

DATE - 18TH AUG - 2025

PURPOSE - WE ARE GOING TO TAKE IMPORTANT AND INFORMED BUSINESS DECISIONS BASED ON TRENDS PATTERNS AND PERFORMANCES

BI - IS THE PROCESS OF TAKING IMPORTANT AND INFORMED BUSINESS DECISION BASED ON THE INSIGHTS WE GET FROM OUR DATA ANALYSIS IS BUSINESS INTELLIGENCE

DATA - RAW FACTS THAT ARE CLUBBED TOGETHER THAT CAN BE STORED , PROCESSED AND ANALYZED

STRUCTURED DATA - FIXED SCHEMA - RDBMS.

SEMI STRUCTURED DATA - FLEXIBLE SCHEMA - XML , CSV

UNSTRUCTURED DATA - NO SCHEMA - IMAGES , AUDIO . VIDEO

STORAGE OPTIONS :

DATA WAREHOUSE - STR DATA

DATA LAKEHOUSE : UNSTRUCTURED DATA

DATA MART - STR

MICROSOFT POWER PLATFORM :

IT IS A LOW CODE/ NO CODE PLATFORM WHICH HELPS IN SOLVING BUSINESS PROBLEMS

5 SERVICES

1. POWER APPS : INTERNAL USERS - POWER FX

2. POWER AUTOMATE : AUTOMATIG YOUR REPETITIVE TAKS , REDUCE THE CHANCES OF HUMAN ERROR
3. POWER PAGES : EXTERNAL FACING WEBSITES.
4. POWER BI: PERFROMING DATA ANALYSIS , IDENTIFYING TRENDS AND PATTERNS . DAX - DATA ANALYSIS EXPRESSION (LOW CODE)
5. MICROSOFT COPILOT STUDIO : OWN CUSTOM CHATBOT / AGENT .

PL-900 : POWER PLATFROM FUNDAMENTALS - 8 HRS- FUNDAMENTAL

PL-200 - POWER PLATFORM FUNCTIONAL CONSULATANT - 40 HRS - 5 DAYS - ASSOCIATE

PL-300 - POWER BI - 24 HRS - 3 DAYS

PL-400 - POWER PLATFROM DEVELOPER - 40 HRS - 8 HRS 5 DAYS

PL-500 - POWER AUTOMATE RPA DEVELOPER - 40 HRS

PL-600 POWER PLATFROM SOLUTION ARCHITECT - EXPERT

5 MAIN TASKS AS A DATA ANALYST IN POWER BI :

1. PREPARE : RAW DATA -- LOAD , EXPLORE (UNDERSTANDING THE DATA) , TRANSFORM DATA (CLEANING , SHAPING OF DATA)
2. MODEL - CREATE SCHEMA - FACT , DIMENSION - CREATE RELATIONSHIPS B/W THEM , DETERMING CFD , CARDINALITY , CREATE HIERARCHY - DAX , VISUAL CALCUALTION
3. VISUALIZE - EFFECTIVE USE OF VISUALS , FORMATTING , LAYOUT , ENHANCE THE REPORT FOR USER EXPERIENCE

4. ANALYZE - IDENTIFY TRENDS AND PATTERNS , ANALYZE AND SUMMARIZE , GROUPING AND BINNING OF DATA , ADV AI VISUALS.
5. MANAGE - SHARING YOUR REPORT AND DASHBOARD TO END USERS, WORKSPACE - PUBLISH , RLS , SCHEDULE REFRESH.

COMPONENETS OF POWER BI :

POWER BI DESKTOP : P , M , V , A - FREE OF COST .

POWER BI SERVICE : V , A , MANAGE - PRO / PREMIUM

WEB BASED SERVICE.

POWER BI MOBILE: IT IS ONLY FOR CONSUMPTION OF REPORT AND DASHBOARD - READ ONLY.

REPORT AND DASHBOARD :

REPORTS :

MULTIPLE PAGES OF VISULIZATION .

IT IS GENERALLY CREATED IN POWER BI DESKTOP

REPORTS HAS ITS OWN VISUALS

IT IS INTERACTIVE

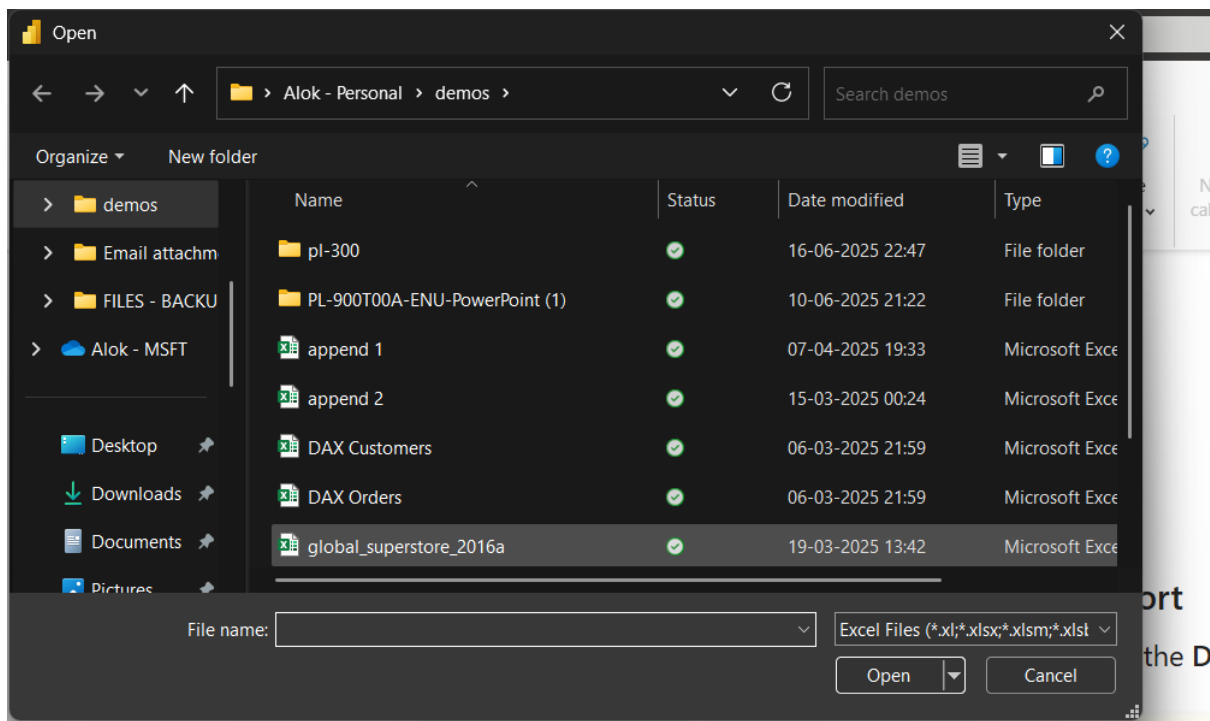
DASHBOARDS :

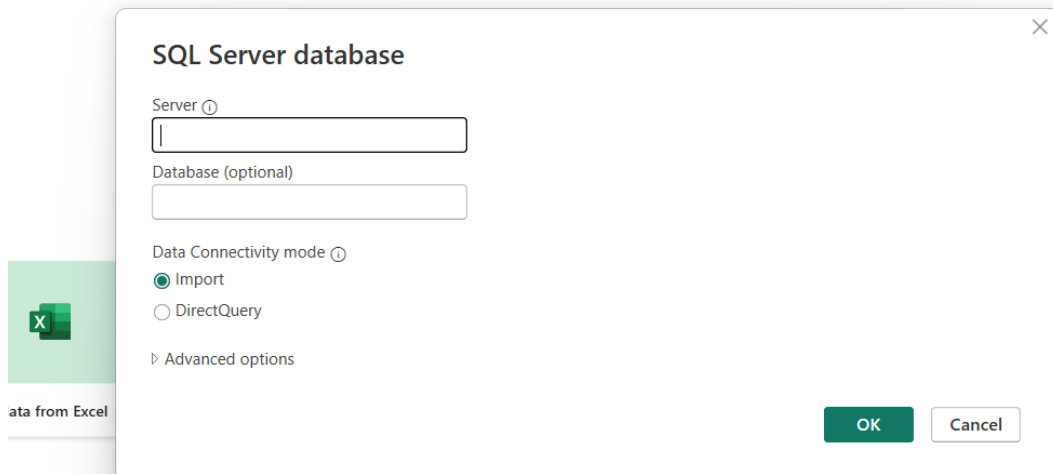
SINGLE OF VISUALIZATION

IT IS ONLY CREATED IN POWER BI SERVICE.

DASHBOARD DOES NOT HAVE ITS OWN VISUALS - IT TAKES ALL THE VISUALS FROM ONE OR MORE REPORT

IT IS NOT INTERACTIVE (STATIC)





IMPORT : 1. FASTER PERFORMANCE

2. ALL DATA SOURCE SUPPORTS IMPORT MODE

3. IT SUPPORTS ALL THE TRANSFORMATIONS AND DAX FUNCTIONS

DISADVANTAGES :

1. SMALLER DATASETS .

PRO - 1GB OF DATA

2. PREMIUM - 10GB

3. YOU WILL NOT GET REFRESHED DATA

DIRECT QUERY :

1. WE CAN WORK WITH LARGE DATASETS

2. WE WILL GET REFRESHED DATA ALWAYS

DISADVANTAGES :

1. SLOWER PERFORMANCE

2. LIMITED TRANSFORMATIONS .

3. ALL DATA SOURCES DOES NOT SUPPORT DIRECT QUERY .

1. Import Mode

Power BI's **Import** mode is supported by **all** data connectors. By default, regardless of the source type—be it files, databases, cloud services, or online platforms—Power BI can import the data into its in-memory model for full-feature modeling and transformations. [Microsoft Learn+1](#)

2. DirectQuery Mode

Not all data sources allow DirectQuery. Below is a comprehensive list of sources known to support DirectQuery,

Supported DirectQuery Sources (latest list):

- Amazon Athena
- Amazon OpenSearch Service (Beta)
- Amazon Redshift
- Azure Cosmos DB v2 (Beta)
- Azure Databricks
- Azure Data Explorer (Kusto)
- Azure HDInsight on AKS Trino (Beta)
- Azure Synapse Analytics (SQL DW)
- Azure SQL Database
- Databricks
- Dataflows
- Dataverse
- Denodo
- Essbase
- Google BigQuery
- Google BigQuery (Microsoft Entra ID) (Beta)
- Hive LLAP
- IBM Db2 database
- Impala database
- KQL Database (Preview)

- OpenSearch Project (Beta)
- Oracle database
- Palantir Foundry
- PostgreSQL
- SAP Business Warehouse (Application Server & Message Server)
- SAP HANA database
- SingleStore
- Snowflake
- SQL Server
- Teradata database
- TIBCO® Data Virtualization

3. Dual Mode

Dual mode is **not tied to specific connectors**. Instead, it's a **table-level configuration** within Power BI. Once you connect via Import or DirectQuery, you can designate a table as **Dual**, allowing it to operate either from cache or live, depending on the query context

4. Direct Lake Mode

Direct Lake is a specialized mode available within the **Fabric** ecosystem—specifically when using delta-formatted data (e.g., Parquet) stored in OneLake (Fabric's lakehouse). This mode allows querying via the VertiPaq engine directly on the lake data, without full import. It's only applicable to Fabric artifacts like **Lakehouses** or **Warehouses**.

Summary Table

Mode	Supported Data Sources
Import	All Power BI connectors (files, databases, cloud services, etc.) Microsoft Learn+1
DirectQuery	Amazon Athena; Amazon OpenSearch (Beta); Amazon Redshift; Azure Cosmos DB v2 (Beta); Azure Databricks; Azure Data Explorer (Kusto); Azure HDInsight on AKS Trino (Beta); Azure Synapse Analytics; Azure SQL DB; Databricks; Dataflows; Dataverse; Denodo; Essbase; Google BigQuery; Google BigQuery (Microsoft Entra ID) (Beta); Hive LLAP; IBM Db2; Impala; KQL DB (Preview); OpenSearch (Beta); Oracle; Palantir Foundry; PostgreSQL; SAP BW (App/Msg Servers); SAP HANA; SingleStore; Snowflake; SQL Server; Teradata; TIBCO DV Coupler.io Blog

Dual Any source that supports Import or DirectQuery—configurable per table in composite models. [SkypointRADACAD](#)

Direct Lake Only data stored in Fabric Lakehouses/Warehouses (delta tables in OneLake) using Fabric's lake infrastructure.



Fact: events , activities

a fact table stores measurable values , quantative data (numbers you analyze like sales , profit , quantity)

foreign key

Dimension : provides the detailed context , entities - primary key

a dimension table provides descriptive data of fact tables like

1-m and m-1 is best way to handle to handle in pbi

we should avoid having m-m , it is complex to handle , there are chances it might give unexpected results .

Circular schema:

power bi will give you a error that there is a circular schema

error = ambiguity

table a --- table b ----- table c----- table a

the power bi has one or more way to get from one table to another , cause ambiguity in filtering and aggregations

pbi will not know which path to take when performing calculation or filtering

1. Incorrect or unexpected results
2. Performance degradation
3. It automatically blocks circular relationships

How to fix:

1. Re- design the data model
2. Use 1-m or m-1 cardinality
3. Avoid CFD filter AS BOTH unless needed
4. Use dax (userelationship) function for managing inactive relationships when needed.

CREATE DAX CALCULATION IN SEMANTIC MODEL:

DAX - DATA ANALYSIS EXPRESSIONS

CALCULATED MEASURES:

IMPLICIT MEASURE

EXPLICIT MEASURE

QUICK MEASURE

CALCULATED COLOUMNS:

CALCULATED TABLES:

MEASURES :

1. THE VALUE OF MEASURE IS NOT STORED IN PBI FILE
2. VALUE OF MEASURE IS CALCULATED ON DEMAND

3. THEY RETURN SINGLE AGGREGATED VALUE (IF NOT PLOTTED AGAINST ANY CONTEXT)

$\text{SUM ORDERS SALES} * \text{QUANTITY} + \text{SHIPPING COST} - \text{DISCOUNT} = \text{TOTAL SALES}$

EXPLICIT MEASURE : WHERE WE EXPLICITLY WRITE DOWN FORMULA FOR OUR MEASURE ALSO KNOWN AS CALCULATED MEASURE & DENOTED BY A CALCULATOR SIGN

IMPLICIT MEASURE : IMPLICIT IS DONE BY PBI ITSELF WE DON'T WRITE ANY FORMULA IN THIS , FOR NUMERICAL DATA BASICALLY

DENOTED BY SIGMA ICON

QUICK MEASURE : SIMILAR TO EXPLICIT ONLY , BUT WE DON'T WRITE FORMULA ON OUR OWN - WE MAKE USE OF UI TO WRITE FORMULAS , IT IS ALSO DENOTED BY CALCULATOR ICON .

CALCULATED COLOUMN :

1. VALUE IS STORED IN PBI FILE.
2. THE VALUE IS RECALCULATED WHEN YOU DO DATA REFRESH .
3. THEY PERFORM ROW WISE OPERATION .
4. It is denoted by table + sigma icon

```
1 MEASUREDEMO = SUM(Orders[Sales]) * SUM(Orders[Quantity]) + SUM(Orders[Shipping Cost]) - SUM(Orders[Discount])
```

Measure	Formatting	Properties	Sort
1 Ctotalamount = Orders[Sales] * Orders[Quantity] + Orders[Shipping Cost] - Orders[Discount]			
Product Name		Sales	Quantity
		Discount	Pi

CALCULATED TABLES : DENOTED BY TABLE AND A CALCULATOR ICON

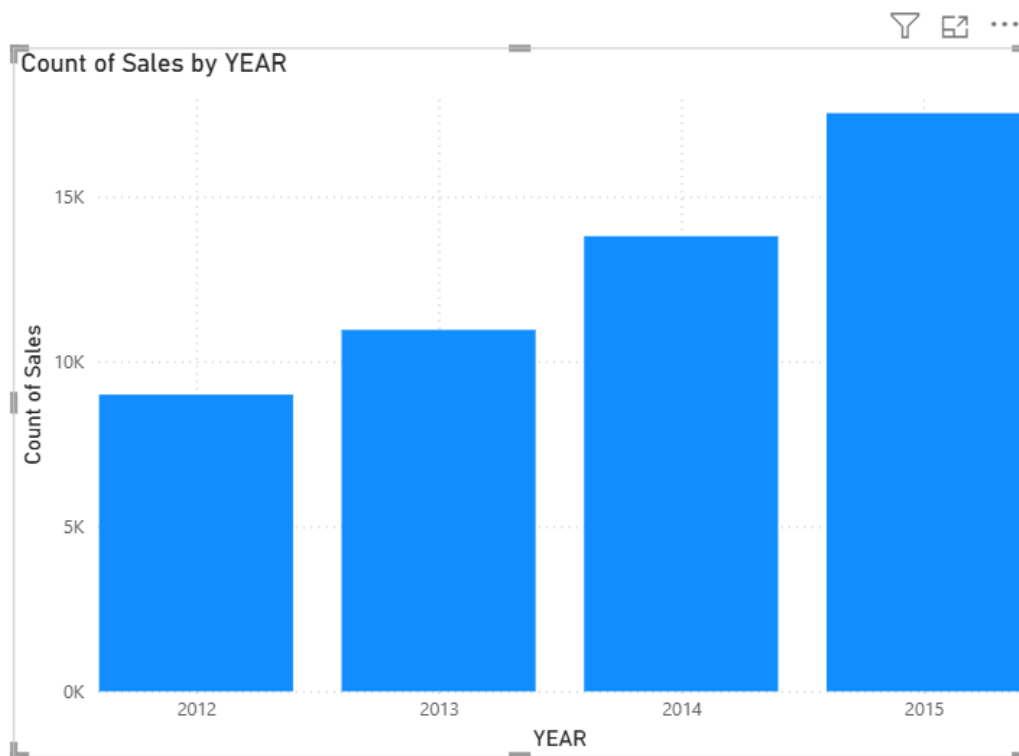
IT WILL ALSO GET STORED IN YOUR PBI FILES - INCREASE THE FILE SIZE

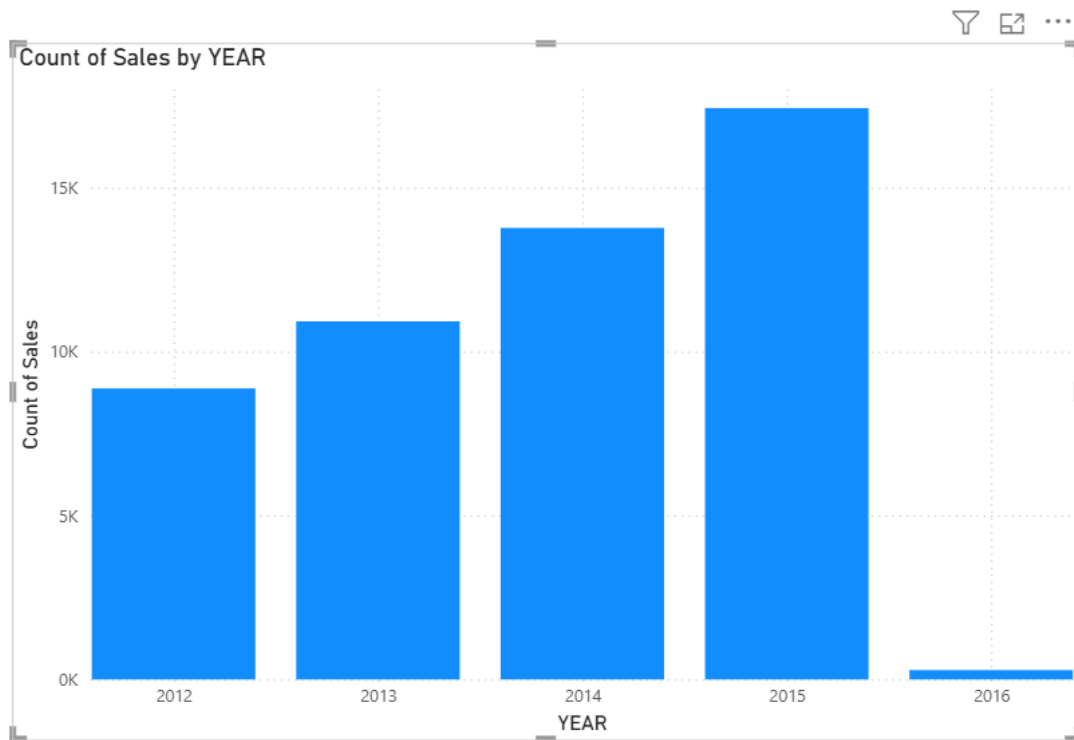
Dates - 12 june - 2012
16th sept 2016

demo date table = CALENDAR(DATE(2024,06,05), DATE(2025,04,03))

Ctotalamount = Orders[Sales] * Orders[Quantity] + Orders[Shipping Cost] - Orders[Discount]

Date Table = CALENDARAUTO()





Msalesfurniture = CALCULATE(SUM(Orders[Sales]), Orders[Category] = "Furniture")

Muserelationship = CALCULATE(SUM(Orders[Sales]) , USERELATIONSHIP(Orders[Ship Date],
'Date Table'[Date]))