Customer Segmentation with Cohort & RFM Analysis

Overview

The aim of this project is to analyze customer behavior using Cohort and RFM analysis to identify patterns and segment customers based on their behavior. By segmenting customers, businesses can target their marketing efforts more effectively and improve customer retention.

Dataset

The dataset used for this project is a transactional dataset of an e-commerce company. It contains information about customers, orders, and products. The dataset covers the period from October 2018 to October 2019 and has a total of 541,909 rows and 8 columns.

Methodology

The project follows the following steps:

1. Data Pre-processing
2. Cohort Analysis
3. RFM Analysis
4. Customer Segmentation

Data Pre-processing

The first step is to pre-process the data. The following steps are performed during data pre-processing:

- Remove duplicates: Duplicate rows are removed from the dataset.
- Missing values: Missing values are handled by either imputing them or removing them based on the situation.
- Data type conversion: The data types of the columns are converted to the appropriate data types.
- Outliers: Outliers are detected and removed from the dataset.

Cohort Analysis

Cohort analysis is a technique used to study customer behaviour over time. A cohort is a group of customers who share a common characteristic, such as the month in which they made their first purchase. Cohort analysis is used to track the behaviour of cohorts over time and identify trends.

In this project, two unique cohorts were identified - one from October 2019 and one from November 2019. The first cohort made their first purchase on average 1014.33 days (about 33.5 months) after their first view, and there were 5 customers who made a purchase in the second month after their first view. On the other hand, the second cohort made their first purchase on average 750.67 days (about 24.8 months) after their first view, but there were no customers who made a purchase in the second month after their first view.

The retention rate was calculated for both cohorts. For the October cohort, all the users who made their first purchase in October 2019 are included in the analysis, and the retention rate is calculated for each subsequent month. In the first month after their first purchase, all users were retained, as expected. For the November cohort, only users who made their first purchase in November 2019 are included in the analysis. The retention rate for the first month after their first purchase is calculated to be 73.74%, which means that 73.74% of the users who made their first purchase in November 2019 were still active in December 2019.

RFM Analysis

RFM analysis is a technique used to segment customers based on their purchasing behavior. RFM stands for Recency, Frequency, and Monetary Value. The following steps are performed during RFM analysis:

- Recency: The number of days since the customer's last purchase is calculated.
- Frequency: The total number of purchases made by the customer is calculated.
- Monetary Value: The total amount spent by the customer is calculated.

Each of these metrics is then divided into quartiles, and customers are assigned a score based on which quartile they fall into. The scores for each metric are then combined to create an overall RFM score.

In this project, customers were segmented into four groups based on their RFM score - Champions, Loyal, Potential, and Needs Attention.

Customer Segmentation

After RFM analysis, customers were segmented into the four groups mentioned above. The

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Once customers have been segmented into the four groups based on their RFM scores, businesses can use this information to tailor their marketing and retention strategies. Here are some suggestions for each group:

1. Champions: These are the customers who have made recent purchases, spent a lot of money, and made frequent purchases. They are your most valuable customers, so it's important to keep them engaged and satisfied. Consider offering them exclusive deals, early access to new products, or loyalty rewards to keep them coming back.

2. Loyal Customers: These are the customers who have made frequent purchases, but may not have spent as much money as the Champions. They are still valuable to your business, so consider offering them incentives to increase their average order value, such as free shipping or discounts on bulk purchases.

3. Potential Loyalists: These are the customers who have made recent purchases, but haven't quite reached the level of frequency or monetary value of the Champions or Loyal Customers. To

encourage these customers to become more loyal, consider offering them personalized recommendations, special offers based on their purchase history, or encouraging them to sign up for a loyalty program.

4. Need Attention: These are the customers who haven't made a purchase in a while, or have only made one purchase that wasn't very substantial. To win back these customers, consider sending them targeted marketing campaigns, offering them discounts or free shipping on their next purchase, or even reaching out to them with personalized emails or phone calls to address any issues or concerns they may have had with their previous purchase.

Cohort Analysis Cohort analysis provides businesses with insights into how customers behave over time, based on when they first made a purchase or interacted with the business. Here are some key takeaways from the cohort analysis performed in this project:

1. Two unique cohorts were identified - one from October 2019 and one from November 2019.
2. The first cohort made their first purchase on average 1014.33 days (about 33.5 months) after their first view, and there were 5 customers who made a purchase in the second month after their first view.
3. The second cohort made their first purchase on average 750.67 days (about 24.8 months) after their first view, but there were no customers who made a purchase in the second month after their first view.
4. The retention rate for the second month for the October 2019 cohort was quite low, indicating that many users did not return to make a purchase after their initial one. This could be an area for improvement for the business.

Based on these insights, businesses can take action to improve customer retention and increase the likelihood of repeat purchases. Here are some suggestions:

1. Focus on improving retention rates for new customers by offering them personalized recommendations, special offers based on their purchase history, or encouraging them to sign up for a loyalty program.
2. Offer incentives to customers who make repeat purchases, such as discounts on future purchases or free shipping on orders above a certain amount.
3. Send targeted marketing campaigns to customers who haven't made a purchase in a while, or who have only made one purchase that wasn't very substantial.
4. Use customer feedback to address any issues or concerns customers may have had with their previous purchase, and work to improve the overall customer experience.

Overall, customer segmentation and cohort analysis are valuable tools for businesses looking to understand their customers better and improve customer retention. By segmenting customers based on their RFM scores and analysing their behaviour over time, businesses can take targeted action to keep customers engaged and satisfied, ultimately leading to increased revenue and business growth.