

Analysis of Credit Card Transaction Data

Insights and Recommendations for Personalized Marketing Strategies

By

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Start



INTRODUCTION

Project Overview

This is a project based on the analysis of credit card transaction data of 8500 active customers to better understand their spending behaviors.

Objective:

- Analyze credit card transaction data to segment customers based on spending behavior, demographics.
- Develop personalized marketing strategies for each customer segment to increase engagement and loyalty.

The customers were grouped into 3 different segments and 4 different clusters namely:

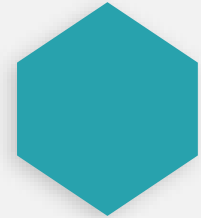
Segments:



Age Category

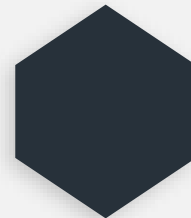


Marital Status

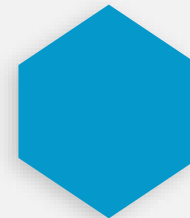


Income Category

Clusters:



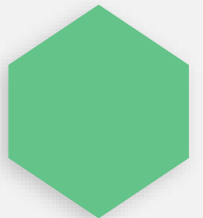
Cluster A



Cluster B



Cluster C



Cluster D

Each Segment and Cluster were carefully analyzed to understand the spending habits and usage of the credit cards, and this helped to Develop and assign personalized strategies to each segment to improve engagement (Card Usage) and Loyalty.

INTRODUCTION

Project Overview

Project Relevance



Reduced Churn and Attrition: Analyzing transaction data allows businesses to identify at-risk customers who may be considering switching to competitors or reducing their engagement.



Enhanced Customer Experience: Understanding customer behavior and preferences enables businesses to deliver personalized experiences that resonate with individual customers.



Improved Customer Targeting: By analyzing transaction data, businesses can identify distinct customer segments based on spending behavior, demographics, and preferences. This allows for targeted marketing campaigns tailored to the specific needs and interests of each segment.



Optimized Marketing Spend: Segmenting customers based on their transaction data helps businesses allocate their marketing budget more effectively. By focusing marketing efforts on high-value segments with the highest potential for conversion, businesses can maximize the impact of their marketing spend and minimize wastage on less responsive segments.

METHODOLOGY



Data Collection:

The data was collected from Kaggle through the Kaggle API which was a total of 10,127 records.

8,500 of which are Active customers while 1,627 are Non-active customers.



Data Cleaning & transformation:

The data was cleaned and Transformed using Microsoft Excel.

Calculated columns were created to facilitate better analysis.



Segmentation technique:

- In this project the customers were segmented using Simple demographic variables such as their age, income, marital status etc. This helps understand the different spending behaviors and preferences across different demographic groups.
- The customers were also segmented into 4 clusters based on similar spending habits using K-means clustering.

This technique helps identify natural groupings of customers based on similarities in their transaction data, allowing for more targeted marketing strategies.



Key Metrics Analyzed:

Each segment was deeply analyzed to understand their spending behavior and engagement (card Usage) to better inform marketing strategies for each customer segment.

To facilitate this analysis each segment was analyzed based on:

- Total transaction Amount
- Total transaction count
- Average utilization ratio
 - Months inactive

DEMOGRAPHIC SEGMENTATION

Age Category:

Customers were segmented into different age categories, such as 26-36, 36-46, 46-56, 56-66, and 66+.

This segmentation helps understand how spending behaviors and engagement vary across different age groups.



Age Category

Age Category:

Customers in the 46-56 age group tend to have the highest total transaction amount, followed by the 36-46 age group.

The 36-46 age group has the highest total transaction count, indicating higher frequency but lower value transactions.

Older age groups (56-66 and 66+) exhibit more conservative spending behavior but may have higher average transaction amounts.

Marital Status:

Customers were segmented based on their marital status, including single, married and divorced.

This segmentation helps identify differences in spending habits and engagement levels among different marital status groups.



Marital Status

Marital Status:

Single customers tend to have higher total transaction amounts on average compared to married & divorced customers.

Married individuals have a higher utilization ratio, while the engagement levels seem balanced across all categories..

Income Category:

Customers were segmented into income categories, such as "less than 40K", 40K-60K, 60K-80K, 80K-120K, and 120K+.

This segmentation helps understand the impact of income levels on spending behaviors and Engagement



Income Category

Income Category:

Customers in the lower income categories (less than 40K and 40K-60K) tend to have higher total transaction counts and higher total transaction amounts on average.

Higher income categories (80K-120K and 120K+) show lower engagement on average indicating less reliance on credit cards for daily expenses.

CLUSTER SEGMENTATION



Cluster A

Cluster A:

Customers in Cluster A exhibit moderate spending behavior with the second highest total transaction amount and transaction count on average.

They have the lowest utilization ratio on average and moderate engagement levels.

This segment represents customers with moderate spending habits and low utilization with credit cards.



Cluster B

Cluster B:

Customers in Cluster B have the third highest total transaction amount and transaction count on average when compared to other clusters.

They may have the highest utilization ratio on average, indicating more frequent use of credit cards for transactions.

This segment represents customers who are more active and engaged in using credit cards for their transactions..



Cluster C

Cluster C:

Customers in Cluster C show lower-than-average spending behavior, with the lowest transaction amounts and counts on Average.

They have the second highest utilization ratio, indicating less reliance on credit cards for transactions on average.

This segment represents customers who are more conservative in their spending habits and may prefer other payment methods over credit cards..



Cluster D

Cluster D:

Customers in Cluster D exhibit the highest spending behavior, with significantly higher transaction amounts and counts on Average.

They may have the second lowest utilization ratio, indicating less reliance on credit cards for transactions.

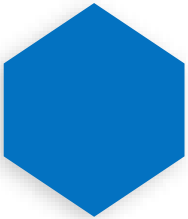
This segment represents high-value customers who are highly engaged and exhibit mild usage in using credit cards for their transactions.

KEY INSIGHTS & ANALYSIS

Customer Segmentation:

- Segmentation was conducted based on demographic factors such as age, marital status, income category, and spending behavior clusters (A, B, C, D).
- Each segment provides valuable insights into customer behavior, preferences, and engagement levels.

Demographic Segments



Age Category

Customers aged 46-56 had the highest average transaction amounts,

While,

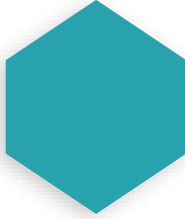
Those above 66 showed the highest engagement levels.

Younger age groups exhibited lower transaction amounts but higher utilization ratios.



Marital Status

Single customers showed higher transaction amounts and counts compared to other marital statuses, indicating potential differences in spending behavior.



Income Category

Customers with income less than 40K had the highest transaction amounts and counts, suggesting that spending behavior may be influenced by income levels.

Significance of Findings:

- Understanding customer segmentation allows for targeted marketing strategies tailored to the preferences and behaviors of each segment.
- Personalized marketing initiatives can increase customer engagement, loyalty, and satisfaction.
- Insights derived from customer behavior data enable businesses to optimize marketing spend, improve customer targeting, and enhance overall customer experience.

Spending Behavior Segments (Clusters):

- Cluster D** exhibited the highest spending behavior, followed by **Cluster B**, while **Cluster C** showed the lowest spending behavior.
- Customers in **Cluster B** and **C** had higher utilization ratios, indicating more frequent credit card usage.
- Cluster A** had the lowest engagement levels suggesting potential areas for improvement in customer engagement.



PERSONALIZED MARKETING STRATEGIES



Age Category

Age Segments:

- For customers aged 46-56: Promote rewards programs tailored to their higher transaction amounts, emphasizing benefits like cashback or discounts on frequent purchases.
- For younger age groups: Focus on increasing engagement through targeted campaigns highlighting convenience and ease of use, such as mobile payment options or exclusive online offers.



Marital Status

Marital Status Segments:

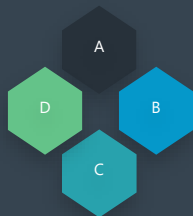
- For single customers: Offer personalized promotions and discounts on lifestyle products or experiences to capitalize on their higher transaction amounts and counts.
- For married customers: Provide family-oriented incentives such as discounts on family packages or joint account benefits to enhance loyalty and encourage higher spending.



Income Category

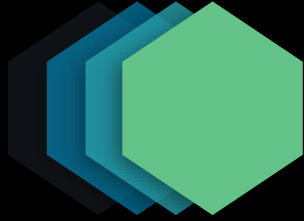
Income Category Segments:

- For customers with income less than 40K: Implement affordability-focused marketing strategies, such as flexible payment plans or installment options, to cater to their higher transaction amounts and counts.
- For higher-income segments: Emphasize premium benefits like exclusive events to enhance the perceived value of credit card ownership and increase loyalty.



Spending Behavior Clusters:

- **Cluster D:** Target these high-spending customers with exclusive offers or VIP programs, leveraging their propensity for larger transactions to increase customer lifetime value.
- **Cluster B:** Encourage continued engagement by promoting loyalty programs or referral incentives, leveraging their higher utilization ratios to drive repeat transactions.
- **Cluster C:** Implement targeted campaigns aimed at increasing engagement levels, such as personalized offers or incentives tailored to their specific spending patterns, to boost transaction counts and overall activity.
- **Cluster A:** Focus on improving engagement through personalized communication and tailored incentives, addressing pain points and barriers to usage to drive increased activity and loyalty.



Thank you



End

