Python Project: Customer Segmentation for a Financial Services Company

Project Description:

In this project, I performed customer segmentation for a financial services company. The primary goal was to identify distinct customer segments to enable targeted marketing strategies and improve customer engagement.

Key Responsabilities and Tasks:

1. **Data Collection and Preprocessing:**

   - Gathered customer data, including demographic information, transaction history, and engagement metrics.
   - Cleaned the dataset by handling missing values, removing duplicates, and standardizing formats.
   - Performed feature engineering to create meaningful attributes for segmentation.

2. **Exploratory Data Analysis (EDA):**

   - Conducted EDA to understand the distribution and relationships within the data.
   - Visualized key variables using histograms, scatter plots, and box plots to identify patterns and anomalies.

3. **Feature Selection:**

   - Selected relevant features for segmentation based on domain knowledge and correlation analysis.
   - Reduced dimensionality using techniques like Principal Component Analysis (PCA) to simplify the dataset and improve computational efficiency.

4. **Segmentation using Clustering Algorithms:**

   - Applied clustering algorithms such as K-Means, Hierarchical Clustering, and DBSCAN to identify distinct customer segments.
   - Evaluated the performance of each algorithm using metrics like silhouette score and Davies-Bouldin index to determine the optimal number of clusters.

5. **Cluster Profiling:**

   - Analyzed the characteristics of each cluster to create detailed profiles.
   - Identified key differentiators such as age, income, transaction frequency, and preferred services for each segment.

6. **Visualization and Reporting:**

   - Created comprehensive reports and presentations summarizing the findings and actionable insights

Outcome:

- Provided strategic recommendations for targeted marketing campaigns tailored to each customer segment.
- Suggested personalized offers, loyalty programs, and communication strategies to enhance customer satisfaction and retention.

Technologies and Tool Used:

- Python
- NumPy
- Scikit-Learn
- Matplotlib & Seaborn