better retention.

6. Behavioral Analysis

Tenure vs Churn

Customers with lower tenure are more likely to churn, indicating onboarding and early experience issues.

Usage Frequency vs Churn

Customers with low usage frequency are more likely to churn, highlighting engagement as a key retention driver.

Support Calls vs Churn

A strong positive relationship exists between support calls and churn, suggesting dissatisfaction with product usability or service quality.

Payment Delay vs Churn

Customers with higher payment delays show increased churn, indicating financial friction and billing issues.

Total Spend vs Churn

High-value customers tend to stay, while low-spending customers are more likely to churn.

Last Interaction vs Churn

Customers who have not interacted recently are at a higher risk of churn, emphasizing the importance of re-engagement strategies.

7. Correlation Analysis

Correlation analysis revealed:

- Strong positive correlation between **Support Calls and Churn**
- Positive correlation between **Payment Delay and Churn**
- Negative correlation between **Total Spend and Churn**

This confirms that poor service experience, billing friction, and low perceived value are key churn drivers.

8. Key Findings

- Customers contacting support frequently are more likely to churn
 - Payment issues significantly increase churn risk
 - Engaged and high-spending customers are more likely to stay
 - Monthly contract users are the most vulnerable segment
 - Low interaction and low usage are early warning signs of churn
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9. Business Recommendations

1. Improve product usability and reduce friction points
 2. Enhance customer support quality and response time
 3. Simplify billing and introduce auto-payment options
 4. Strengthen onboarding experience for new users
 5. Launch re-engagement campaigns for inactive users
 6. Encourage long-term contracts through incentives and discounts
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10. Conclusion

This analysis demonstrates that customer churn is largely driven by experience, engagement, and service quality rather than pricing. By focusing on improving product experience, support effectiveness, and customer engagement, businesses can significantly reduce churn and improve long-term customer value.