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MBAN Data Science Summary Report Assignment 1

Analysis Approach

The analysis began with loading the data and conducting initial exploration; this involved importing relevant libraries(pandas, matplotlib, seaborn), uploading the dataset and displaying the first rows. Next, data cleaning and preprocessing was completed where missing values were checked, data types were displayed and converted if necessary (date columns to datetime), and new columns were created for subscription duration and age groups. Descriptive statistics for the numerical columns, and frequency distribution for the categorical variables were completed to summarize the data and understand their distributions. Visualization tools such as bar charts, stacked and non stacked box plots and histograms were created. Churn analysis was done by calculating the percentage of people who churn for each category; this was completed for both standard and all tiers, and compared in tables. From here, the most prominent factors affecting churn rate were found. Statistical testing was done where the mean was calculated for subscription duration to understand how long users stay subscribed before churning, as well as the most frequent reasons for churning. Revenue analysis on all tiers and standard was completed where the average monthly payment was used to calculate the total revenue lost due to churn. Next, the potential revenue increase from reducing churn by 5% was calculated. For the standard tier, the value of 9.99$ was used as this is the median value from the 3 pricing options corresponding to different subscription tiers. By using these methods, processes, and tools, insights were gained into the churn behavior of the streaming service users, and areas identified where improvements can be made to reduce churn and increase revenue.

Key Metrics

1. Churn Rate: The percentage of users who cancel their subscriptions.
   ○ High churn rates can hint to potential issues with customer satisfaction- helps in understanding how many customers are leaving for demographic and behavioral segmentation (age, gender, location, payment type, favorite genre, and device used), and to identify trends.
2. Subscription Duration: The length of time users remain subscribed before churning.
   ○ Helps in understanding customer engagement and the effectiveness of retention strategies
3. Churn Reasons: reasons for churning with the highest frequency
   ○ Helps in understanding exactly why customers are dissatisfied; these can be directly targeted.
4. Average Revenue per User: The total revenue divided by the number of users, measured monthly.
   ○ Provides insight into the revenue generated per user, which can highlight the profitability of different user segments
5. Revenue Churn: The total revenue lost due to churned customers over a specific period
   ○ Helps in understanding the financial impact of churn and prioritizing revenue retention efforts.
6. Revenue Increase: The potential revenue gained if churn was decreased by 5%
   ○ Helps in showing the revenue impact of retention activities

Findings and Insights

From the visualization and statistical tools, it was found that 26.45% of basic subscription users, 25.26% of premium users, and 23.40% of standard users churn. Although a higher percentage of basic users churn, the percentage of churned users for each subscription type was looked at, and 50.41% are from the standard tier, while 29.67% are from the basic tier and 19.92% are from the premium tier. This is inline with the

business context where the largest volume of churned users are from the standard tier- users from this tier will be the focus for retention efforts. Churn rate was calculated for demographic and behavioral segmentation for churned users across all tiers, as well as the standard tier isolated. The percentage churned for relevant segmentation was found; age categories were of importance, where the majority of churned users were young adults with a percentage of 25.82%. A significant difference was seen in the churn rate by gender where 26.79% of customers churned are female, while 18.46% are male; this data shows that female users churn more frequently. In terms of location, the West had the lowest churn percentage of 18.42%, and the East had the highest of 30.70%. The churn rate by payment type was fairly equal so focus was given to other segmentations. The genre category by churn percentage proved to be interesting as the highest churn rate was seen in documentaries with 27.72%, and the lowest in Sci Fi with 20.65%. In the devices used category, the highest churn rate by far is the mobile devices, with 33.49%. The average subscription duration was calculated to be 197.72 days, or 6.5 months, and the most common reason in the standard tier for churning was that they found better service. The total revenue lost due to churning customers was calculated to be $244,925, while the potential revenue increase by reducing churning by 5% was calculated to be $12,246.

Recommendations to the Business

Targeted retention strategies should be put in place for churned users in the Standard tier based on their demographic and behavioral profiles. Some specifics pertaining to this include personalized marketing material for the specific high churn groups. Young adults can be targeted by offering engagement-based incentives, such as loyalty points or rewards for watching a certain number of hours or specific content. Curated playlists and personalized recommendations for female users can be made to keep them engaged with content they are more likely to enjoy. Regional marketing strategies can be put in place to target customers located in the East, such as creating localized content catered to the tastes and preferences of individuals from this area. Because the highest churn rate for genre type was documentary users, this content type should be prioritized and algorithms should be implemented to personalize content recommendations. Due to mobile users showing higher churn rates, the business should invest more on app optimization for better user experience, as well as mobile only features such as offline watching. The average subscription duration for churned users is 6.5 months; a recommendation would be for the business to send out email and text reminders to customers nearing this benchmark about renewing the services, as well as offering discounts and offers at this time period. The most common reason for churning was that they found better service; the company should place effort in improving customer experience. This can be done through features such as sending out offers for renewed subscription, improved customer service (including live chats, email and phone service), adding more benefits, and sending out personalized emails thanking them for their service. These should help to improve customer satisfaction, which was the main reason stated for churners.

Business Impact Estimates

If the recommendations above are followed, quantitatively, the business can potentially increase revenue by $12,246 if the churn rate was reduced by 5%. The customer lifetime value would also increase with reduced churn as they would continue providing profit for the company. Furthermore, the company would have an improved ROI on marketing and sales efforts; this is because the business is spending less money on acquiring new customers and more money on retaining existing customers. Qualitatively, the business will have improved customer satisfaction, and loyalty which can lead to a stronger brand reputation. By reducing churn, the business can improve customer satisfaction, reduce costs, increase revenue, and improve its ROI.