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Bank Customers Market Segmentation

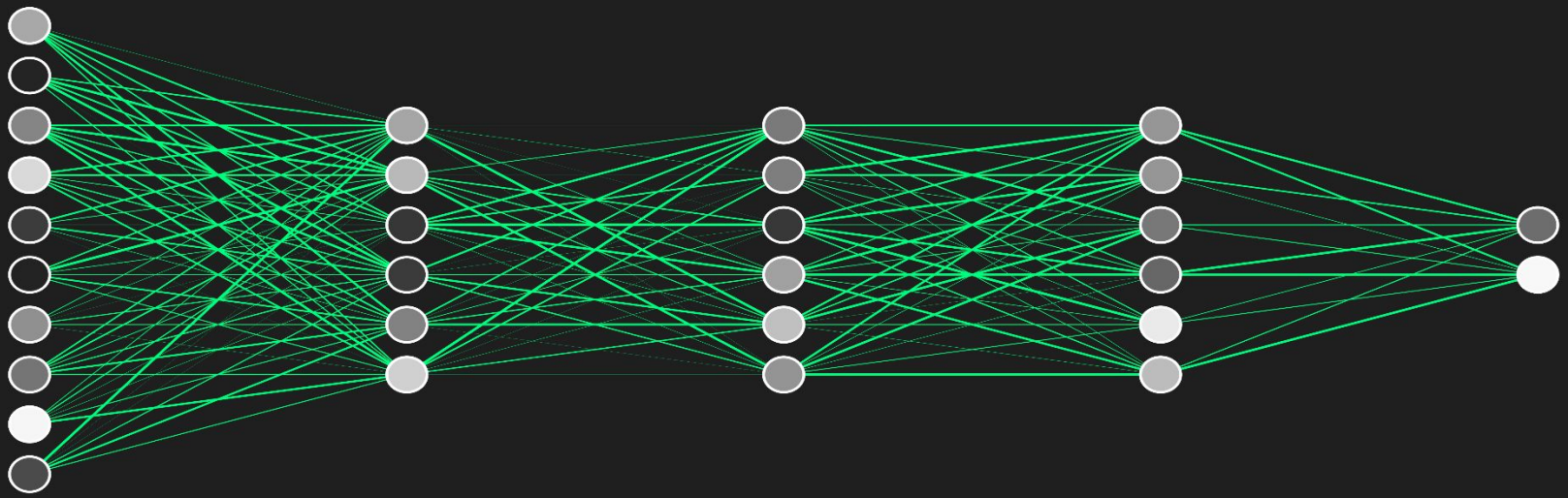


Table of Contents

1

Project Overview

Introduction

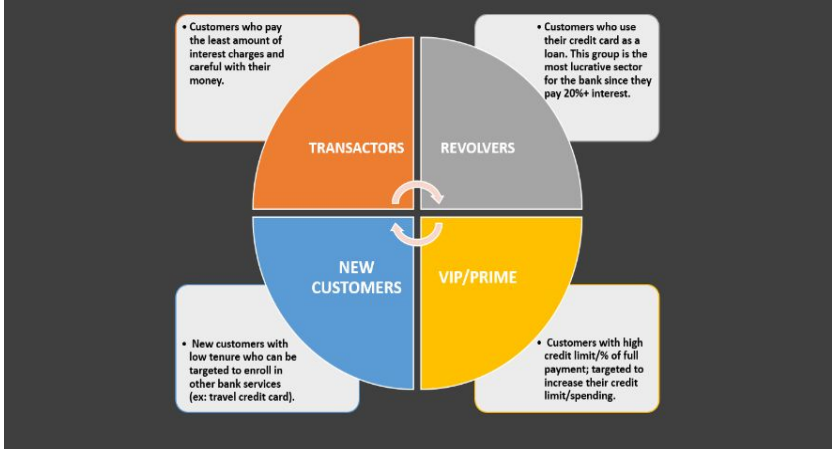
- The project involves data cleaning, analysis, and machine learning to segment bank customers into distinct groups for marketing.
- By segmenting customers, the bank can gain insights into credit card spending and realign their marketing strategies for effectiveness.

2

Understand the Problem Statement

Initial Step

- The problem statement involves segmenting the customer base for targeted marketing campaigns to improve ROI.
- Machine learning algorithms will be used to analyze and clean customer data for segmentation.
- This process will help launch targeted marketing campaigns tailored to specific customer groups.
- The goal is improved marketing ROI through effective customer segmentation.



Business Case

Importance

- The bank's marketing team aims to leverage AI/ML to launch a targeted marketing ad campaign tailored to customer groups.
- Successful segmentation is crucial for maximizing the marketing campaign conversion rate.
- The bank requires at least three distinctive groups for effective segmentation.
- This process will ensure the marketing strategy is data-driven and customer-focused.

Dataset Selection

Data Choice

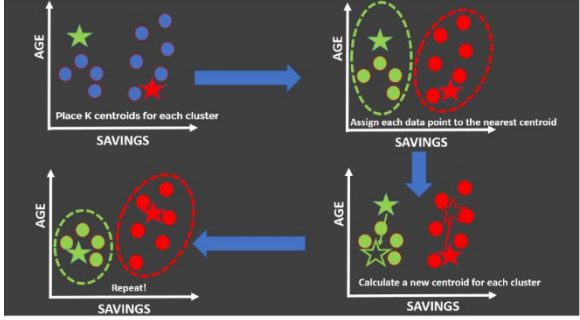
- The dataset contains 8950 instances of customer credit card details, crucial for segmentation.
- Important columns include CUSTID, BALANCE, BALANCE_FREQUENCY, PURCHASES, and ONEOFFPURCHASES.
- Other relevant columns: INSTALLMENTS_PURCHASES, CASH_ADVANCE, PURCHASES_FREQUENCY.
- The chosen dataset is comprehensive for the analysis required for segmentation.

5

Clean, Visualize and Explore Dataset

Data Prep

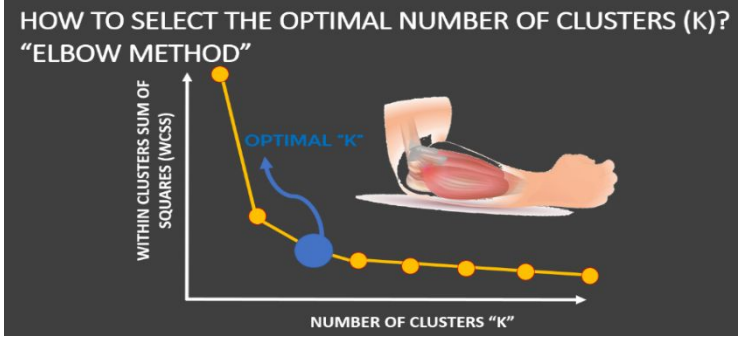
- Data cleaning is vital to ensure accuracy and reliability for subsequent analysis.
- Visualization helps in identifying patterns and anomalies in the dataset.
- Exploration provides insights into the distribution and relationships between variables.
- These steps form the foundation for effective machine learning model development.



Understand K-Means Theory

Clustering

- K-Means is a popular algorithm for customer segmentation based on feature similarity.
- Understanding its theory and intuition is crucial for effectively applying it.
- It partitions customers into K clusters, where each customer belongs to the cluster with the nearest mean.
- This method helps in identifying distinct customer groups for targeted marketing.



Optimal Number of Clusters

Elbow Method

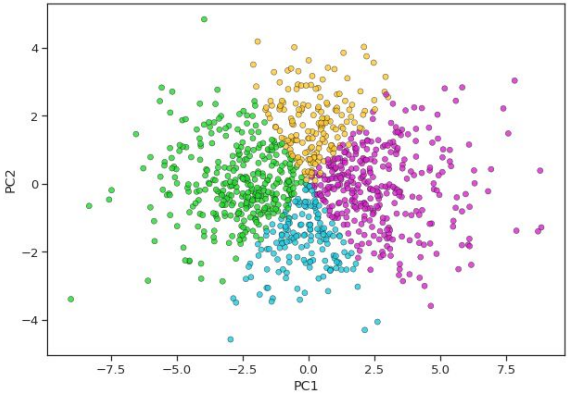
- Determining the optimal number of clusters is critical for effective segmentation.
- The Elbow Method helps to find the optimal number by plotting within-cluster sum of squares.
- The 'elbow' point on the graph indicates the best number of clusters to use.
- This ensures that the model balances accuracy and complexity effectively.

Apply K-Means Method

Segmentation

- After determining the optimal number of clusters, apply the K-Means method for segmentation.
- Each customer is assigned to one of the clusters based on feature similarity.
- The result is a clear division of customers into distinct groups.
- These groups can then be targeted with tailored marketing strategies.

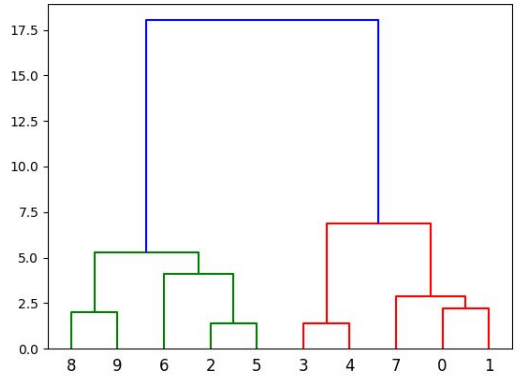
Principal Component Analysis



PCA

- PCA is used to reduce the dimensionality of the dataset while retaining variance.
- It simplifies the dataset, making it easier to visualize and interpret the clusters.
- PCA helps in identifying the most significant features contributing to the variance.
- Visualization of PCA results aids in understanding the cluster separation.

Hierarchical Clustering & PCA



Advanced

- Hierarchical clustering is another method for customer segmentation, offering a tree-like cluster hierarchy.
- Combining PCA with hierarchical clustering helps in visualizing complex relationships.
- It provides a comprehensive view of customer segments and their structures.
- This advanced analysis supports more precise and informed marketing decisions.