TELECOM CHURN ANALYTICS PROJECT

(VERTEX MOBILE NET.)

Prepared by: Baffoe Obed Oppong

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Introduction

Project Objective

The objective of this project is to analyze customer churn for Vertex Mobile Net using advanced data analytics techniques. Customer churn analytics is the process of identifying and understanding the reasons why customers leave a service or product. The insights gained from this analysis help companies to develop strategies to retain customers, enhance satisfaction, and ultimately improve profitability. In this project, we aim to:

- Identify the overall churn rate and trends over time.

- Understand the demographic and contractual characteristics of churned customers.

- Analyze the primary reasons for customer churn.

- Provide actionable insights to reduce churn and improve customer retention.

Scope

The scope of this project includes the development of a comprehensive dashboard in Power BI, covering various aspects of customer churn at Vertex Mobile Net. The key deliverables of this project are:

1. Churn Rate Calculation and Visualization:

   - Calculation of the total number of customers, churned customers, and overall churn rate.
   - Visualization of churn rate trends over time.

2. Churn Reasons Analysis:

   - Identification and quantification of the top reasons for customer churn.
   - Visualization of churn reasons and categories using clustered column and pie charts.

3. Demographic Analysis:

- Examination of churn rates across different demographic categories such as age groups, gender, and other relevant attributes.
- Visualization of the relationship between demographic factors and churn rates.

4. Contract and Usage Analysis:

- Analysis of churn rates by contract type (e.g., month-to-month, one-year, two-year) and data usage patterns.
- Visualization of the impact of contract types and data usage on churn rates.

5. Customer Service Analysis:

- Examination of the relationship between customer service interactions and churn rates.
- Visualization of churn rates by the number of customer service calls.

The dashboard provides a detailed and interactive view of these key metrics, allowing stakeholders to explore and understand the factors driving customer churn at Vertex Mobile Net. This information will be critical in formulating strategies to mitigate churn and enhance customer retention.

Data Preparation

Data Source

The data used for this project was provided by Only Quality Data and stems from a hypothetical Vertex Mobile Net's customer database. The dataset includes various fields that capture detailed information about customers, their demographics, subscription types, usage patterns, and interactions with customer service.

Meta Data:

The metadata for the Vertex Mobile dataset provides a detailed structure and explanation of the various data fields included in the case study. This information is crucial for analyzing customer churn.

Summary of the metadata:

1. Customer Status:

   - Customer ID: Unique identifier for each customer.
   - Churn Label: Indicates if a customer has churned (Yes/No).
   - Churn Reason: Specific reason why the customer ended the contract.
   - Churn Category: Groups multiple churn reasons for analysis.

2. Demographics:

   - Gender: Gender of the customer (Male/Female/Prefer not to say).
   - Under 30: Indicates if the customer is under 30 (Yes/No).
   - Senior: Indicates if the customer is 65 or above (Yes/No).
   - Age: Age of the customer.

3. Contract Information:

   - Contract Type: Type of contract (Month-to-Month/One Year/Two Year).
   - Payment Method: Preferred payment method (Credit Card/Direct Debit/Paper Check).
   - State: State where the customer lives.
   - Phone Number: Customer's phone number.

- Group: Indicates if part of a group contract (Yes/No).
- Number of Customers in a Group: Number of customers part of the group.

4. Subscription Types & Charges:

- Account Length (in months): Duration of the customer's account with Vertex Mobile.
- Local Calls: Number of local calls made.
- Intl Calls: Number of international calls made.
- Intl Mins: Minutes spent on international calls.
- Intl Active: Indicates if international calls were made (Yes/No).
- Intl Plan: Indicates if the customer has a plan for free international calls (Yes/No).
- Extra International Charges: Extra charges for international calls for those not on an international plan.
- Customer Service Calls: Number of calls made to customer service.
- Avg Monthly GB Download: Average monthly download volume in gigabytes.
- Unlimited Data Plan: Indicates if the customer has free unlimited download capacity (Yes/No).
- Extra Data Charges: Extra charges for data downloads for those not on an unlimited plan.
- Monthly Charges: Average of all monthly charges to the customer.
- Total Charges: Sum of all monthly charges.

Data Cleaning

The data cleaning process was crucial to ensure the accuracy and reliability of the analysis. The following steps were taken:

- ✓ Handling Null Values:
  - o Null values in the Churn Reason and Category fields were replaced with 'N/A'
- ✓ Data Validation:
  - o Ensured that all fields had valid entries (e.g., no negative values for age).
  - o Ensured there were no duplicate entries to avoid skewing the results.

✓ Standardization:

    o Ensured consistency in date formats and numerical precision.

Data Preparation

Several transformations and preparations were necessary to structure the data appropriately for visualization and analysis. These steps included:

✓ Calculated Columns:

    o Created a 'Churned' column using an IF statement to convert churn labels into binary values (1 for churned, 0 for not churned).

    o Developed a 'Demographics' column to categorize customers into 'Senior', 'Under 30', and 'Other' based on age-related fields.

✓ Aggregated Metrics:

    o Computed total customers and churned customers.

    o Calculated the overall churn rate as a percentage.

✓ Grouping and Binning:

    o Grouped age into bins (Youth: 14-30, Mid Age: 31-55, Elderly: 56-85) for better visualization and analysis.

Dashboard Design and Features

Overview

The Telecom Churn Analytics dashboard provides a comprehensive overview of customer churn at Vertex Mobile Net. The purpose of the dashboard is to identify patterns and insights into why customers leave, helping the company develop strategies to retain customers and reduce churn rates. The main features of the dashboard include visualizations on overall churn rates, reasons for churn, churn rates by demographics, contract types, data usage, and geographical distribution.
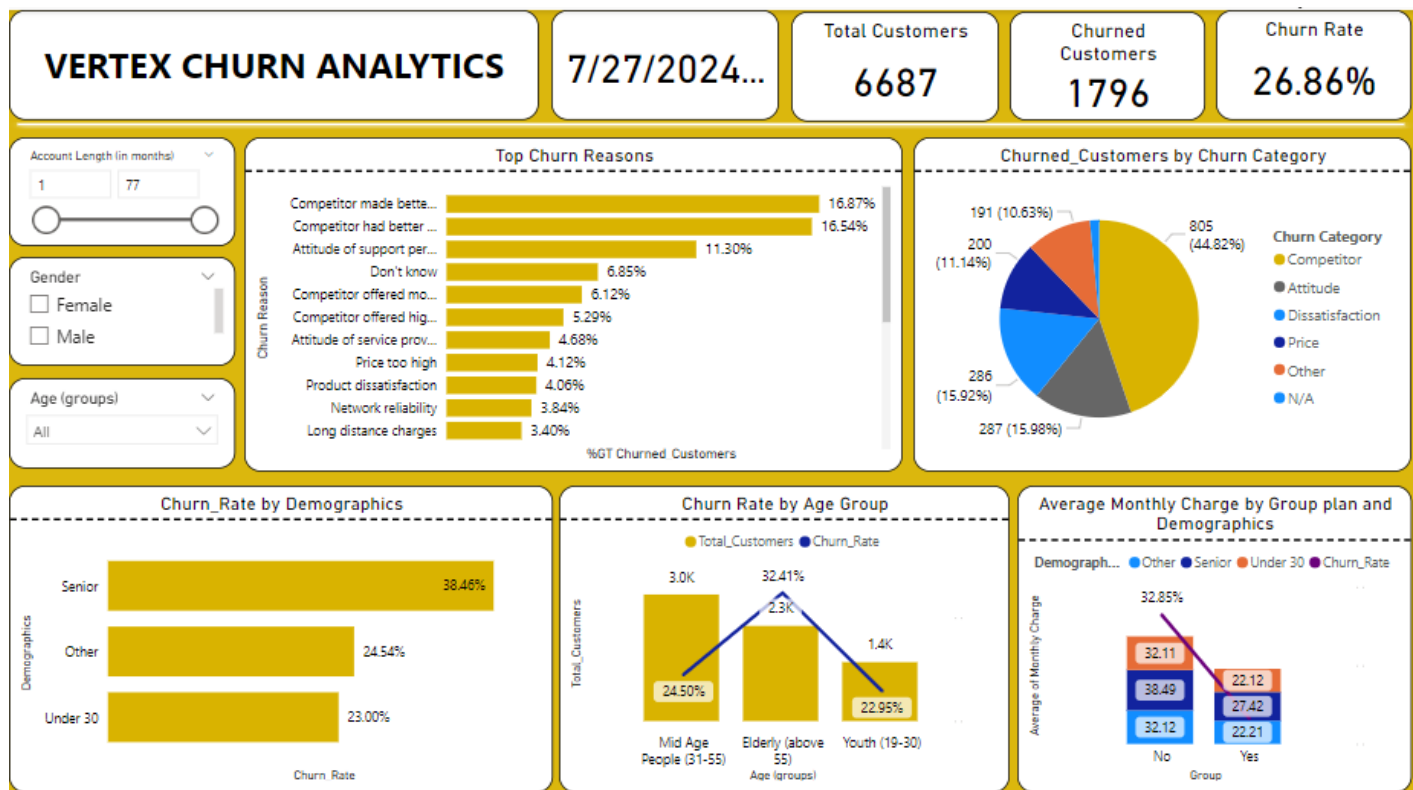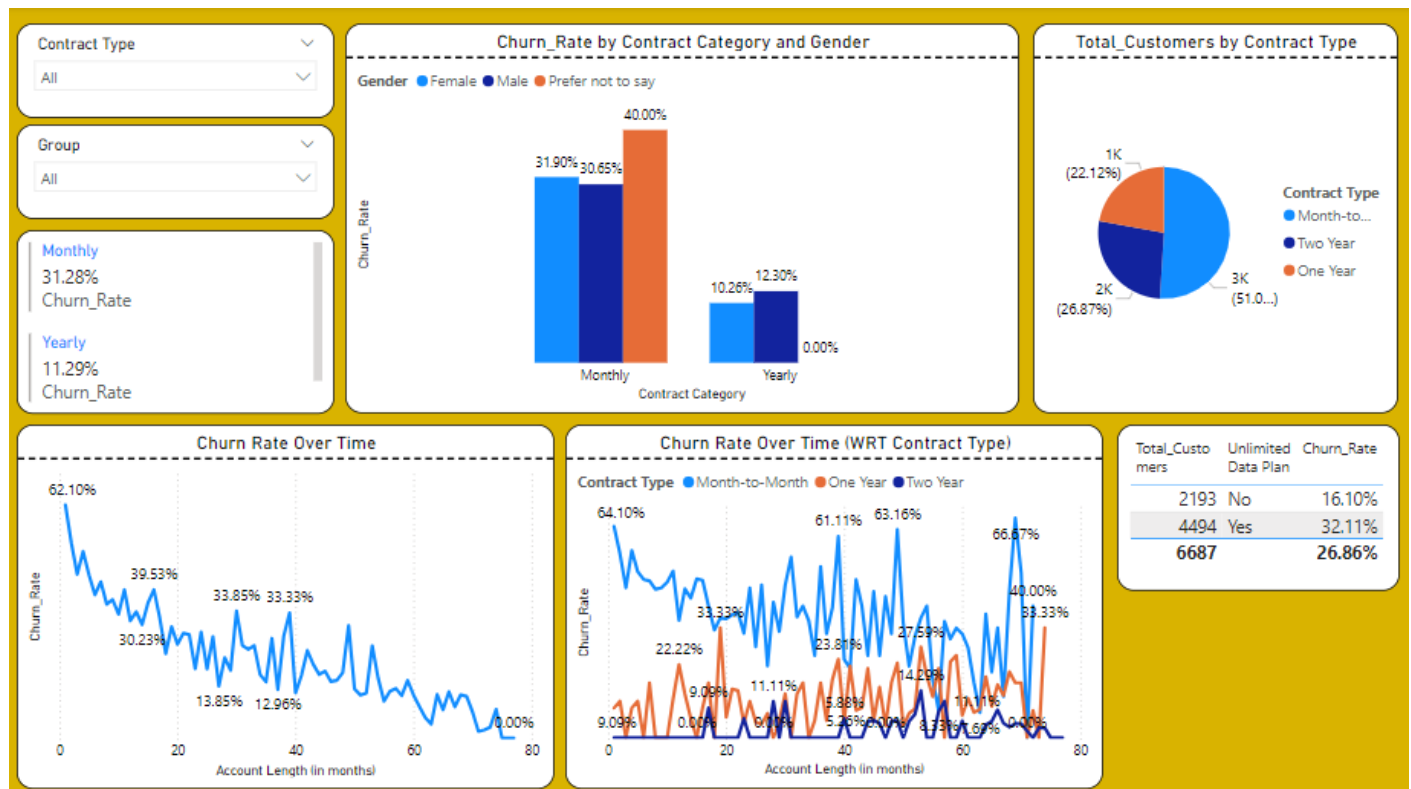
Visualizations and Insights

1. Total Customers and Churn Rate

- o Visualization: This section displays the total number of customers, the number of churned customers, and the overall churn rate.
- o Insight: The churn rate of 26.86% indicates a significant portion of the customer base is leaving, highlighting the need for targeted retention strategies.

2. Top Churn Reasons

- o Visualization: A bar chart showing the top reasons for customer churn.
- o Insight: The most common reasons for churn include better offers from competitors (16.87%), better network reliability from competitors (16.54%), and negative experiences with support personnel (11.30%). This suggests that competitive offers and customer service are critical areas to address to reduce churn.

3. Churned Customers by Churn Category

- o Visualization: A pie chart categorizing churned customers by different churn categories such as Competitor, Attitude, Dissatisfaction, and Price.
- o Insight: The largest category is Competitor-related churn (44.82%), indicating that competitors' offers are a major factor driving customer loss.

4. Churn Rate by Age Group

- o Visualization: A bar chart displaying churn rates across different age groups (Youth, Mid-Age, Elderly).
- o Insight: The highest churn rate is observed among Youth (32.41%), followed by Elderly (24.50%) and Mid-Age (22.95%). This suggests that younger customers are more likely to leave, possibly due to higher sensitivity to competitive offers or dissatisfaction.

5. Churn Rate by Demographics

- o Visualization: A bar chart showing churn rates by demographic groups (Senior, Under 30, Other).
- o Insight: Senior customers have the highest churn rate at 38.46%, followed by Under 30 at 24.54%. Targeted strategies to retain senior customers could be beneficial.

6. Average Monthly Charge by Group Plan and Demographics

- o Visualization: A clustered bar chart showing average monthly charges across different group plans and demographics.
- o Insight: Customers on a group plan have lower average monthly charges, and there is a notable difference in charges between demographics. This could inform pricing strategies to make plans more attractive to different customer segments.

7. Churn Rate by Contract Category and Gender

- o Visualization: A clustered column chart comparing churn rates by contract type (Monthly, Yearly) and gender.
- o Insight: Monthly contracts have a significantly higher churn rate (31.28%) compared to yearly contracts (11.29%), and the churn rate is slightly higher for females. Encouraging customers to switch to yearly contracts could help reduce churn.

8. Total Customers by Contract Type

- o Visualization: A bar chart displaying the distribution of customers across different contract types (Month-to-Month, One Year, Two Year).
- o Insight: The majority of customers are on month-to-month contracts (51.0%), which have the highest churn rate. Promoting longer-term contracts could improve retention.

9. Churn Rate Over Time

- o Visualization: A line chart showing churn rates over time relative to account length.
- o Insight: The churn rate is highest for new accounts and decreases over time, indicating that retaining new customers is crucial. Efforts to improve the onboarding experience and early engagement could reduce early churn.

Key Insights

Analysis

The Telecom Churn Analytics dashboard provides several key insights into the customer churn dynamics at Vertex Mobile Net:

- Overall Churn Rate: The overall churn rate of 26.86% indicates a significant portion of the customer base is leaving. This high churn rate necessitates immediate attention to understand and mitigate the underlying causes.
- Top Churn Reasons: The primary reasons for churn include better offers from competitors (16.87%), better network reliability from competitors (16.54%), and negative experiences with support personnel (11.30%). This points to the importance of competitive pricing, service reliability, and customer service quality.
- Churn Categories: Competitor-related churn is the largest category (44.82%), followed by Attitude (15.98%), Dissatisfaction (15.87%), and Price (14.20%). This reinforces the need to monitor and counter competitor strategies actively.
- Demographic Analysis: Seniors (38.46%) and the Under 30 group (24.54%) exhibit higher churn rates compared to other demographic groups. This suggests that targeted retention strategies for these groups could be beneficial.
- Contract and Usage Patterns: Monthly contracts have a significantly higher churn rate (31.28%) compared to yearly contracts (11.29%). Additionally, higher average monthly charges correlate with higher churn rates, indicating that price sensitivity may be an issue.
- Customer Service Interaction: Customers with more frequent customer service interactions tend to have higher churn rates, highlighting the need for efficient and effective customer service to improve retention.

Trends

Several significant trends emerge from the dashboard data:

- High Initial Churn: The churn rate is highest among new customers and decreases over time, indicating that the initial customer experience is critical for retention.

- Demographic Sensitivity: Younger and older customers are more likely to churn, suggesting a need for age-specific engagement strategies.

- Contract Type Impact: Customers on monthly contracts churn at a higher rate than those on yearly contracts, indicating that promoting longer-term contracts could improve retention.

- Competitive Pressure: Competitor-related reasons dominate the churn causes, emphasizing the need to stay competitive in pricing and service offerings.

- Customer Service Correlation: Frequent customer service interactions are associated with higher churn, pointing to potential dissatisfaction with the service experience.

Implications

The insights from the dashboard have several implications for Vertex Mobile Net:

- Retention Strategies: The high overall churn rate and significant churn among new customers suggest that improving the initial customer experience and engagement is critical. Implementing targeted retention programs for new customers can help reduce early churn.

- Competitive Positioning: Given that many customers leave due to better offers from competitors, Vertex Mobile Net should continually monitor competitor pricing and service quality and adjust its offerings accordingly to remain competitive.

- Customer Service Improvement: The correlation between frequent customer service interactions and higher churn rates indicates a need to enhance the efficiency and effectiveness of customer support. Investing in training and better support systems could help reduce churn.

- Contract Promotions: Since monthly contracts have higher churn rates, promoting longer-term contracts through incentives or discounts could help improve customer retention.

- Targeted Marketing: The demographic analysis suggests that targeted marketing and retention efforts for seniors and younger customers could be beneficial. Tailoring offers and engagement strategies to these groups can help address their specific needs and reduce churn.

Recommendations

Strategies

1. Enhance Initial Customer Experience:

   ✓ Onboarding Programs: Develop comprehensive onboarding programs that ensure new customers understand and utilize the services effectively. This can include personalized welcome messages, tutorials, and proactive customer support.

   ✓ Early Engagement: Implement early engagement strategies such as regular check-ins, satisfaction surveys, and targeted offers within the first three months of a customer's tenure to identify and address issues promptly.

2. Competitive Pricing and Offers:

   ✓ Price Matching and Incentives: Introduce price matching policies and special incentives for existing customers who receive better offers from competitors. This can include loyalty discounts, free upgrades, or extended contract discounts.

   ✓ Flexible Plans: Offer more flexible plan options that can be customized based on usage patterns and customer preferences to meet diverse needs and reduce price sensitivity.

3. Improve Customer Service Quality:

   ✓ Training Programs: Invest in regular training programs for customer service representatives to enhance their problem-solving skills, empathy, and efficiency in handling customer queries.

   ✓ Customer Feedback Loop: Establish a robust feedback loop where customer service interactions are regularly reviewed, and feedback is used to continuously improve service quality.

4. Promote Long-Term Contracts:

   ✓ Incentives for Long-Term Contracts: Offer attractive incentives for customers to switch from monthly to yearly contracts, such as discounts, additional data, or premium features at no extra cost.

✓ Contract Renewal Benefits: Provide benefits for contract renewals, such as loyalty bonuses, early renewal discounts, or exclusive offers for long-term customers.

5. Targeted Marketing and Retention Programs:

✓ Age-Specific Campaigns: Develop targeted marketing campaigns for seniors and younger customers, addressing their specific needs and preferences. For seniors, emphasize reliability and support, while for younger customers, focus on competitive pricing and innovative features.

✓ Churn Prediction Models: Implement predictive analytics to identify customers at high risk of churn and engage them with personalized retention strategies before they decide to leave.

Improvements for Future Data Collection and Analysis

1. Comprehensive Data Collection:

➤ Additional Metrics: Collect additional metrics such as customer satisfaction scores, and detailed interaction histories to gain a deeper understanding of customer experiences and potential churn drivers.

➤ Real-Time Data: Implement real-time data collection systems to monitor customer interactions and behaviors continuously, enabling more timely and proactive interventions.

2. Enhanced Data Quality:

➤ Data Validation Processes: Establish rigorous data validation processes to ensure accuracy and completeness of the data. Regularly audit and clean the data to remove inconsistencies and errors.

3. Advanced Analytics Techniques:

➤ Machine Learning Models: Utilize advanced machine learning models to predict churn more accurately and identify subtle patterns that traditional analysis might miss.

➤ Sentiment Analysis: Implement sentiment analysis on customer feedback and support interactions to gauge customer sentiment and identify potential issues early.

4. Customer Segmentation:

- ➤ Behavioral Segmentation: Move beyond demographic segmentation to include behavioral segmentation, where customers are grouped based on their interactions, usage patterns, and responses to marketing efforts.
- ➤ Personalized Interventions: Use segmentation insights to develop highly personalized retention strategies that cater to the unique needs and behaviors of different customer groups.

5. Feedback Mechanisms:

- ➤ Regular Surveys: Conduct regular surveys to gather feedback on customer experiences and preferences. Use this data to refine services and address pain points promptly.
- ➤ Focus Groups: Organize focus groups with different customer segments to gain qualitative insights into their needs and expectations.

Conclusion

Summary

The Telecom Churn Analytics dashboard provides valuable insights into the factors contributing to customer churn at Vertex Mobile Net. Key findings include a high overall churn rate of 26.86%, significant churn driven by competitive offers, and notable differences in churn rates across demographic groups and contract types. The dashboard's visualizations highlight the importance of improving the initial customer experience, enhancing customer service quality, and offering competitive pricing and flexible plans. By leveraging these insights, Vertex Mobile Net can develop targeted strategies to reduce churn and improve customer retention.

Future Work

1. Deeper Behavioral Analysis:

   - Customer Journey Mapping: Analyze the entire customer journey to identify key touchpoints and interactions that influence churn. This can help in designing interventions at critical stages.
   - Churn Triggers: Investigate specific triggers that lead to churn, such as billing issues, network outages, or changes in service quality.

2. Enhanced Predictive Modeling:

   - Advanced Algorithms: Incorporate more advanced machine learning algorithms to improve churn prediction accuracy. Techniques such as random forests and neural networks can uncover deeper patterns.
   - Dynamic Models: Develop dynamic models that can adjust to new data in real-time, providing up-to-date predictions and insights.

3. Personalization:

   - Personalized Offers: Use the insights from segmentation to create personalized offers and communication strategies that resonate with individual customers.

4. Incorporate Additional Data Sources:

- Social Media and Web Analytics: Integrate social media and web analytics data to understand customer sentiment and online behavior. This can provide early warning signs of dissatisfaction and churn.
- Customer Support Interactions: Analyze transcripts and recordings of customer support interactions to identify common issues and areas for improvement.

5. Customer Feedback Integration:

- Continuous Feedback Loop: Establish a continuous feedback loop where customer feedback is regularly collected, analyzed, and integrated into the dashboard. This can help in identifying and addressing issues promptly.

By addressing these areas for future work, Vertex Mobile Net can continue to enhance its understanding of customer churn, develop more effective retention strategies, and ensure sustained customer satisfaction and loyalty. The ongoing refinement and expansion of the Telecom Churn Analytics dashboard will be crucial in achieving these goals.