Experiment No. 5
Apply appropriate Unsupervised Learning Technique on the Wholesale Customers Dataset
Date of Performance:
Date of Submission:

Aim: Apply appropriate Unsupervised Learning Technique on the Wholesale Customers Dataset.

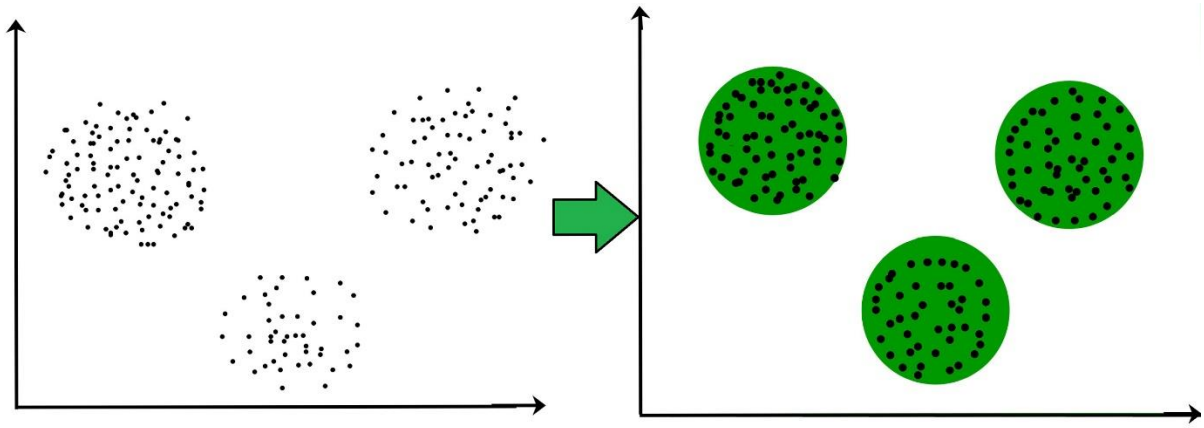
Objective: Able to perform various feature engineering tasks, apply Clustering Algorithm on the given dataset.

Theory:

It is basically a type of unsupervised learning method. An unsupervised learning method is a method in which we draw references from datasets consisting of input data without labeled responses. Generally, it is used as a process to find meaningful structure, explanatory underlying processes, generative features, and groupings inherent in a set of examples.

Clustering is the task of dividing the population or data points into a number of groups such that data points in the same groups are more similar to other data points in the same group and dissimilar to the data points in other groups. It is basically a collection of objects on the basis of similarity and dissimilarity between them.

For example: The data points in the graph below clustered together can be classified into one single group. We can distinguish the clusters, and we can identify that there are 3 clusters in the below picture.



Dataset:

This data set refers to clients of a wholesale distributor. It includes the annual spending in monetary units (m.u.) on diverse product categories. The wholesale distributor operating in different regions of Portugal has information on annual spending of several items in their stores across different regions and channels. The dataset consist of 440 large retailers annual spending on 6 different varieties of product in 3 different regions (lisbon , oporto, other) and across different sales channel (Hotel, channel)

Detailed overview of dataset

Records in the dataset = 440 ROWS

Columns in the dataset = 8 COLUMNS

FRESH: annual spending (m.u.) on fresh products (Continuous)

MILK:- annual spending (m.u.) on milk products (Continuous)

GROCERY:- annual spending (m.u.) on grocery products (Continuous)

FROZEN:- annual spending (m.u.) on frozen products (Continuous)

DETERGENTS_PAPER :- annual spending (m.u.) on detergents and paper products (Continuous)

DELICATESSEN:- annual spending (m.u.)on and delicatessen products (Continuous);

CHANNEL: - sales channel Hotel and Retailer

REGION:- three regions (Lisbon, Oporto, Other)

Code:

Conclusion:

Based on the visualization, comment on following:

1. How can you can make use of the clustered data?

   By observing the clusters we can make some conclusion/ decisions like

Understanding Customer Segments: Clustered data aids in comprehending distinct customer groups based on their buying patterns, enabling the creation of more relevant marketing campaigns tailored to each group's preferences.

Efficient Inventory Management: Clustering supports inventory optimization by ensuring that the right products are stocked in appropriate quantities to align with the preferences of each cluster.

Identifying New Markets: Clustering can also uncover potential new markets or customer segments that share similarities with existing clusters.

Optimizing the Supply Chain: Supply chain operations can be fine-tuned by customizing delivery schedules and routes according to the unique needs of each cluster.

2. How the different groups of customers, the ***customer segments***, may be affected differently by a specific delivery scheme?

   High-value customers, who make frequent purchases, tend to be more sensitive to delivery choices. They are likely to value and be willing to pay for premium delivery services. Conversely, low-value customers prioritize cost savings and are generally less affected by delivery speed and may not demand expedited options.

   Customers in different geographic regions may experience varying levels of service quality and delivery speed. Remote or underserved areas may face longer delivery times and may be more affected by any changes in delivery schemes.

   Loyal customers who have established trust with a company may be forgive occasional delivery issues. New customers might be more sensitive to delivery experiences, and a negative experience could deter them from future purchases.