Bigazon is a leading online and physical store format for business to business distributor (selling to hotels, other retail outlets and institutions) selling products across different categories. Bigazon distributes the products through online and in physical store formats across three southern states of Karnataka, Andhra Pradesh and Kerala . Bigazon wanted to increase its sales revenue across different business customers for FY2018-2019 financial year to capture hyperlocal market and was mulling different strategies. The Business intelligence team of Bigazon worked on the report the 2017-2018 sales numbers across different customer segment as shared in Bigazon 2017-2018 sales data(Bigazon.xls) .

The CEO engaged the analytics team trained in REVA University to come out with a strategy for increasing the sales for FY2018-19 . Bigazon has plans to increase overall sales in FY 2018-2019 across different customer segments and has decided SG&A expenses in form of promotions and offers to the tune of Rs.7.5 lacs . The promotion expenses across online and store sales for different items are: Fresh Fruits @ Rs.3.4 per kg , milk @ Rs.2.5 per litre , Grocery @ Rs1.3 per kg , Detergent/Washing Powder @ Rs1.1/kg , Delicatessen ,Rs2.3 per kg and frozen items @ Rs 1.7 per kg .

The Reva analytics team reached out to Procurement team on inventory .The procurement team shared the overall procurement details of different items bought in FY2017-2018. The details are as following   Fresh fruits @158061 Kgs ; Milk @72867litres ;Grocery @99959 Kgs ;Detergent/washing powder @36224 kgs   ; Delicatessen @7893 kgs ;Frozen items @38619 kgs .Bigazon has to spend around 10% of its overall revenue on transportation and logistics for distributing merchandise to end customers . The cost of transport for Fresh Fruits is Rs5.0 per kg ; for Milk it is Rs 6 per litre ;Grocery is Rs3.0 per kg ,for Detergent /Washing powder , it is Rs.1 per kilometre ; for Delicatessen it is Rs12 per kilometre owing to international shipping cost and for frozen foods , the transportation cost per kg is Rs 6 per kg .In order to maintain long term profitable procurement contracts , Bigazon has minimum guaranteed order quantity from different vendors expect for Delicatessen that had both minimum as well as maximum order quantity owing to import compliance . The quantity guarantee for different categories are as follow: Fresh Fruits @10000 kgs per annum ; Milk @5000 litres per annum ;Grocery @5000 kgs per annum ; Detergent at 2500 Kgs per annum Delicatessen has minimum order quantity of 4500 kgs and maximum is 10000 kgs . The Reva analytics team also found from price promotion elasticity that with revenue can be increased because of increase in selling price per sku normalized across 230 different SKU categories. For fresh fruits , the selling price can be Rs.44 per   kg , for milk selling price result in Rs 45 per kg , for Grocery, it is Rs.47 per kg ; For Washing Powder /Detergents , it is Rs.50 per kg , Delicatessen, it is 95 per kg (as most of the items are imported) and for frozen items it is Rs 60 per kg

The team decided to first initiate Descriptive analytics followed by predictive and then prescriptive analytics. Can you please help the analytics team in the following questions?

Analytics Questions

a. Represent the total sales across the three regions in form of Pie chart   (5)
b. Represent the overall sales at category level ,Fresh fruits , Dairy , Grocery, Frozen items etc in form of a descending bar graph with highest Product category with the highest 2017-2018 revenue in the extreme left and descending to lowest category revenue (5)
c. Represent the individual category sales across Online and Store channels in the same bar graph   (5)

Predictive analytics

Presently Bigazon treats all businesses as same as homogeneous group . It wants to create customer segment derived from the sales data looking at the similarity of categories and channel across regions.

d. What is the analytics method to be used for identifying the different business group? What is the ideal customer segments for 440 business customers for Bigazon? What names would you give to each of the business segment (this is called Firmographics like Demographics for human beings)   (5)
e. Which customer segment contributed the most to Bigazon revenue in FY2017 -2018? (5)

Prescriptive Analytics

f. What is the constraint and objective function if Bigazon business problem is converted in Operation Research problem?   (10)
g. What is the maximum revenue Bigazon can hope to make in FY2018-2019 keeping in mind the promotion investment, increase in price as well as guaranteed quantity commitments? What is the YoY percentage growth in revenue? (10)
h. What is the recommended quantity that Procurement team has to order for Milk and Fresh Fruits? (10)
i. Which Product category is going to contribute most of the revenue in FY2018-2019? (10)
j. From Sensitivity report , if we can invest more either on increasing Promotion budget or additional budgeting on transportation , where would you recommend Bigazon to invest and why?   (10)