**Conclusion**

**KMEANS:**

Based on the analysis, these are the final observations from the dataset for each cluster:

* **Cluster 1: (low income, high spending)**

It is a risky group since they do not have the spending capacity yet they have a high spending score. They should be sent more discount-based coupons.

* **Cluster 2: (average income, average spending)**

It occupies the maximum amount of people that earn decent as well as spend a decent amount. They should be sent regular updates and promotional offers to keep their interest.

* **Cluster 3: (high income, high spending)**

It is the best group since they have a high income and a high spending score as well. They should be sent regular updates and promotions.

* **Cluster 4: (low income, low spending)**

It should be ignored since they do not have the spending capacity nor do they show interest in spending.

* **Cluster 5: (high income, low spending)**

It has high income but they do not shop as much. These people should be targeted since they have the spending capacity. Their past data should be analysed to send them specific promotional messages to get their interest back.

**Limitations of KMeans Clustering:**

The user must specify k (the number of clusters) in the beginning. K-means can only handle numerical data.

**HIERARCHICAL CLUSTERING:**

Based on the analysis, these are the final observations from the dataset for each cluster:

* **Cluster 1: (high income, low spending)**

It has high income but they do not shop as much. These people should be targeted since they have the spending capacity. Their past data should be analysed to send them specific promotional messages to get their interest back.

* **Cluster 2: (average income, average spending)**

It occupies the maximum amount of people that earn decent as well as spend a decent amount. They should be sent regular updates and promotional offers to keep their interest.

* **Cluster 3: (high income, high spending)**

It is the best group since they have a high income and a high spending score as well. They should be sent regular updates and promotions.

* **Cluster 4: (low income, high spending)**

It is a risky group since they do not have the spending capacity yet they have a high spending score. They should be sent more discount-based coupons.

* **Cluster 5: (low income, low spending)**

It should be ignored since they do not have the spending capacity nor do they show interest in spending.

**Limitations of Hierarchical Clustering:**

* Sensitivity to noise and outliers.
* Faces Difficulty when handling with different sizes of clusters.
* It is breaking large clusters.
* In this technique, the order of the data has an impact on the results.