

Summary and Recommendations

Executive Summary of Churn Analysis

This analysis delves into the factors influencing customer churn in a telecom company. Through comprehensive data processing, visualization, and analysis, we identified key drivers of churn and provided actionable insights.

Data Processing and Cleaning

- **Handling Missing Data:** Missing values in the 'TotalCharges' column were replaced with 0, representing customers with zero tenure.
- **Categorical Data Transformation:** The 'SeniorCitizen' column was transformed from binary (0,1) to categorical ('No', 'Yes') for better readability.

Key Insights from Visualizations

1. **Overall Churn Rate:**
 - **Churn Rate:** 26.54% of the customers have churned.
 - The primary focus was to investigate the reasons behind this churn rate.
2. **Demographic Insights:**
 - **Senior Citizens:** 42% of senior citizens have churned compared to 24% of non-senior citizens.
 - This indicates that senior citizens are nearly twice as likely to churn as non-senior citizens.
3. **Tenure and Contract Type:**
 - **Tenure:** Customers with a tenure of 1-2 months have a churn rate of 61%, while those with a tenure of more than 12 months have a churn rate of just 11%.
 - **Contract Type:**
 - Month-to-month contracts have a churn rate of 43%.
 - One-year contracts have a churn rate of 11%.
 - Two-year contracts have the lowest churn rate at 3%.
 - This highlights the stability provided by longer-term contracts.
4. **Service Usage:**
 - **Phone Services:**
 - Customers with phone services have a churn rate of 20%.
 - Customers without phone services have a churn rate of 47%.
 - **Internet Services:**
 - DSL users have a churn rate of 22%.
 - Fiber optic users have a higher churn rate of 42%.
 - **Online Security:**
 - Customers with online security have a churn rate of 15%.
 - Customers without online security have a churn rate of 34%.
 - **Online Backup:**
 - Churn rate is 18% for users of online backup services.

- Churn rate is 33% for non-users.
 - **Tech Support:**
 - Users have a churn rate of 14%.
 - Non-users have a churn rate of 36%.
 - **Streaming TV:**
 - Users have a churn rate of 28%.
 - Non-users have a churn rate of 31%.
 - There is a significant relationship between the use of these services and customer churn, with higher service adoption correlating with lower churn rates.
5. **Payment Methods:**
- **Electronic Check:**
 - Customers using electronic check have a churn rate of 45%.
 - **Credit Card:**
 - Customers using credit cards have a churn rate of 12%.
 - **Bank Transfer:**
 - Customers using bank transfers have a churn rate of 13%.
 - **Mailed Check:**
 - Customers using mailed checks have a churn rate of 17%.
 - Electronic check users exhibit a significantly higher churn rate compared to other payment methods.

Conclusions

- **Customer Retention:** Long-term contracts and bundled services (Phone, Internet, Security) significantly reduce churn rates. Initiatives to convert month-to-month contracts to longer-term plans could be beneficial.
- **Targeted Interventions:** Senior citizens and customers using electronic checks should be targeted with specific retention strategies, given their higher likelihood of churning.
- **Service Enhancement:** Encouraging the usage of additional services like Online Backup, Tech Support, and Online Security can help in lowering churn rates. Emphasizing these services' value and promoting them could be key strategies.
- **Payment Method Optimization:** Promoting more stable payment methods like credit cards and bank transfers over electronic checks could reduce churn.