MANAGERIAL DOCUMENT

Company XYZ, a leading wholesale distributor, serves a diverse clientele categorized into two primary channels: Channel 1, known as Horeca (hotels, restaurants, and cafes), and Channel 2, which refers to Retail. XYZ is exploring a dataset of 440 clients, detailing their annual spending across six product categories (Fresh, Milk, Grocery, Frozen, Detergents_Paper, Delicatessen), as well as their region and business channel.

From the raw data, it is evident that fresh products are the highest-selling category, indicating strong demand for perishable items across the client base.On the other hand, delicatessen is the lowest-selling category. This may indicate lower demand or limited awareness of the product among clients.The key business questions driving this analysis include: Which product categories are contributing the most and least to revenue for XYZ? Are there specific regions or channels where certain product categories are underperforming? How do spending patterns differ across regions (Region 1, Region 2, and Region 3)? Are there notable differences in spending behavior between Horeca and Retail? Can clients be classified into distinct groups based on their spending patterns within each channel?

PROCEDURE:

The dataset was bifurcated into two channels, Horeca and Retail since each channel serves distinct consumer needs, their consumption patterns vary across both channels and regions. Using K-means Clustering, we identified natural customer segments based on spending behaviors. Additionally, a separate analysis on outliers provided valuable insights into high-spending customers. This helped identify distinct customer segments with specific product preferences.

INSIGHTS AND IMPLICATIONS:

Customer Segmentation- The cluster analysis revealed five distinct customer profiles with unique purchasing patterns within channel 1 and 4 distinct retail segments within channel 2.

Channel 1: (5 clusters)

- Cluster 1(Premium Restaurants): High spend on Fresh produce and grocery, suggesting a focus on premium quality ingredients, likely representing high-end restaurants or premium hotels.
- Cluster 2(Delicatessens): Moderate spend on Fresh and high Delicatessen spend, indicating customers such as gourmet shops or delicatessens.
- Cluster 3(Cafes): Higher Milk, grocery and Detergents spend, typical of quick-service restaurants or cafes where dairy and sandwiches are made and cleanliness is key.
- Cluster 4(Catering services): Significant spend on Frozen foods, indicating bulk suppliers or large catering services.
- Cluster 5(Budget Eateries): Lower spend across categories, suggesting small, budget-conscious eateries or restaurants.
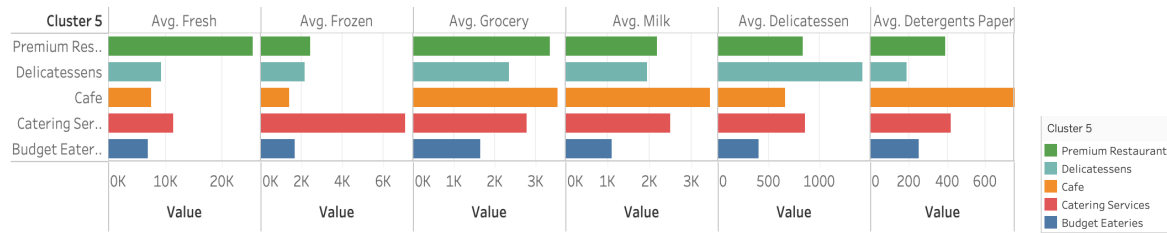
Channel-2 (Cluster-4)

Cluster-1 (Specialty Fresh Markets) - High Fresh spending (11,603) suggests a focus on quality perishables and moderate spending across other categories; moving forward, we recommend conducting customer surveys to gather insights on purchasing habits and preferences for fresh produce.

Cluster-2 (Supermarkets/Hypermarkets)- Balanced high spending across categories, with Grocery at 15,753 and Milk at 9,031, indicates a one-stop-shop approach; to build on this, we recommend analyzing sales transaction data to understand customer basket compositions better.

Cluster-3 (Gourmet/Delicatessen Stores)- Strong Fresh sales (11,566) and high Delicatessen spending (2,357) reflect demand for premium items; we suggest leveraging customer purchase history through loyalty programs or promotions for deeper insights.

Cluster-4 (Discount Supermarkets)- The focus on essential staples, with Grocery spending at 15,836 and Milk at 9,716, highlights a value-oriented strategy; moving forward, we recommend conducting price sensitivity analysis using promotional response data and customer surveys.

Regional Analysis -

Region 1 (Lisbon) consists exclusively of Cluster 4 (Discount Supermarkets), suggesting the need to explore consumer interest in fresh produce through focus groups or pilot programs to gauge demand for specialty fresh markets. Region 3 (Other regions), which accounts for 76.2% of the client base and shows a strong preference for Clusters 2 (Supermarkets/Hypermarkets) and 3 (Gourmet/Delicatessen Stores), would benefit from market research on local preferences and competitive offerings to tailor product assortments and marketing strategies. Insights into regional demographics could further support these initiatives.

Outlier Analysis -

Channel 1 (Horeca) consists of three clusters. Cluster 3, with 62.9% (66 out of 105) of clients, has moderate spending, averaging $22,916.97 on Fresh products. Cluster 2, comprising 34.3% of clients, shows higher average spending, particularly $70,025.31 on Fresh and $9,572.81 on Grocery categories. Cluster 1, though small with just 3 clients, represents significant outliers, with average spending of $60,571.67 on Fresh and $38,049.33 on Frozen products, indicating large-scale operations. Geographically, 73.3% of clients are in the "Other" region, with 21% in Lisbon, highlighting regional spending patterns that may require focused outlier analysis.

Channel-2

Channel 2 (Retail) consists of 41 clients in three clusters. Cluster 3, the largest (48.8%), focuses on Grocery ($29,804.75), Milk ($17,583.80), and Detergents_Paper ($15,187.50). Cluster 2, with 41.5% of clients, shows balanced spending, particularly in Fresh ($19,122.82) and Grocery ($10,098.82). Cluster 1, though small (9.8%), represents outliers with high spending, especially in Fresh ($29,862.50) and Milk ($53,080.75), suggesting large supermarkets. Geographically,

68.3% are in "Other" regions, with smaller groups in Lisbon and Oporto, indicating the need for region-specific outlier analysis.

RECOMMENDATIONS:

1. Convenience for Cafes: Promote products that align with the specific needs of cafes, such as dairy and cleaning supplies. Introduce subscription services or streamlined ordering systems to create added value, ensuring a reliable supply and reinforcing customer loyalty.

2. Operational Efficiency through Demand Forecasting: Utilize cluster insights to enhance inventory management by predicting demand for specific products within each cluster. This will ensure stock availability while minimizing waste, ultimately leading to cost savings and improved customer satisfaction.

3. Streamlined Supply Chain Management: Establish a responsive supply chain for fresh produce and frozen foods by collaborating closely with local suppliers and farmers for Specialty Fresh Food Market. For Discount Supermarket, streamline the supply chain through bulk purchasing agreements, ensuring competitive pricing and efficient product delivery.

4. From our outlier analysis, we observed unusually low spending in detergent paper for channel 1 (restaurants) and in frozen and delicatessen for channel 2, which may explain their classification as outliers. Further investigation is needed, particularly given the focus of marketing strategies on frozen and delicatessen products in channel 2.