**Project Summary: Quality Control Dashboard**

**Objective**

The goal of this project was to build a **Power BI dashboard** for monitoring production quality and identifying key defect trends. The Production Manager wanted an interactive tool to:

* Track the **overall defect rate**.
* Identify **top 5 defective products**.
* Monitor if the defect rate is **improving or worsening over time**.
* Compare defect counts by **production line and inspector**.

**Data Used**

Two datasets were provided:

* **production\_data** – Contains ProductID, BatchID, Date, and Status (Pass/Fail).
* **batches\_data** – Contains BatchID, ProductionLine, and InspectorName.

**Data Modeling**

* Relationship created: production\_data[BatchID] → batches\_data[BatchID].
* A separate **Date Table** (DateTable1) was created using DAX:

DateTable1 =

ADDCOLUMNS (

CALENDAR ( MIN ( production\_data[Date] ), MAX ( production\_data[Date] ) ),

"Year", YEAR ( [Date] ),

"Month Number", MONTH ( [Date] ),

"Month Name", FORMAT ( [Date], "MMMM" ),

"Month-Year", FORMAT ( [Date], "MMM-YYYY" ),

"Quarter", "Q" & FORMAT ( [Date], "Q" )

)

**DAX Measures**

1. **Overall Defect Rate**

Overall Defect Rate =

DIVIDE (

COUNTROWS ( FILTER ( production\_data, production\_data[Status] = "Fail" ) ),

COUNTROWS ( production\_data ),

0

)

1. **Defective Items**

Defective Items =

COUNTROWS ( FILTER ( production\_data, production\_data[Status] = "Fail" ) )

1. **Daily Defect Rate**

Daily Defect Rate =

DIVIDE (

COUNTROWS ( FILTER ( production\_data, production\_data[Status] = "Fail" ) ),

COUNTROWS ( production\_data ),

0

)

1. **Monthly Trend (Difference)**

Monthly Trend =

VAR CurrentMonth = [Overall Defect Rate]

VAR PrevMonthValue =

CALCULATE ( [Overall Defect Rate], PREVIOUSMONTH ( DateTable1[Date] ) )

RETURN

CurrentMonth - PrevMonthValue

1. **Monthly Trend % (Percentage Change)**

Monthly Trend % =

VAR CurrentMonth = [Overall Defect Rate]

VAR PrevMonthValue =

CALCULATE ( [Overall Defect Rate], PREVIOUSMONTH ( DateTable1[Date] ) )

RETURN

DIVIDE ( CurrentMonth - PrevMonthValue, PrevMonthValue )

**Visualizations in Dashboard**

* **Card** → Overall Defect Rate (6%).
* **Clustered Bar Chart** → Top 5 products by defect count.
* **Line Chart** → Trend of defect rate over time (using Month-Year).
* **Table/Matrix** → Defect counts by ProductionLine and InspectorName.
* **Slicer** → Date range filter for interactivity.

**Key Insights**

* The **Overall Defect Rate** gives a quick quality KPI.
* The **Top 5 Products Chart** highlights which products contribute most to defects.
* The **Line Chart** shows whether quality is **improving or deteriorating over time**.
* The **Table/Matrix** helps pinpoint issues linked to **specific lines or inspectors**.
* The **Monthly Trend %** measure helps track **month-to-month improvement or decline**.

Top of Form

Bottom of Form