

Customer Churn Analysis

1. Introduction

The Customer Churn Analysis report aims to investigate the underlying factors contributing to customer churn and provide insights that could help in reducing churn rates. This analysis evaluates key aspects of customer behavior, focusing on identifying patterns that correlate with churn. Also, developing machine learning model to predict the churn before it happens.

2. Data Analysis Summary

Data Exploration

- **Feature Types:** Identify the data types for each feature to understand the structure and apply necessary preprocessing.
- **Encoding Needs:** Determine which categorical features require encoding for model training.
- **Feature Evaluation and Critical Analysis:** Each feature will be examined to determine its relevance for training, identifying those that don't contribute to the predictive model:
 - *Example:* The feature "**Churn Reason**" was collected after customer churn occurred, making it unavailable for real-time predictions, so it is excluded from training to maintain model integrity. But, it will be helpful enhance the services and decrease the customers churn
 - **Non-Meaningful Features:**
 - CustomerID: Used solely for identification, providing no predictive insight.
 - Country, State: Single-value features that do not add information.
 - City: High cardinality; covered by geographic coordinates.
 - Lat Long: Covered by Latitude and Longitude.
 - Numerical features also identified as unnecessary:
 - Count: Contains a constant value, used only for representation.

- **Zip Code:** Customer location is already indicated by latitude and longitude.

Data Visualization

- **Churn Label Distribution:** Approximately 26.5% of customers churn. The objective is to identify customers likely to leave before they do and develop strategies to retain them.
- **Contract Distribution:** The majority (55%) of customers are on month-to-month contracts, suggesting a higher churn risk due to the flexibility of ending service each month. Potential retention strategies include incentivizing longer-term contracts through enhanced services, offers, or customer support.
- **Churn Reasons:** Top churn reasons relate to customer support quality and competitive offers. Improvements in these areas could address some primary churn drivers.
- **Geographic Distribution:** Customer clusters are concentrated in central and southern California.
- **Churn Score Analysis:** The churn scores provided, derived from IBM SPSS Modeler, show inconsistencies and may not always accurately predict customer behavior. Even if accurate, relying on Churn Score as a predictor could be problematic, as not all companies have access to IBM SPSS Modeler. It's more of an added luxury that may not be available across organizations, especially for smaller companies. For this reason, I prefer to proceed with the analysis assuming Churn Score is absent, making the model more widely applicable and independent of third-party predictive tools.

3. Key Findings

Contract Type and Churn Likelihood:

- **Observation:** 55% of customers are on a month-to-month contract. This contract type is more flexible, allowing customers to easily end the service each month. Consequently, customers on month-to-month contracts might be more susceptible to leaving, especially if a better offer becomes available.
- **Question:** How can we encourage these customers to commit to longer-term contracts, such as annual or biennial plans?
 - Possible strategies might include offering better services, more attractive pricing, enhanced customer support, or other incentives to add value to long-term contracts.

- **Next Step:** Exploring the "Churn Reason" feature further could help answer this question by identifying specific factors driving customer decisions.

Churn Rate:

- **Observation:** 26.5% of customers have stopped using the service.
- **Objective:** The goal is to predict which types of customers are most likely to leave, so proactive measures can be taken to retain them before they churn

Churn Reasons:

- **Observation:** The top seven churn reasons are primarily related to the quality of customer support and available offers.
- **Insight:** To address these issues, the company could consider improving support quality and revising offers to meet customer expectations, potentially reducing churn.

Feature Correlation with Churn:

- **Key Points:**
 1. Features such as Latitude, Longitude, and Gender have near-zero correlation with the target feature, Churn Label, indicating no meaningful relationship with churn.
 2. There is a direct correlation between **Churn Score** and **Churn Label**, which aligns with the plots showing churn scores provided by IBM SPSS Modeler. However, as previously noted, the churn score's accuracy is questionable, which could negatively impact model performance.
 3. **Churn Score Availability:** Even if **Churn Score** were accurate, relying on it might be impractical since not all companies use IBM SPSS Modeler. This dependency makes **Churn Score** an added luxury rather than a necessity, so it is preferable to proceed under the assumption that **Churn Score** is absent in the data to enhance model applicability across various companies.

4. Recommendations

1. Focus on Retaining Month-to-Month Customers

Action: Implement targeted retention strategies for customers on month-to-month contracts, as they are more likely to churn due to contract flexibility.

Suggestions: Consider offering benefits to encourage longer commitments, such as discounts for annual contracts, enhanced service features, or exclusive customer support. Incentivizing long-term contracts may reduce churn by making it less convenient or attractive for customers to leave.

2. Enhance Customer Support and Offer Quality

Action: Improve customer support quality and the competitiveness of available offers, as these were identified as key churn reasons.

Suggestions: Invest in customer service training, streamline support processes, and consider conducting surveys or gathering feedback to refine offerings based on customer expectations. Highlight the value of support and tailor offers to directly address customer pain points identified in the analysis.

3. Optimize Predictive Model with Reliable and Accessible Features

Action: Focus on using features that are both accurate and universally accessible for churn prediction, minimizing dependency on tools like IBM SPSS Modeler.

Suggestions: Since **Churn Score** is a derived feature from IBM SPSS Modeler and may not be available to all companies, exclude it from the model. Instead, leverage more universally available data, ensuring the model is generalizable and applicable across different business environments.

5. Conclusion

The Customer Churn Analysis has uncovered strategic opportunities for improving customer retention, especially among month-to-month contract holders and customers expressing dissatisfaction with current offers and support. By prioritizing targeted retention efforts, the business can significantly reduce churn, increase customer loyalty, and strengthen revenue stability.

Key insights suggest that enhancing customer support and tailoring more competitive, value-driven offers will appeal directly to high-risk customers. Additionally, incentivizing long-term contracts with exclusive benefits or cost-saving options could convert month-to-month subscribers into committed, long-term clients, thus reducing churn volatility.

By addressing these key areas, the business positions itself to build a more resilient, satisfied customer base and drive sustainable growth.

Continued analysis and strategic alignment with customer preferences will be essential to maintaining a competitive edge and fostering long-term success in customer relationships.

