Lab Exercise 1

1. Analysis:
   1. Completeness – There are no missing values but there could be additional data like target KPIs to determine the performance gap for each aggregate KPI.
   2. Inconsistencies – Columns like Sales, Quantity, Discount, Profit are entered as strings and not as floats. Postal codes are also not encoded as strings.
   3. Redundancies – There are redundancies in the order number that will cause an issue without specifying row ID as the primary key.
   4. Duplicates – There are no true duplicates for each entry, but some columns will have the same value such as order id, order and ship date, customer, segments.
2. Target Audience
   1. **Operational Report**

*Assumptions:*

The target audience for the operational reports are the **regional managers** and **store-level staff** who are responsible for day-to-day activities.

Each target audience will only be interested in their own area of responsibility; i.e., the South Regional Manager will only focus on South Region.

The target audience is focused on **detailed information** on sales, quantity, product categories for their respective area of responsibility.

*Intended Use:*

These reports will focus on **performance monitoring** by providing information on sales and profitability for each city in their respective regions, **decision making** by identifying underperforming stores and categories, **resource allocation** by showing which stores need more staffing and inventory, and **problem solving** by showing which orders and categories are more likely to be returned.

* 1. **Executive Report**

*Assumptions:*

The target audience for the executive reports are the **senior executives** and **board directors.**

The target audience is focused on **high-level** data analysis such as sales and profit trends, regional performance, and opportunities for growth.

*Intended Use:*

These reports will focus on high level **performance monitoring** by providing information on sales and profitability on a regional level and on a periodical basis, **decision making** by identifying underperforming regions and sales trends, **resource allocation** to assist understaffed regions, and **problem solving** to elevate underperforming regions.

1. Context and Additional Assumptions
   1. Operational Report
      1. Cost Column
      2. Sales by Category
      3. Sales by Product
      4. Shipment Time
   2. Executive Report
      1. MoM Profit %
      2. MoM Sales %
      3. YoY Profit %
      4. YoY Sales %
      5. Sales Forecast
2. Operational and Executive Reports
   1. **Operational Report**

The operational report will contain aggregate KPIs based on each regional manager’s area of responsibility. These reports will provide critical information to help the managers make informed decisions and manage their regions effectively.

**KPIs:**

Sales - Revenue generated

Quantity – number of items in the order

Profit – Sales - Cost

Returned Order – Returns “Yes” if the order has been returned by the customer

Ship Mode – Type of shipping method for orders ranging from same-day to standard class of which same-day is the fastest and standard is the slowest

Segment – A class of whom the order is placed by

Category – The type of ordered product

* 1. **Executive Report**

The executive report will contain aggregate company KPIs. This will include all the information from all regions and will provide high level understanding of the current company performance to assist in decision making for

**KPIs:**

Sales - Revenue generated

Quantity – number of items in the order

Profit – Sales - Cost

Returned Order – Returns “Yes” if the order has been returned by the customer

Ship Mode – Type of shipping method for orders ranging from same-day to standard class of which same-day is the fastest and standard is the slowest

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YoY Profit % - % Change in year-on-year profit for each aggregate.

YoY Sales % - % Change in year-on-year percent difference on sales for each aggregate.

MoM Profit % - % Change in month-on-month profit for each aggregate.

MoM Sales % - % Change in month-on-month percent difference on sales for each aggregate.

Forecast Sales – A linear regression ML algorithm to predict future sales value

Forecast Sales % Difference - % difference on actual vs forecasted sales numbers

1. Empty Templates
   1. Operational Reports

Sales and Profit per City

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| City | Category | Sub Category | Sales | YoY Sales % | Profit | YoY Profit % | Returned % |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Order Fulfillment and Ship Method Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| City | Order Date | Order Shipment | Shipment Time | Shipment Method |
|  |  |  |  |  |
|  |  |  |  |  |

* 1. Executive Reports

Monthly Sales and Profit Reports

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Region | Sales | MoM Sales % | Profit | MoM Profit % | Forecast Sales |
| North |  |  |  |  |  |
| East |  |  |  |  |  |
| West |  |  |  |  |  |
| South |  |  |  |  |  |

Yearly Sales and Profit Reports

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Region | Sales | YoY Sales % | Profit | YoY Profit % | Forecast Sales |
| North |  |  |  |  |  |
| East |  |  |  |  |  |
| West |  |  |  |  |  |
| South |  |  |  |  |  |