

Sales & Customer Performance Analytics (E-Commerce)

◆ STEP 1: BUSINESS UNDERSTANDING (FOUNDATION)

What you must understand first

Power BI is **not about charts**, it is about **business decisions**.

Business Scenario

An **E-Commerce company** wants answers to these questions:

- How much **sales and profit** are we making?
- Are sales **growing or declining**?
- Which **products** perform best?
- Which **customers** generate the most revenue?
- Which **regions** contribute maximum sales?
- How is this month / year performing compared to **last year**?

Final Goal

Create an **interactive dashboard** that management can use to:

- Track KPIs
 - Identify problems
 - Take decisions
-

◆ STEP 2: DATASET UNDERSTANDING (VERY IMPORTANT)

Tables Used in This Project

1 Sales Table (FACT TABLE)

- Contains **transaction-level data**
- Each row = one order
- Used for calculations (Sales, Profit, Quantity)

2 Customers Table (DIMENSION)

- Contains customer details
- Used for slicing and grouping sales

3 Products Table (DIMENSION)

- Contains product details
- Used for product-level analysis

Key Teaching Point

In real projects, **fact and dimension tables are always separate**
This is called **Star Schema**

◆ STEP 3: LOADING DATA INTO POWER BI

Actions in Power BI

1. Open **Power BI Desktop**
2. Click **Get Data → Excel**
3. Select the dataset file
4. Select:
 - ☐ Sales
 - ☐ Customers
 - ☐ Products
5. Click **Transform Data**

Why “Transform Data”?

Because:

- Raw data is never perfect
 - Cleaning is mandatory
 - Direct loading causes wrong results
-

◆ STEP 4: POWER QUERY – DATA CLEANING

Sales Table

Check and explain:

- OrderDate → Date type
- SalesAmount, Profit, Discount → Decimal
- Quantity → Whole number
- No blank OrderID

Customers Table

- CustomerID should not be blank
- Age → Whole number
- SignupDate → Date

Products Table

- CostPrice, SellingPrice → Decimal
- ProductID must be unique

Final Action

Click **Close & Apply**

Explain to students:

“Bad data = wrong dashboard = wrong decisions”

◆ STEP 5: WHY DATE TABLE IS REQUIRED

Problem Without Date Table

Power BI's default date:

- Breaks YTD / MTD / QTD
- Gives incorrect time comparison

What Date Table Solves

- Correct time intelligence
- Consistent date filtering
- Accurate YoY growth

Rule: **Every professional Power BI project has a Date Table**

◆ STEP 6: CREATE DATE TABLE (DAX)

Create New Table

DataTable =

```
ADDCOLUMNS(
    CALENDAR ( MIN(Sales[OrderDate]), MAX(Sales[OrderDate]) ),
    "Year", YEAR([Date]),
    "Month", FORMAT([Date], "MMM"),
    "Month No", MONTH([Date]),
    "Quarter", "Q" & FORMAT([Date], "Q"),
    "Year-Month", FORMAT([Date], "YYYY-MM"),
    "Week No", WEEKNUM([Date]),
    "Day", DAY([Date]),
    "Day Name", FORMAT([Date], "DDD"),
    "Is Weekend", IF(WEEKDAY([Date],2)>5,"Yes","No")
)
```

Mandatory Step

- Select DataTable
 - Click **Mark as Date Table**
 - Choose Date column
-

◆ STEP 7: DATA MODELING (MOST CRITICAL STEP)

Relationships to Create

From (Many) **To (One)**

Sales[CustomerID] Customers[CustomerID]

Sales[ProductID] Products[ProductID]

Sales[OrderDate] DataTable[Date]

Relationship Settings

- Cardinality: **Many to One**
- Filter direction: **Single**
- Active: Yes

Explain to Students

- Fact table stays in center
- Dimension tables connect around it
- This is **Star Schema**

◆ STEP 8: MEASURES VS CALCULATED COLUMNS

Calculated Column

- Calculated row by row
- Stored in memory
- Not dynamic

Measure

- Calculated at runtime
- Reacts to slicers
- Used for KPIs

Rule: **Always use Measures for KPIs**

◆ STEP 9: CREATE BASE MEASURES

Total Sales = SUM(Sales[SalesAmount])

Total Profit = SUM(Sales[Profit])

Total Orders = DISTINCTCOUNT(Sales[OrderID])

Total Quantity = SUM(Sales[Quantity])

Total Customers = DISTINCTCOUNT(Customers[CustomerID])

Explain business meaning of each measure.

◆ STEP 10: BUSINESS KPI MEASURES

Average Order Value =

DIVIDE([Total Sales], [Total Orders])

Profit Margin % =

DIVIDE([Total Profit], [Total Sales])

Returned Orders =

CALCULATE(

[Total Orders],

Sales[OrderStatus] = "Returned"

)

Explain:

- Why management tracks KPIs
- Why percentages matter more than totals

◆ STEP 11: TIME INTELLIGENCE MEASURES

YTD Sales =

TOTALYTD([Total Sales], DateTable[Date])

MTD Sales =

TOTALMTD([Total Sales], DateTable[Date])

QTD Sales =

TOTALQTD([Total Sales], DateTable[Date])

Last Year Sales =

CALCULATE(
 [Total Sales],
 SAMEPERIODLASTYEAR(DateTable[Date])
)

Sales Growth % =

DIVIDE(
 [Total Sales] - [Last Year Sales],
 [Last Year Sales]
)

Explain with **real-life examples** (salary, expenses, growth).

◆ STEP 12: ADVANCED DAX (INTERVIEW IMPORTANT)

Product Rank =

RANKX(
 ALL(Products[ProductName]),
 [Total Sales]
)

Selected Region =

SELECTEDVALUE(Customers[Region], "All Regions")

Explain:

- CALCULATE changes filter context
 - RANKX for Top/Bottom analysis
 - SELECTEDVALUE for dynamic titles
-

◆ STEP 13: DASHBOARD – PAGE 1 (EXECUTIVE SUMMARY)

Purpose

Quick business health check

Visuals

- KPI Cards:
 - Total Sales
 - Total Profit
 - Total Orders
 - Total Customers
 - Profit Margin %
 - Line chart: Sales trend
 - Slicers: Date, Region, Category
-

◆ STEP 14: DASHBOARD – PAGE 2 (SALES ANALYSIS)

Visuals

- Sales by Category (Bar chart)
- Sales by Region / State
- Channel-wise Sales
- Monthly Sales Trend

Business Question

“Where is revenue coming from?”

◆ STEP 15: DASHBOARD – PAGE 3 (CUSTOMER ANALYSIS)

Visuals

- Top Customers
- Customer Segment vs Sales
- Average Order Value by Region

Business Question

“Who are our best customers?”

◆ STEP 16: DASHBOARD – PAGE 4 (PRODUCT PERFORMANCE)

Visuals

- Top & Bottom Products
- Profit vs Discount
- Brand contribution

Business Question

“Which products need attention?”

◆ STEP 17: INTERACTIVITY

- Add slicers to all pages
 - Enable cross-filtering
 - Create drill-through page
 - Add tooltips
 - Use dynamic titles
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◆ STEP 18: VALIDATION CHECKLIST

- ✓ KPIs match across pages
 - ✓ Slicers affect visuals
 - ✓ Time intelligence works
 - ✓ No inactive relationships
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◆ STEP 19: PUBLISH TO POWER BI SERVICE

1. Click **Publish**
2. Select workspace
3. Create dashboard
4. Pin visuals
5. Schedule refresh
6. Share with users