

## Sales & Customer Performance Analytics (E-Commerce)

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### ◆ 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

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### ◆ 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**

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### ◆ 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
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### **◆ 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”

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### **◆ 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**

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#### ◆ STEP 6: CREATE DATE TABLE (DAX)

##### Create New Table

```
DateTable =  
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 DateTable
  - Click **Mark as Date Table**
  - Choose Date column
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#### ◆ STEP 7: DATA MODELING (MOST CRITICAL STEP)

##### Relationships to Create

**From (Many)      To (One)**

Sales[CustomerID] Customers[CustomerID]

Sales[ProductID] Products[ProductID]

Sales[OrderDate] DateTable[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**
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#### ◆ **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**

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#### ◆ **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.

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#### ◆ **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
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#### ◆ 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).

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#### ◆ 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
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◆ 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
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◆ 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?”

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◆ 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?”

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

**Visuals**

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

## **Business Question**

“Which products need attention?”

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### ◆ **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