MUKESH PATEL SCHOOL OF TECHNOLOGY

MANAGEMENT & ENGINEERING

Subject: Business Visualization &Analytics

MINI PROJECT

Semester VI, Year: III

Academic Year: 2022-2023

DELIVERY & CUSTOMER ANALYSIS

Group members:

Bhavyaraj Singh (N064)

Anshuman Thapliyal (N069)

Contents

DATASET DESCRIPTION

Dataset: **CUSTOMERS_CLEAN**

Data item	Description
City Name	It contains the registered name of the city in which the customer currently resides.
Continent Name	It contains the registered name of the continent in which the customer currently resides.
Customer Country	It contains the registered name of the country in which the customer currently resides.
Customer Group Name	It contains the registered group name assigned to the customer. It includes: Internet/Catalog Customers, Orion Club Gold members(high, medium, and low activity).
Customer ID	It is a unique ID assigned to each registered customer.
Customer Name	It contains the name of the registered customer.
Customer Type Name	It contains the registered type name assigned to the customer.
Delivery Date	It contains the date of the delivery on which the customer receives its order.
Loyalty Member	It contains the information whether a customer owns a loyalty membership or not.
Order Date	It contains the date on which the order was placed.
Order Month	It contains the month on which the order was placed.
US State Names	It contains the geo-location based on the name of states where the customer resides.
US Zip Codes	It contains the geo-location based on the zip codes where the customer resides.
US Hierarchy	It contains the hierarchy based on the Customer Country.

DATASET MANUPILATION

- **Date Ordered Was Deliver**: changed format from Date9 to MONYY7 and year and also renamed to delivery date
- **Discount In Percent Of Normal Total Retail Price**: renamed to average discount and aggregate changed to average
- **Date Order Was Placed By Customer**: renamed to order date
- **Customer ID**-> right click-> new calculation-> Name: Number of customers, type: distinct count
- **Order ID**-> right click-> new calculation-> Name: Number of Orders, type: distinct count
- **Profit**-> right click-> duplicate-> rename as **Average Profit** -> change aggregation to average
- New data item-> custom category ->name: **Loyalty Member**, based on: loyalty number -> value group1: “No” -> drag and drop “00” -> value group2: “Yes” -> drag and drop “99”
- **State Name**-> classification changed from category to geography-> Name: US State name, Name or code context: **US State Names**
- **Postal Codes**-> classification changed from category to geography-> Name: US Zip code, Name or code context: **US Zip Codes**
- New data item-> hierarchy-> Name: **US hierarchy**-> selected items: US State name & US Zip code
- Order date-> duplicate-> rename as **Order Month**-> format changed to Month7
- Left panel-> data->actions-> apply data filter->character: customer country -> condition: Customer Country in United States

VISUALIZATION

Top 10 Cities By Number Of Orders

Type of graph: Bubble chart

X axis: Days To Delivery

Y axis: Number Of Orders

Size: Profit

Group: City Name

Right panel-> ranks-> new rank-> city name: top count, count: 10, by: Number Of Orders

Right panel->data roles-> animation-> Order Months

Profit And Number Of Orders By Month

Type of graph: Dual axis Bar chart

Category: Order Months

Measure: Number Of Orders, Profit

Sorted the graph in ascending order

Drop down list

left panel -> objects-> drop down list->category: City Name

right panel-> ranks->new rank-> city name: top count, count: 10, by: Number Of Orders

right panel-> actions->object links->order information by month-> link selection

Number Of Orders By Customer Type Name

Type of graph: Pie chart

Category: Customer Type Name

Measure: Number Of Orders

Button bar

left panel -> objects-> button bar->category: Order Type-> title: select an order type

Average Profit By State/Zip Code

Type of graph: Tree map

Size: Frequency

Colour: Average Profit

Profit By Location

Type of graph: Geo coordinate:

Geography: US Hierarchy

Colour: Average Profit

We can select a particular state by double clicking it or we can enter a specific location (top left corner of the map)

Correlation Of Selected Measures

Type of graph: Correlation matrix

Measures: Average Discount, Cost, Days To Delivery, Quantity Ordered, Retail Price

Strong corelation between cost and retail price-> right click-> new object from selection-> heat map

Frequency By Retail Price, Cost

Type of graph: Heat maps

Axis item: Retail Item, Cost

Colour: Frequency

A description is given below the chart when we expand it

Average Profit By Order Type

Type of graph: Bar chart

Category: Order Type

Measure: Average Profit

Group: Continent Name

Average Profit By Loyalty Membership

Type of graph: Bar chart:

Category: Customer Type Name

Measure: Average Profit

Group: Loyalty Member

Right panel-> options-> bar-> direction to vertical

Profit By Continent

Type of graph: Cross tab to bar chart

Rows: Order Type

Columns: Continent Name

Measure: Profit

Right panel-> options -> total and subtotal-> checked totals ->made totals as columns

Changed crosstab to bar chat

Right panel -> data roles-> remove order type from lattice column-> add order type to group

Right panel-> options -> title changed to profit by continent name -> change grouping style from clustered to stacked ->checked data labels

INSIGHTS

Our analysis is North America specific as we've applied a data filter on our CUSTOMERS_CLEAN dataset initially then on the entire world map

Dashboard:

Delivery Analysis

We can say that the highest profit was received in the month of December($322,888.79), and the number of orders(17,357).

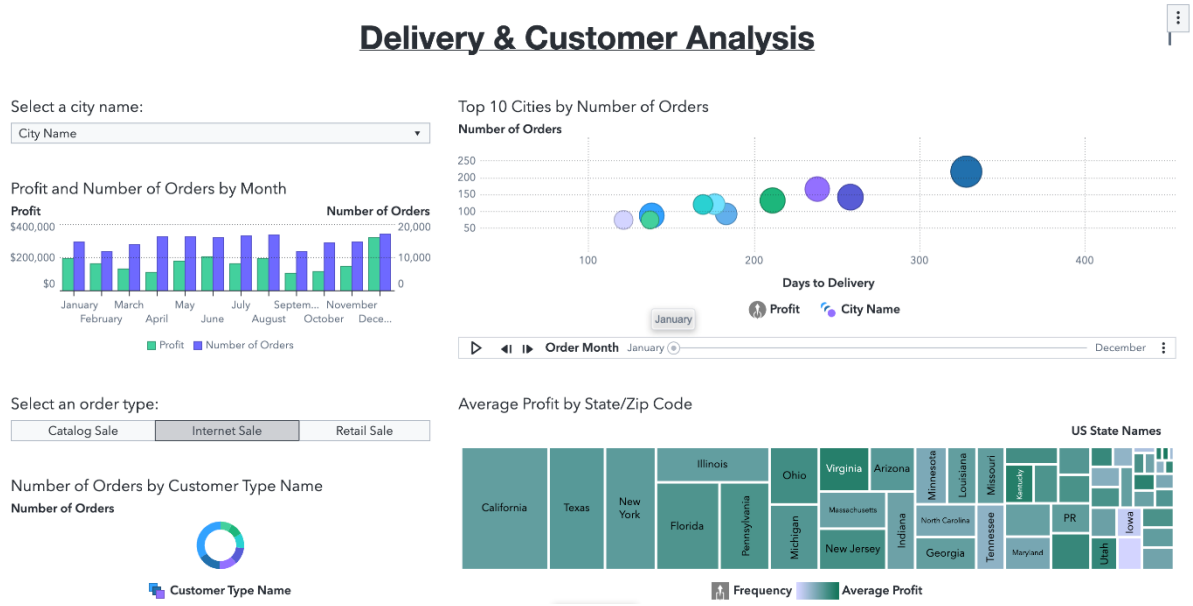


Figure 1: dashboard for delivery and customer analysis

We've created a bubble plot to track the movement of profits and number of orders of the top 10 cities across the duration of a year.

Both the graphs can also be used for specific cities as well.

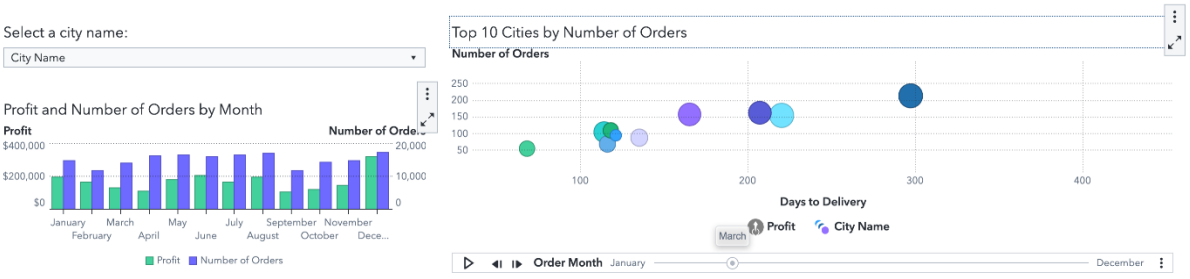


Figure 2: Delivery Analysis

Customer Analysis

By selecting an order type, we get to see a pie chart to show the number of orders per customer type name.

Also, a tree map showing the average profit per zip code and state.

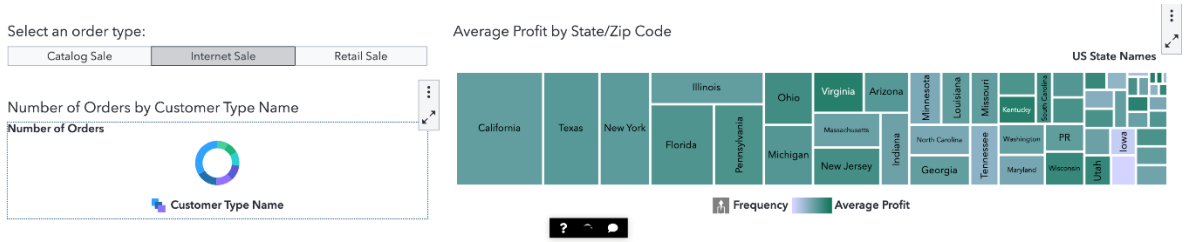


Figure 3: Customer Analysis

Profit by location

By using data item – US hierarchy, along with average profit shown in a gradient scale, it displays the average profit per US State. We've put a filter by selecting Texas as the state of focus. We've also put a tracker on Austin, Texas which displays the average profit per zip code within a 50-mile radius of the tracker.

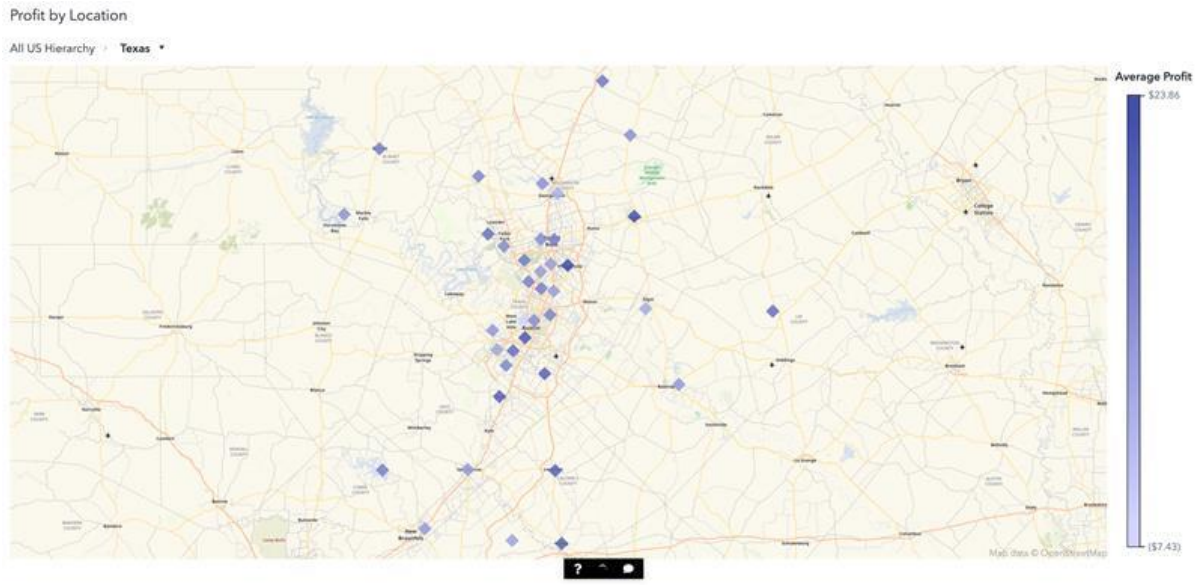
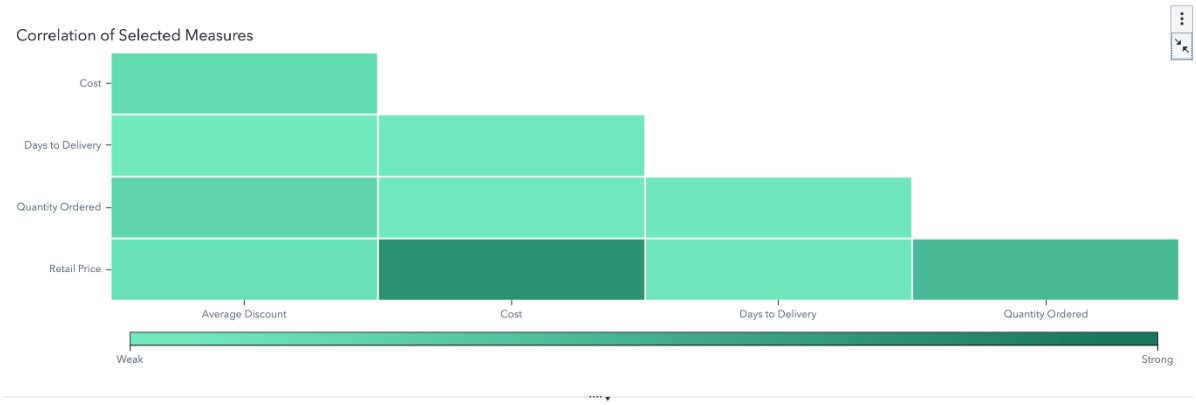


Figure 4: profit by location

Correlation and Heat Map:

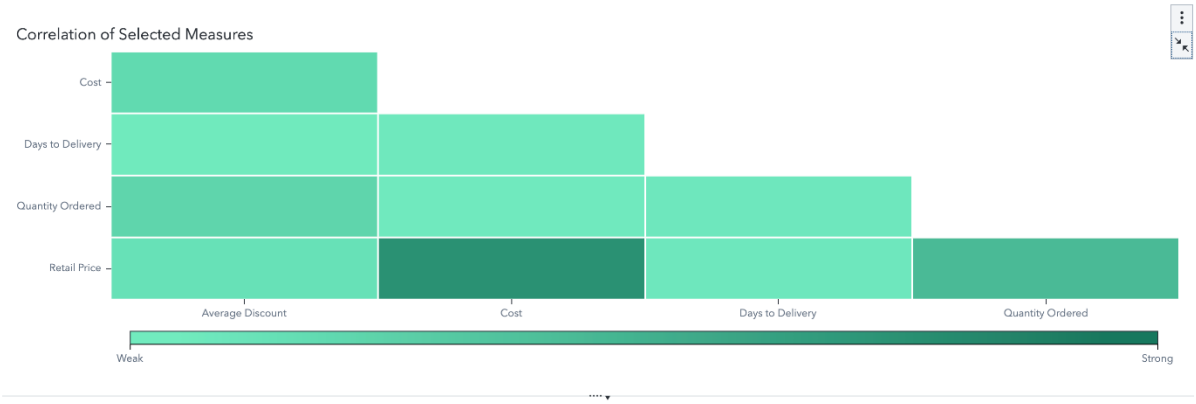
Here we've shown two graphs showing a correlation matrix and a heat map.



X Axis	Y Axis	Correlation
Average Discount	Retail Price	0.0915
Average Discount	Quantity Ordered	0.1922
Average Discount	Days to Delivery	-0.0041
Average Discount	Cost	0.1563
Cost	Retail Price	0.7790
Cost	Quantity Ordered	0.0101
Cost	Days to Delivery	0.0182
Days to Delivery	Retail Price	0.0263
Days to Delivery	Quantity Ordered	0.0294
Quantity Ordered	Retail Price	0.4268

Figure 5: correlation and heat map

A correlation matrix between variables is seen and a correlation value is assigned. Based on the cell in the correlation matrix which is represented by the strong corelation between cost and retail price.



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Days to Delivery	Retail Price	0.0263
Days to Delivery	Quantity Ordered	0.0294
Quantity Ordered	Retail Price	0.4268

Figure 6: correlation matrix

From the heat map we have created a cost analysis between retail price and cost. R-quare value generated is 0.6068 and a correlation coefficient is of 0.78

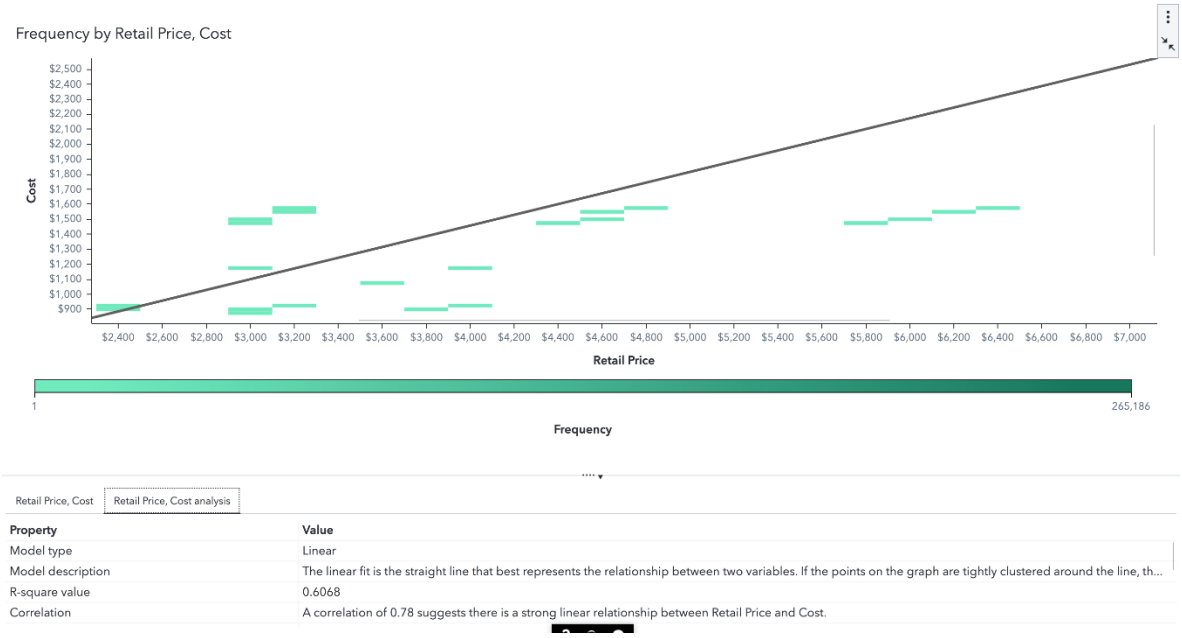

Figure 7: cost analysis

Average Profits:

Here we've shown two graphs that represent average profit by order type and if the customer has a loyalty membership or not for each continent

Looking at the bar chart we can infer that Africa is incurring losses for the order type of Internet Sales. And maximum profit is generated by Asia in catalog sales

In this bar chart we have divided the customers into loyalty members or not and profit generated by each category.

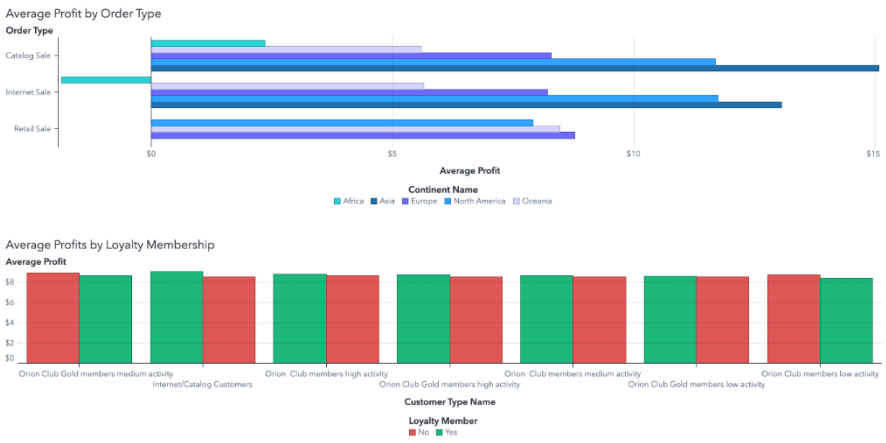

Figure 8:Average Profit

Profit by Continent Name:

A stacked bar graph is used to show profit in each continent and each order type. We can see that retail sales have performed the best in order type and the profit is maximum in Europe continent and Africa is incurring loss hence its on the other side of the y axis

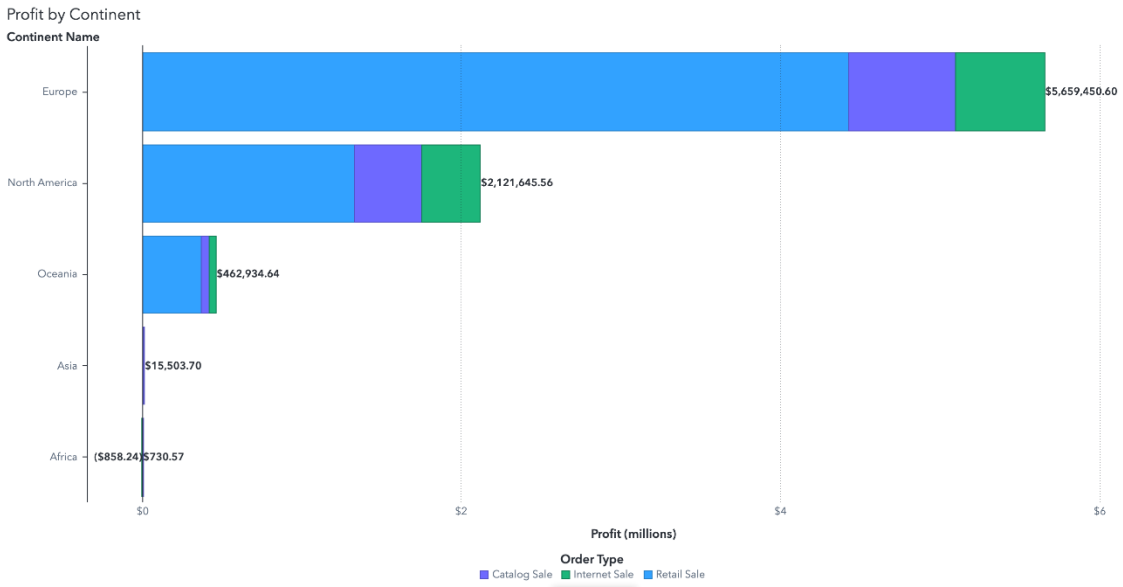

Figure 9: profit per continent

Conclusion

Successfully implemented SAS Viya Learner by creating a dashboard and report for the data set CUSTOMERS_CLEAN. We have also stated our insights for the same. Please find the report of SAS Viya learner attached below.