

Executive Summary: Customer Churn Analysis

Objective

The objective of this analysis is to understand customer churn within our telecom business by examining customer-level data. Specifically, we aim to:

- Quantify the churn rate.
- Identify customer segments with higher churn risk.
- Analyze service usage, tenure, contract types, and payment methods to uncover drivers of churn.
- Provide actionable recommendations to reduce churn and improve customer retention strategies.

This analysis uses a dataset of **7,043 customers**, including their demographics, service subscriptions, tenure, billing information, and churn status.

Key Insights

1. Churn Rate

- The overall churn rate in our customer base is **approximately 26.5%**.
 - This indicates that more than **1 in 4** customers are leaving, highlighting the need for strong retention strategies.
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2. Demographic Insights

- **Senior Citizens:**
 - Although senior citizens make up ~16% of the customer base, they show disproportionately higher churn rates.
 - For example, churn among senior citizens is significantly higher than among non-seniors (seen in stacked bar charts with senior churn ~42% vs non-senior ~24%).
 - This indicates an age-related vulnerability that may be due to pricing sensitivity or service usability.
- **Gender:**
 - Analysis of churn by gender shows no substantial difference.

- Male and female customers churn at similar rates (~26–27%), suggesting that churn drivers are independent of gender.
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3. Tenure Analysis

- Customers with **short tenure (<12 months)** have the highest churn.
 - Churn rates drop sharply as tenure increases:
 - Customers with >50 months tenure have significantly lower churn (<10%).
 - Histogram analysis shows a clear negative correlation between tenure and churn likelihood.
 - Insight: Retention in the first year is critical.
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4. Contract Type Impact

- Customers on **month-to-month contracts** have the highest churn rates (estimated >40%).
 - In contrast:
 - **One-year contracts** show lower churn (~10–12%).
 - **Two-year contracts** show the lowest churn (~3–5%).
 - Bar chart visualisations clearly highlight this disparity.
 - This shows the effectiveness of long-term contracts in reducing churn.
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5. Service Usage Patterns

- Churn is strongly associated with under-utilization of optional services:
 - Customers without **OnlineSecurity, OnlineBackup, TechSupport, and DeviceProtection** churn at significantly higher rates.
 - For example, churn among customers without OnlineSecurity is visibly higher (~35–40%) compared to those with it (~15–20%).
 - Count plots across nine service-related variables show consistent patterns:
 - Customers with **PhoneService** and **InternetService** (particularly DSL) have lower churn.
 - Those lacking value-added services are more vulnerable to churn.
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6. Payment Method Impact

- Customers using **Electronic Check** show the highest churn (~40%).
- Other payment methods have substantially lower churn:
 - Bank Transfer (Automatic): ~10–12%.
 - Credit Card (Automatic): ~12–14%.
 - Mailed Check: ~18–20%.
- Visualisations confirm that payment friction or lack of automation may drive churn risk.



Visualisations and Data Insights

Your notebook includes clear, well-designed charts that support these insights:

- ✓ **Pie Chart** of churn distribution shows **26.54%** churn rate.
- ✓ **Count Plots** by gender, senior citizen status, contract type, payment method, and service usage highlight churn differences across segments.
- ✓ **Histogram** of tenure reveals strong negative correlation between tenure and churn.
- ✓ **Stacked Bar Charts** show churn percentage by senior citizen status and contract type.
- ✓ **Multi-panel Count Plots** demonstrate higher churn among customers not subscribing to security, backup, or support services.

These visualisations make the analysis transparent and actionable by quantifying differences in churn across dimensions.



Recommendations

Based on the data analysis and visual insights, the following actions are recommended to reduce churn:

1 Focus on Early Retention:

- Develop onboarding and engagement strategies to retain customers in their first 12 months.
- Offer incentives, loyalty programs, or onboarding support.

2 Promote Long-term Contracts:

- Actively market 1-year and 2-year contracts to reduce month-to-month churn exposure.
- Offer discounts or perks for contract upgrades.

3 Senior Citizen Targeting:

- Create senior-friendly plans, pricing, and support services.
- Provide personalized communication to address their needs.

4 Encourage Service Adoption:

- Bundle OnlineSecurity, OnlineBackup, TechSupport, and DeviceProtection into popular plans.
- Use promotions to drive uptake of these sticky services that reduce churn.

5 Optimize Payment Methods:

- Reduce reliance on Electronic Check by incentivizing automated payment methods.
- Simplify and automate billing to lower churn linked to payment friction.

6 Monitor and Segment:

- Continuously monitor churn rates across customer segments.
 - Use predictive churn modeling to proactively target at-risk customers.
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Conclusion

The analysis identifies clear drivers of churn, notably contract type, tenure, service utilization, senior status, and payment method. By acting on these insights with targeted strategies, the business can significantly reduce its churn rate, improve customer lifetime value, and increase overall profitability.

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