Executive summary

Company XYZ is a wholesale distributor that serves a number of business clients in Portugal. The management team of XYZ would like to get a deeper understanding of the spending patterns of their clients so that the team can make strategic decisions to better meet the client's demand and improve inventory management.

PROCEDURE:

To help Company XYZ best understand the clients' spending patterns, we have performed clustering analysis techniques leveraging R. Applying the hierarchical approach, all of the clients were naturally categorized into four different clusters based on the annual spending across six product categories.

Parameters used to identify features of the four clusters obtained:

Percentage of Total Product spending - This is defined as the percentage of the total product spending by each cluster of clients across different regions or channels.

Average Product Spending - This term refers to the average spending of each cluster on six different products across different regions or clusters. We scaled the average spending on a scale of 0 to 5.

RESULTS

We clustered the customer base into four groups: Paramount, Premier, Pivotal, and Potential.

*Types of Customers based on spending patterns. We would like to call these four types of customers as the **4P'S** as they play a huge role in the revenue growth of XYZ company.*

Paramount - The customers belonging to this group comprise the largest volume of clients spending the total maximum amount from XYZ. So, they have the highest percentage of total spending on all 6 types of products and generate the maximum revenue for XYZ company. But the customers on average are spending less than the customers in other clusters. They are called Paramount as they form the largest revenue-generating customer base and come first before others. Also, the customers are the majority of hotels, restaurants, and cafes and belong to different parts of Portugal.

Premier -The customer in this group tends to spend a humongous amount on Fresh and Frozen products but they are a little short in number in comparison to Paramount customers, but their average spending capacity is more than Paramount. They are the Premier group because of their high spending volumes, especially on food products. Customers are mainly from hotels, restaurants, and cafes throughout Portugal.

Pivotal -The customers in this group also spend a considerable total amount while their average spending capacity is better than Paramount and Premier but comparatively less in number. They spend considerably on

basic household products like grocery detergent/paper and milk and belong to the Pivotal group. This group consists of the majority of Retail customers and is spread across Portugal.

Potential- These customers have the maximum spending capability as they have the highest average spending capacity and have the greatest potential in increasing the revenue of XYZ company in the future. Although they are small, their average spending capacity is more than others. These customers tend to fall into the Retail stores, and they have predominantly no presence in Lisbon.
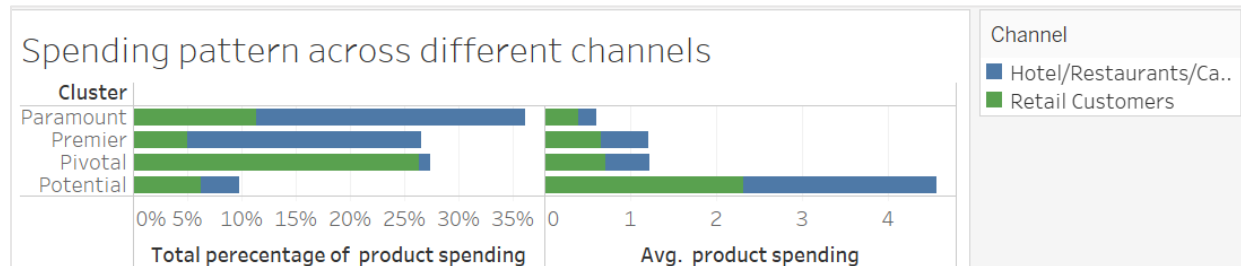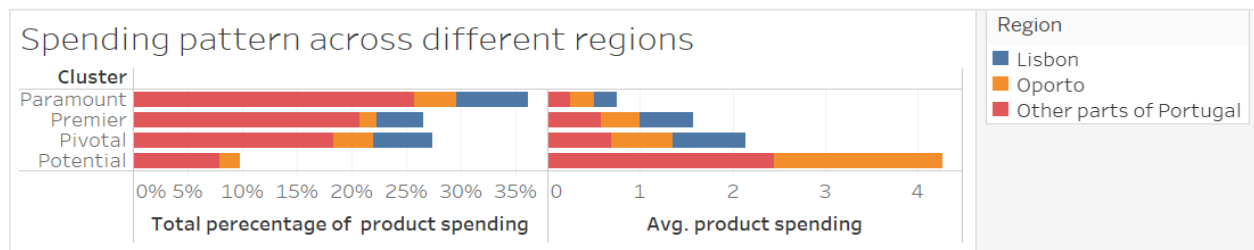
Distribution of clusters:

We can see that the Paramount cluster has the most customers and the Potential cluster has the least in the group. The following chart shows the number of four clusters across different regions and different channels.

By Channel & Region
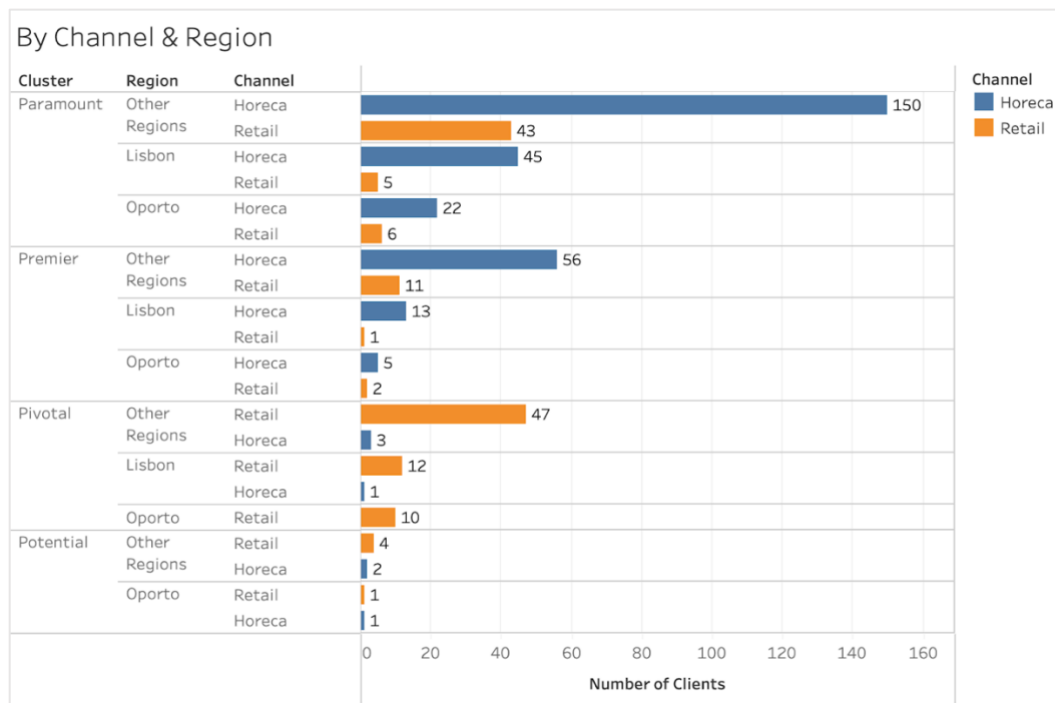
We then further analyzed the spending patterns across different regions and channels:

From the table below, we can see that Premier spends the most on Fresh & Frozen products, while Pivotal focuses on householding products.

Average spending on each product (each cluster)	Fresh	Milk	Grocery	Frozen	Detergents& Paper	Delicate	Total
Paramount	29.29%	17.69%	18.98%	12.81%	12.45%	8.78%	100.00%
Premier	**43.17%**	13.15%	11.14%	**19.54%**	4.48%	8.53%	100.00%
Pivotal	6.29%	**23.15%**	**30.44%**	3.27%	**32.44%**	4.40%	100.00%
Potential	15.07%	22.85%	21.14%	11.40%	20.93%	8.61%	100.00%

Spending pattern across different regions

Spending pattern across different channels

Recommendations to XYZ company after reviewing the clustering results:

1. In analyzing the cluster across six different products, we have identified distinct preferences within each group. Paramount, which has the most client numbers, focuses most of the spending on fresh products, further they are spread across other regions comprising most of the Horeca client base. Premier exhibits a higher interest in food-related products, while Pivotal shows a stronger preference for household products. To effectively target these clusters, we recommend the following strategies:

a.   Sufficient Inventory and efficient supply chain management: Maintaining an ample stock of products within the preferred categories of each group and delivering these products in a time-bound manner to ensure the client's demands and to enhance customer satisfaction and loyalty.

b.   Targeted Advertising/Promotions: Develop targeted marketing campaigns that specifically highlight and promote the preferred categories of each group.

2. XYZ can investigate the Potential group of customers as their average spending capacity is more than others and the company can look for opportunities to increase stock, inventory management or do more analysis to increase its presence in other parts of Portugal. To attract more of these clients, we recommend the following approaches:

a.   Setting Spending Goals with Incentives: By establishing specific spending goals, CompanyXYZ can offer attractive incentives, such as discounts or rewards, when customers reach or exceed those targets.

b.   Extending Payment Periods: It will help businesses in effective cash management and give them greater flexibility in making large purchases.