**e2E Rail Task:**

Dataset - inventory and sales data

Task: data analysis, visualization, and reporting

1)Excel Analysis

sub task:

-->Pivot tables summarizing key metrics

-->eg:total sales by product category

-->eg:stock levels by date

-->At least two charts

-->eg:a bar chart for sales

-->eg:a line chart for inventory trends

2)Power BI Dashboard

sub task:

-->summarizing the data (At least 3 visualizations)

-->a bar chart, a pie chart, and a slicer for filtering by category or date

3)Word Report

sub task:

-->1-2 pages in Microsoft Word explaining your findings from the analysis and dashboard

(eg: Highlight key insights top-selling products, low-stock items)

4)PowerPoint Presentation

-->3-slide PowerPoint presentation summarizing the dashboard insights

-->Slide 1: Overview of the dataset and key metrics.

-->Slide 2: Visuals from your Power BI dashboard.

-->Slide 3: Recommendations based on your analysis (e.g., restocking priorities).

Deadline: 10 AM 21/05/2025

**Given Data features:**

Product\_ID

Product\_Name

Catagory

Supplier\_ID

Supplier\_Name

Stock\_Quantity

Reorder\_Level

Reorder\_Quantity

Unit\_Price

Date\_Received

Last\_Order\_Date

Expiration\_Date

Warehouse\_Location

Sales\_Volume

Inventory\_Turnover\_Rate

Status

TOTAL FEATURE : 15 columns

**Data cleaning and preparation**

1)checking duplicates, null, blank, type of each column

2)classify numeric and non-numeric features

3)Understand which feature is needed for analysis, remove unnecessary columns, extract new columns.

**CATEGORY FEATURE :**

1)Product\_Name

2)Catagory

3)Supplier\_Name

4)status

5)new column : Inventory\_Performance\_Category

6)new column : Inventory\_Risk\_Assessment

7)new column : Shelf Life Status

8)Warehouse\_Location -- not needed (unique values)

**NUMERICAL FEATURE:**

1)Stock\_Quantity

2)Reorder\_Level

3)Reorder\_Quantity

4)Unit\_Price

5)Sales\_Volume

6)new column : Shelf life (expiration date - date received) there are many values coming under negative ,some expiration date is before date received for each product

8)Inventory\_Turnover\_Rate -- not needed (used as extracting feature)

9)Product\_ID -- not needed (unique values)

10)Supplier\_ID -- not needed unique value (when we used as extracting feature) Supplier\_ID : 38-037-1699

can take Region code (38) as region category

--> we can get 38 but without confirmation of what 38 means, we can't use this. There 100 unique value but when we filter from supplier name,it is 350 unique value, logically we can't use this feature

**DATE FEATURE:**

1)Date\_Received

2)Last\_Order\_Date

3)Expiration\_Date

Turnover Rate Inventory\_Performance\_Category Inventory\_Risk\_Assessment

1–29 Slow-moving stock risk of expiry

30–80 Healthy movement ideal range

80–100 Fast-moving stock watch for stockouts

**New data** ,

Numerical features -

stock quantity,re-order level,re-order quantity,unit price,sales volume

Categorical features -

Product name,product category,supplier name,inventory performance category,investment risk assessment category,status,shelf life status,Predicted\_Status,Status

Date features-

Date received,expiration date, last order date

**Did Analysis in these areas:**

Overstocking,bought too much

Low demand,customers don’t want it

Old/outdated items based on expiration date

It ties up our money,cash stuck in stock

We may need storage space or pay warehousing costs.

Risk of damage, expiry

If we’re not careful, customers may go to competitors.