

Week 8 – Business Analytics Fundamentals – Sydney Campus



1. Lecture 7
2. Tutorial Week 8 – step-by-step instruction
3. Attendance & Tutorial Questions - Recognising student participation and engagement specifically identifying those who are most actively involved!

Lecturer/Tutor: Dr. Farshid Keivanian

HI6037 Fundamentals of Business Analytics

Lecture 7

Data Warehousing



Learning Objectives

- 1 Understand the need for data warehouse in large organisations
- 2 The difference between OLTP and OLAP
- 3 The key data warehouse terms
- 4 The fundamentals of a star schema
- 5 The data warehouse vendors and the role of PowerBI

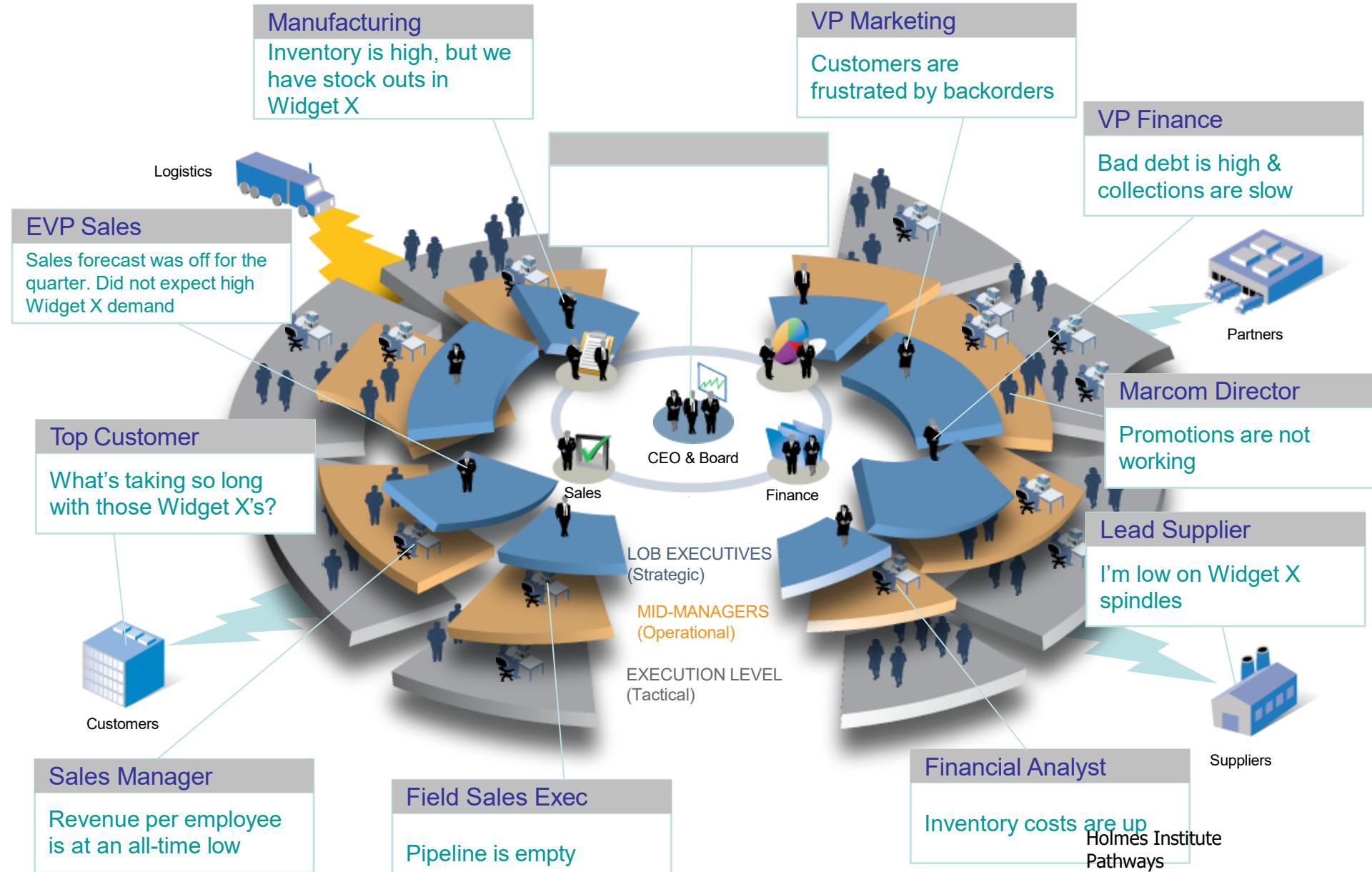
Strategy



This figure illustrates the strategic role of data warehousing in providing strategic insights and reports, enabling decision-making, monitoring, and process efficiency, with a focus on process flexibility to optimize enterprise operations from supplier to customer.

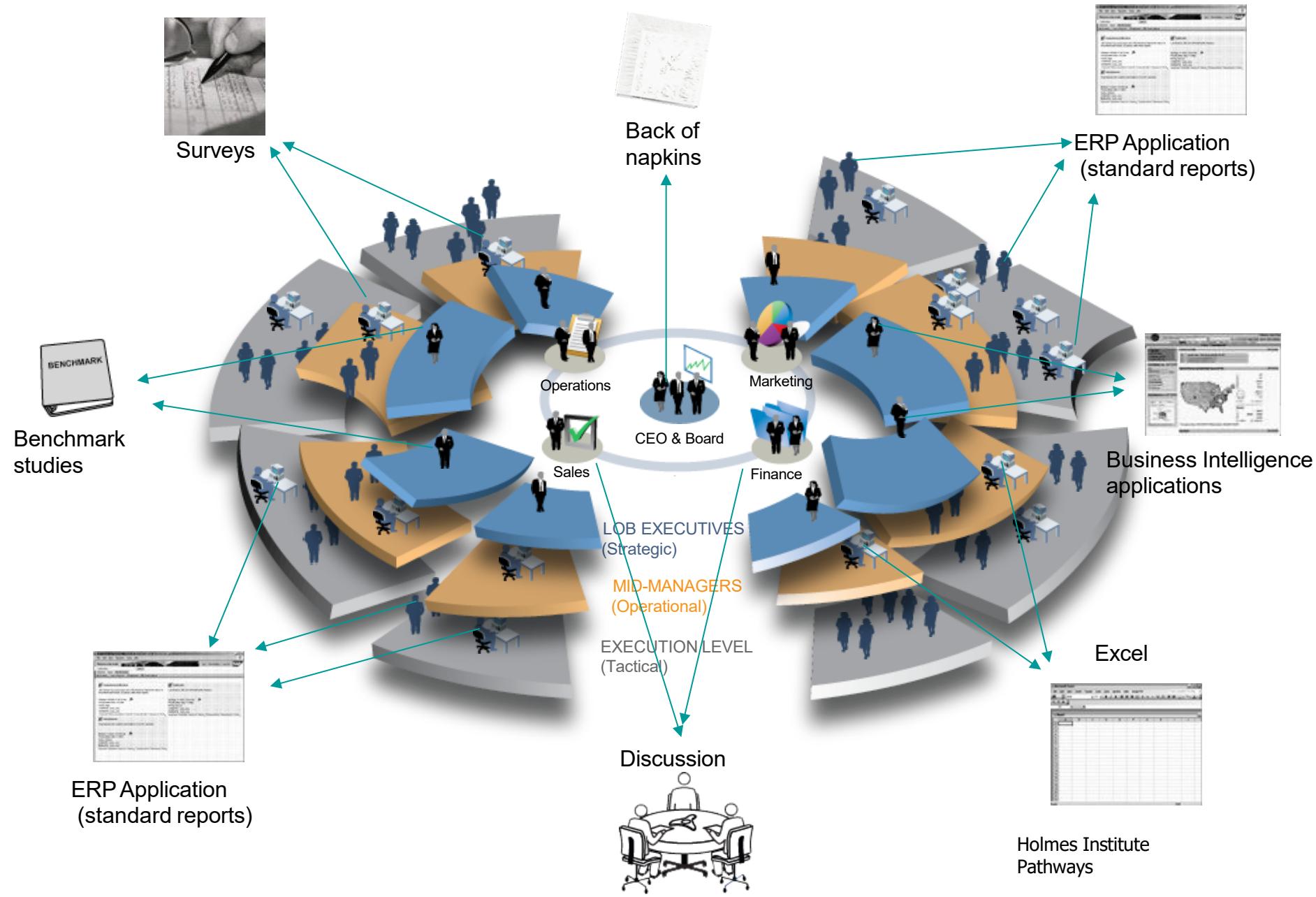
Hard to get answers in a complex environment

This figure illustrates the challenges of obtaining answers in a complex business environment, highlighting various issues faced by different departments such as manufacturing, marketing, finance, sales, and supply chain, all interacting with the CEO and board, showing the interconnected nature of business operations and decision-making.

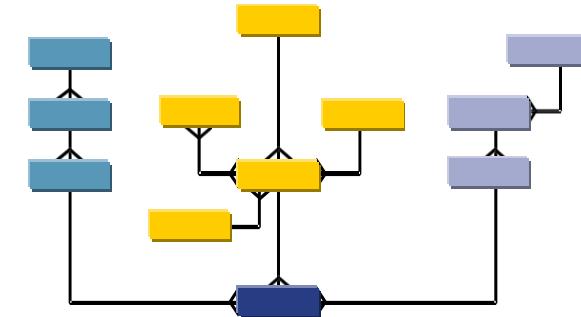


Data residing in numerous locations

This figure highlights the challenge of managing data spread across numerous locations, including ERP applications, business intelligence tools, Excel spreadsheets, benchmark studies, surveys, and even informal sources like the back of napkins, complicating the decision-making process within an organization.

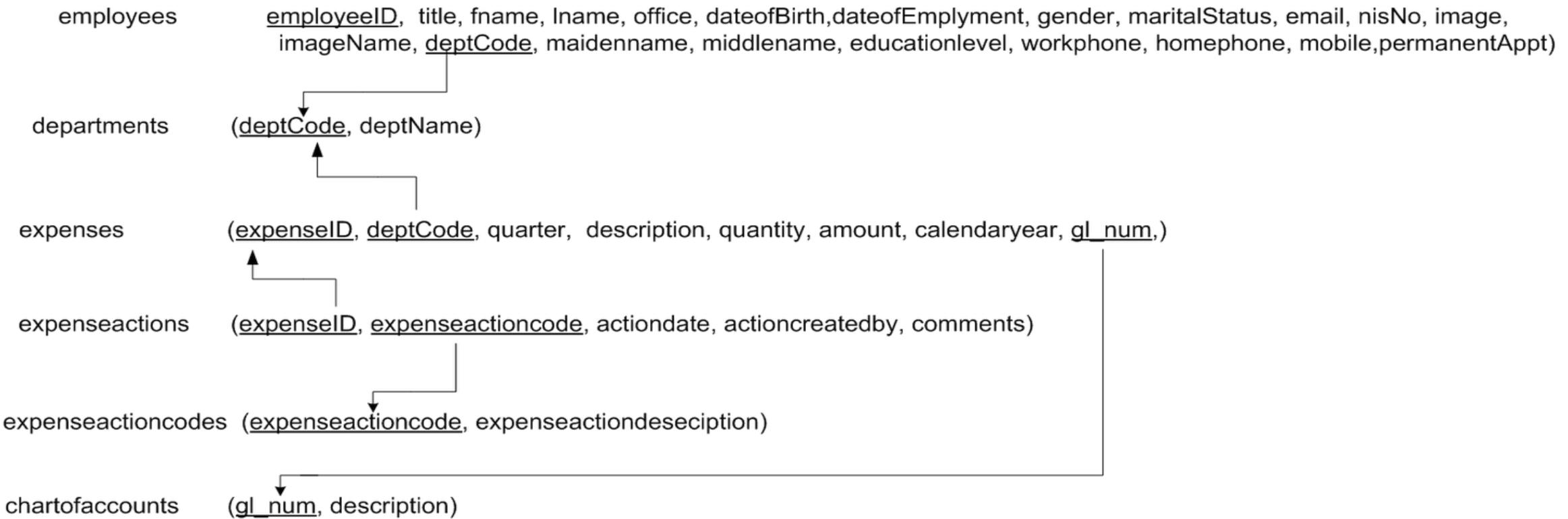


	OLTP Operative Environment
Purpose	Efficiency through the automation of processes
Priorities	High availability High data volumes
View of Data	Detailed
Age of Data	Current
Database Operations	Add, Edit, Delete, Read
Typical Data Structures	Relational (Normalised)
Integration of data from various sources	Minimal
Data Set (storage)	6 to 18 months
Archiving	Yes



This figure outlines the characteristics of an Online Transaction Processing (OLTP) environment, emphasizing its purpose for efficiency through process automation, high availability, detailed and current data views, relational data structures, and minimal data integration from various sources.

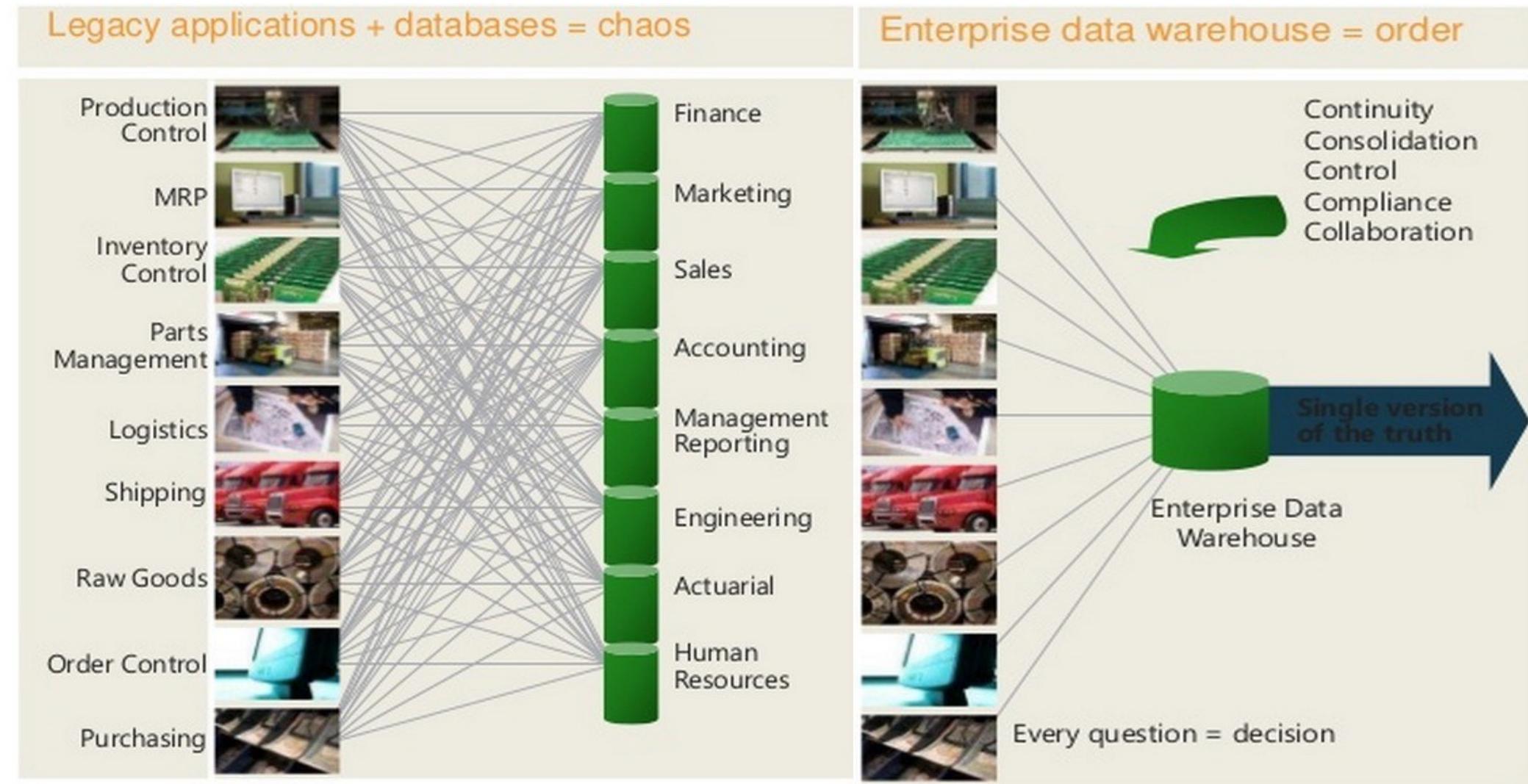
Relational Schema Design



This figure illustrates the characteristics and key aspects of an Online Analytical Processing (OLAP) environment, focusing on its purpose for supporting complex queries and analysis, handling aggregated historical data, enabling multidimensional views, and integrating data from various sources to facilitate strategic decision-making.

Accessing data

This figure contrasts the chaos of accessing data from multiple, unintegrated legacy applications and databases with the order provided by an enterprise data warehouse, which consolidates data into a single version of the truth for streamlined decision-making and enhanced organizational control and compliance.



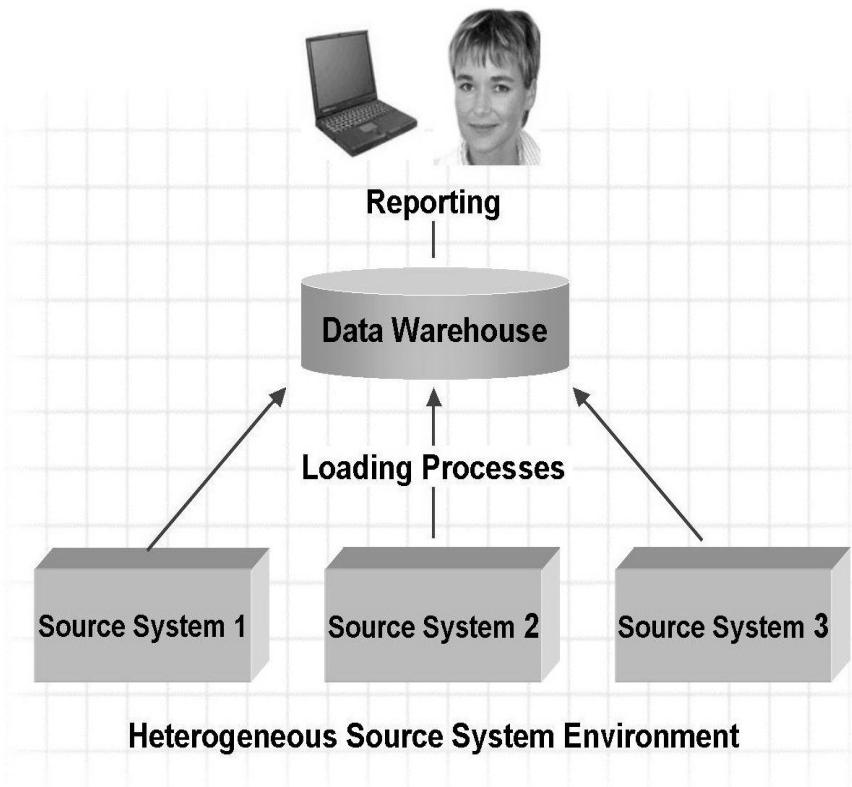
What is a Data Warehouse?



A **data warehouse** is a **database** used for **reporting** and **data analysis**. It is a **central repository** of data which is created by **integrating** data from one or more disparate sources. Data warehouses store **current** as well as **historical data**.



Data Warehouse - Definitions

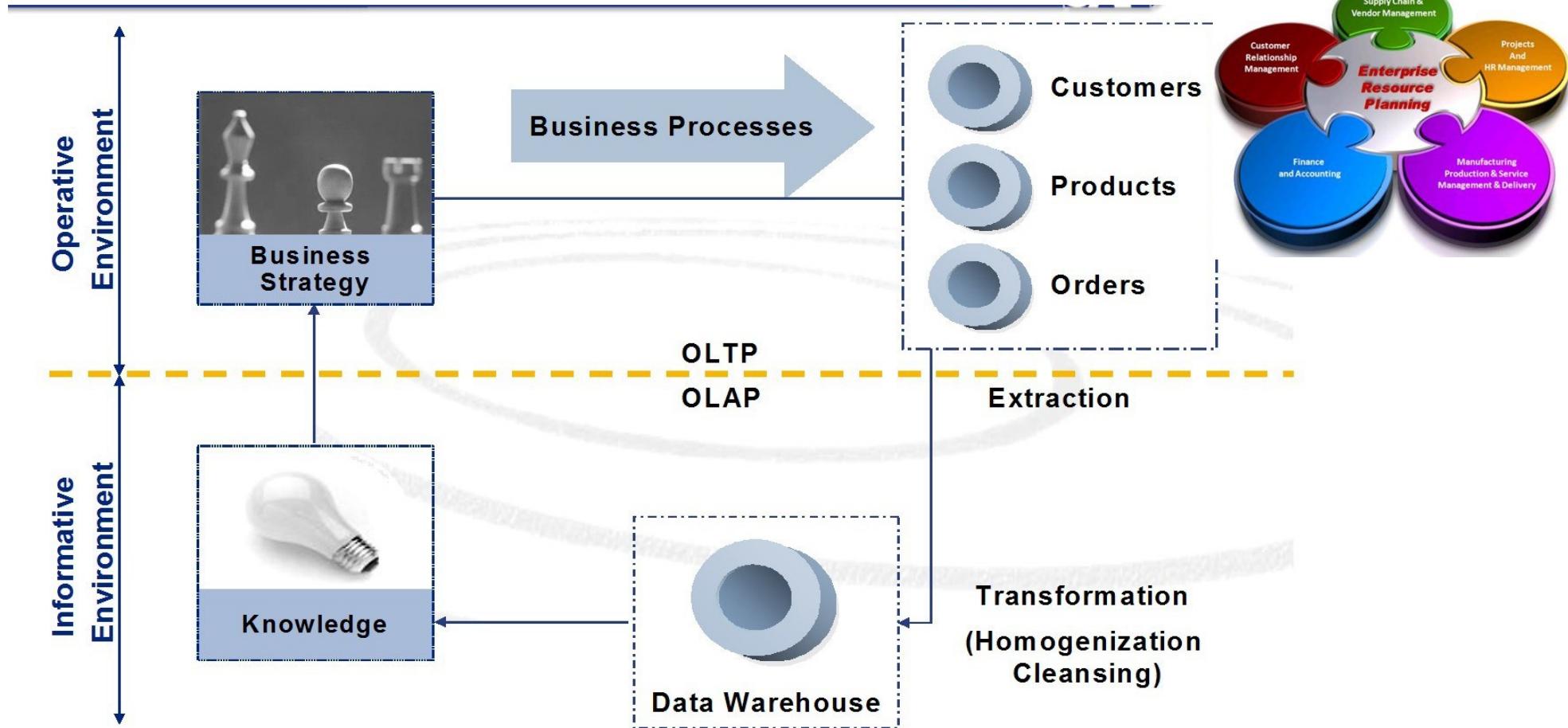


- A data warehouse is a **subject oriented** (customers or products), **integrated**, **time-dependent**, **non-volatile** (stable) collection of data in support of management's decision-making process. (W. H. Inmon, 1994).
- A copy of transaction data specifically structured for query and analysis
(R. Kimball, "The Data Warehouse Toolkit" 1996)

This figure illustrates the data warehousing process, where data from various heterogeneous source systems is loaded into a centralized data warehouse, enabling unified reporting and analysis.

The Role of Data Warehouse

This figure demonstrates the role of a data warehouse in transforming and consolidating data from various business processes and operational systems into valuable knowledge, supporting strategic business decisions and effective enterprise resource planning.



Why is a Data Warehouse Important?

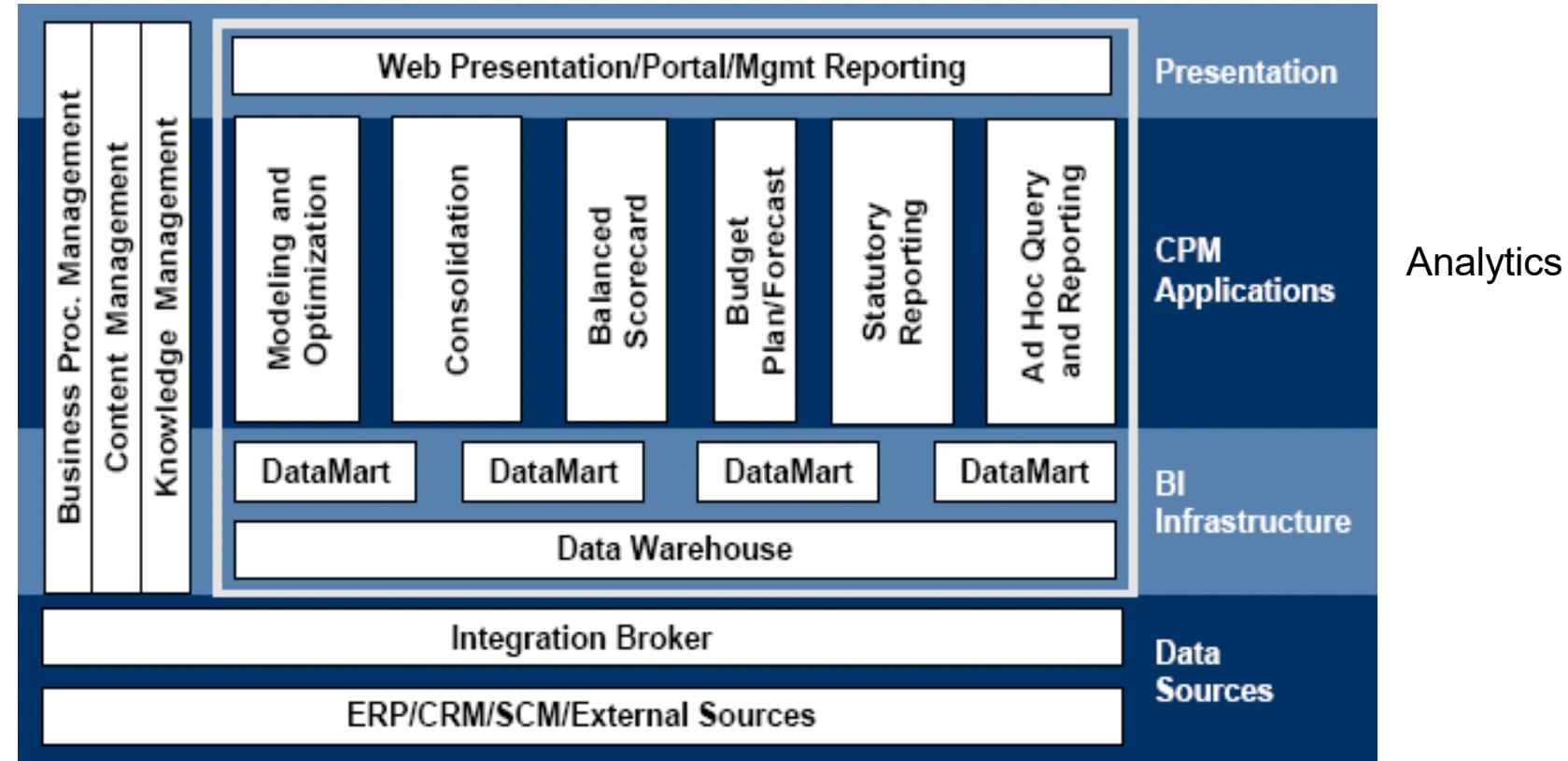
Here we explain the importance of a data warehouse, highlighting its benefits such as reducing stress on production systems, optimizing read access, integrating multiple data sources, maintaining historical records, restructuring data models, protecting against system upgrades, enabling independent report creation, improving data quality, and providing a single version of the truth.

- Reduce stress on production systems
- Optimized for read access
- Integrate many sources of data
- Keep historical records
- Restructure/rename tables and fields in new models
- Protect against source system upgrades
- No IT dependence for report creation
- Improve data quality
- Single version of the truth

	OLTP Operative Environment	OLAP Informative Environment
Purpose	Efficiency through the automation of processes	Generation of knowledge
Priorities	High availability High data volumes	Simple use Flexible data access
View of Data	Detailed	Aggregated
Age of Data	Current	Historical
Database Operations	Add, Edit, Delete, Read	Read
Typical Data Structures	Relational (Normalised)	Multi-Dimensional structures
Integration of data from various sources	Minimal	Comprehensive
Data Set (storage)	6 to 18 months	2 to 7 years
Archiving	Yes	Yes

Business Intelligence Platform

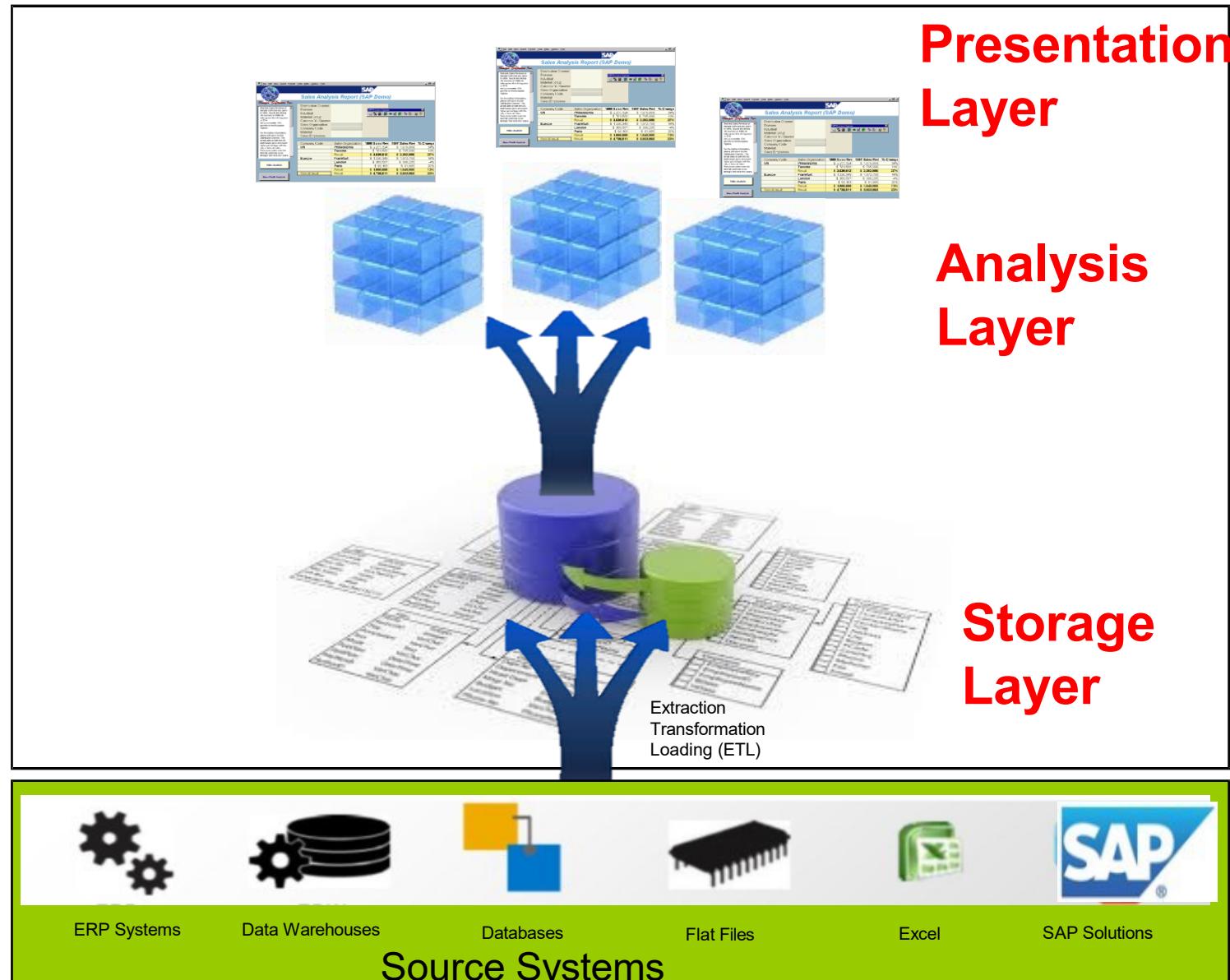
This figure depicts the architecture of a comprehensive business intelligence (BI) system, illustrating the integration of data sources (ERP/CRM/SCM/External Sources) into a data warehouse and data marts, which support various Corporate Performance Management (CPM) applications such as modeling, consolidation, balanced scorecard, budgeting, and reporting, with a web presentation layer for management reporting and decision-making.



Architecture Source: Gartner (CPM, 2004)

Data Warehouse Structure

This figure illustrates the structure of a data warehouse, showing the extraction, transformation, and loading (ETL) processes that integrate data from various source systems into the storage layer, which is then organized in the analysis layer for reporting and presented to users in the presentation layer.



**Presentation
Layer**

**Analysis
Layer**

**Storage
Layer**

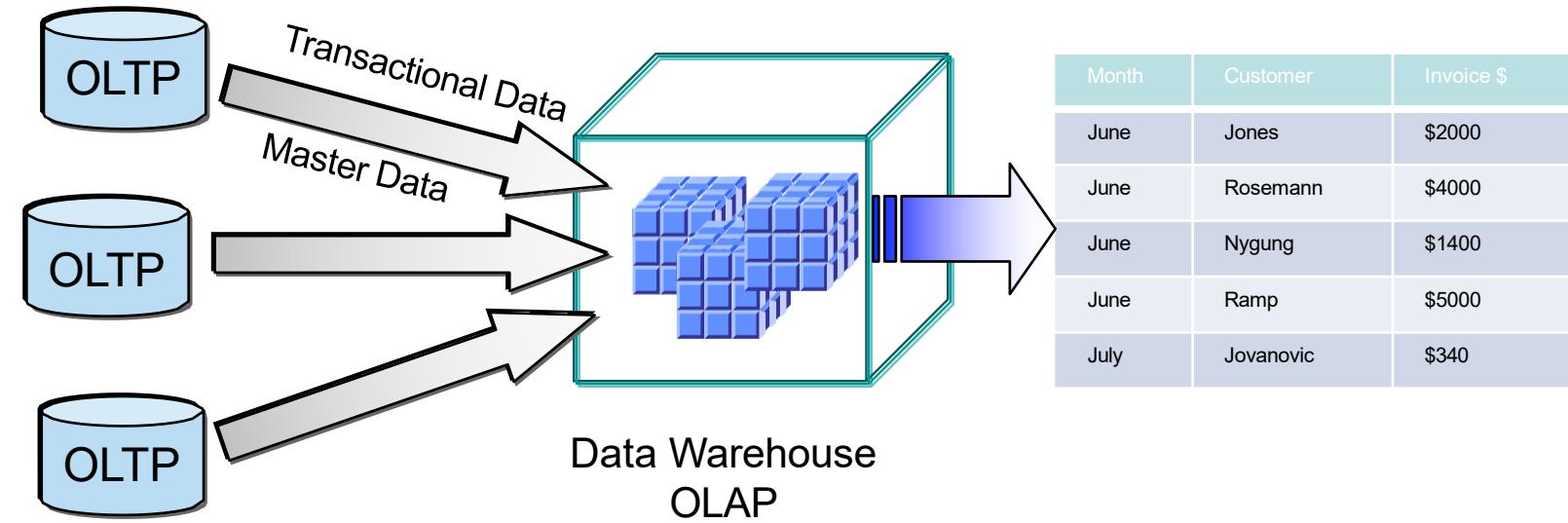
Data in Reports – Data Warehouse

This table illustrates how data in reports from a data warehouse is structured, showing the separation of dimensions (time, customer, material) from facts (measures like sales quantity and amount) to provide a comprehensive view for analysis and decision-making.

Dimensions			Facts	
Time	Master Data		Measures/Key Figures/Indicators	
Date	Customer	Material	Sales Quantity	Amount
1/1/08	Jones	Racer 26	2	\$2000
1/1/08	Rosemann	Mountain B	5	\$4000
1/1/08	Nygung	Racer 234	1	\$1400
.....				
			Total	\$35,000

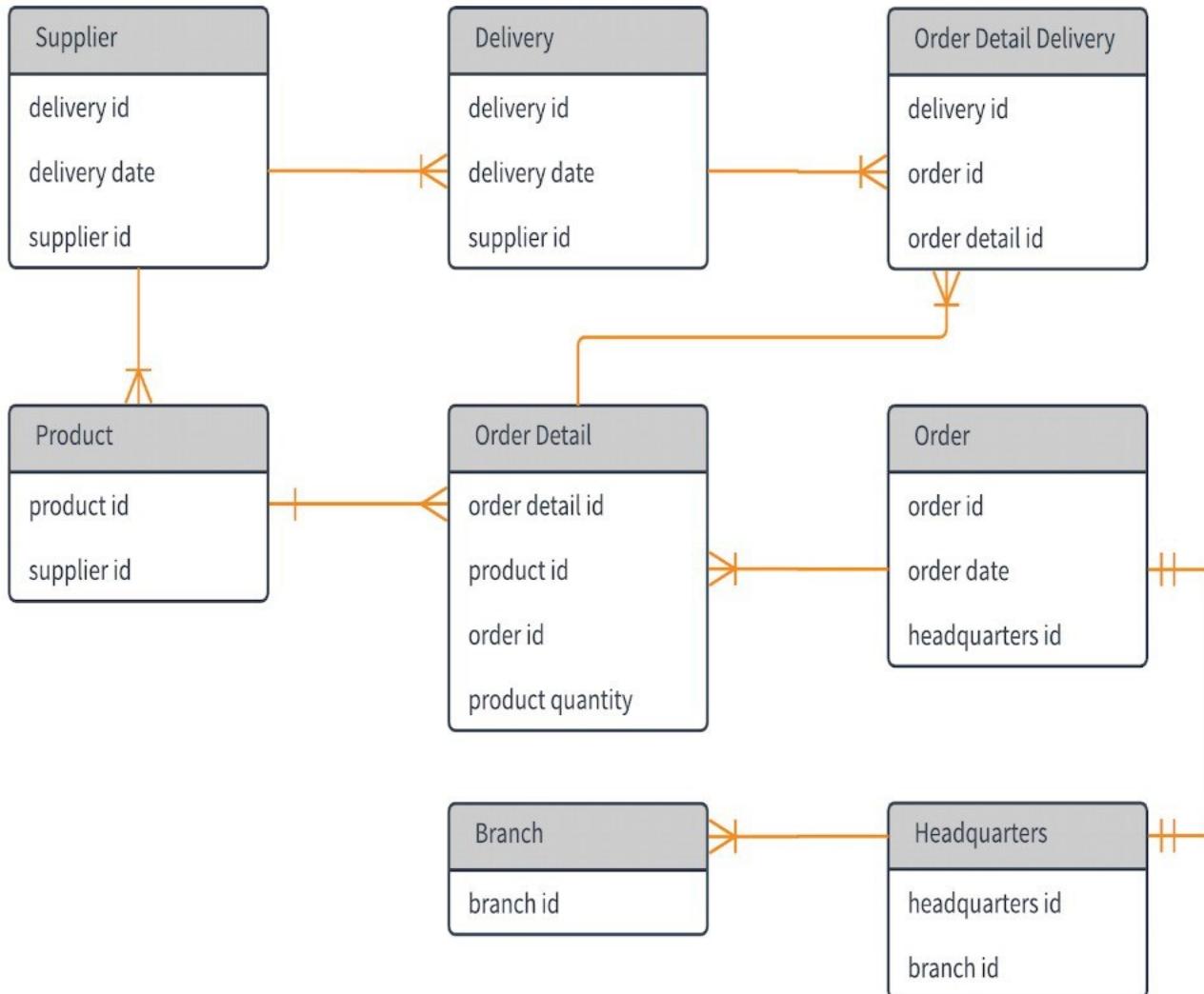
Data Warehousing

This figure demonstrates the process of data warehousing, where transactional and master data from various OLTP systems are consolidated into a data warehouse (OLAP) for analysis and reporting, providing summarized information such as monthly customer invoices.

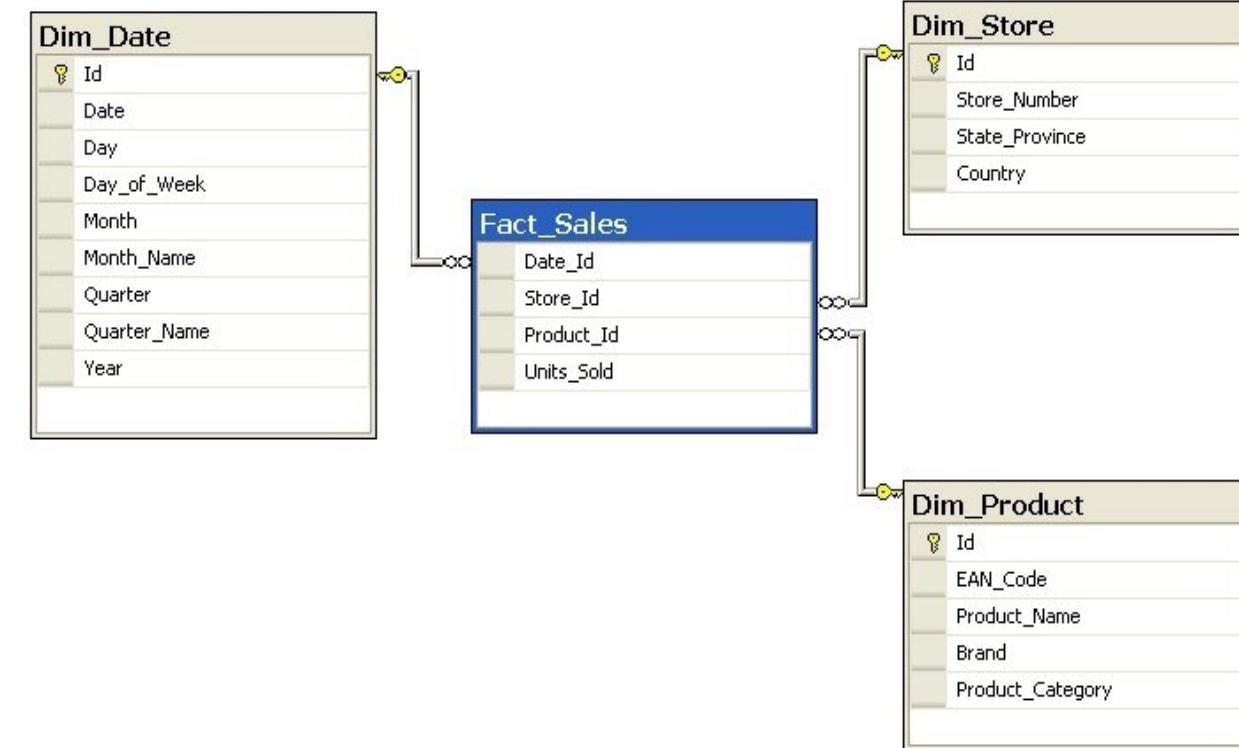


Schemas

OLTP



OLAP



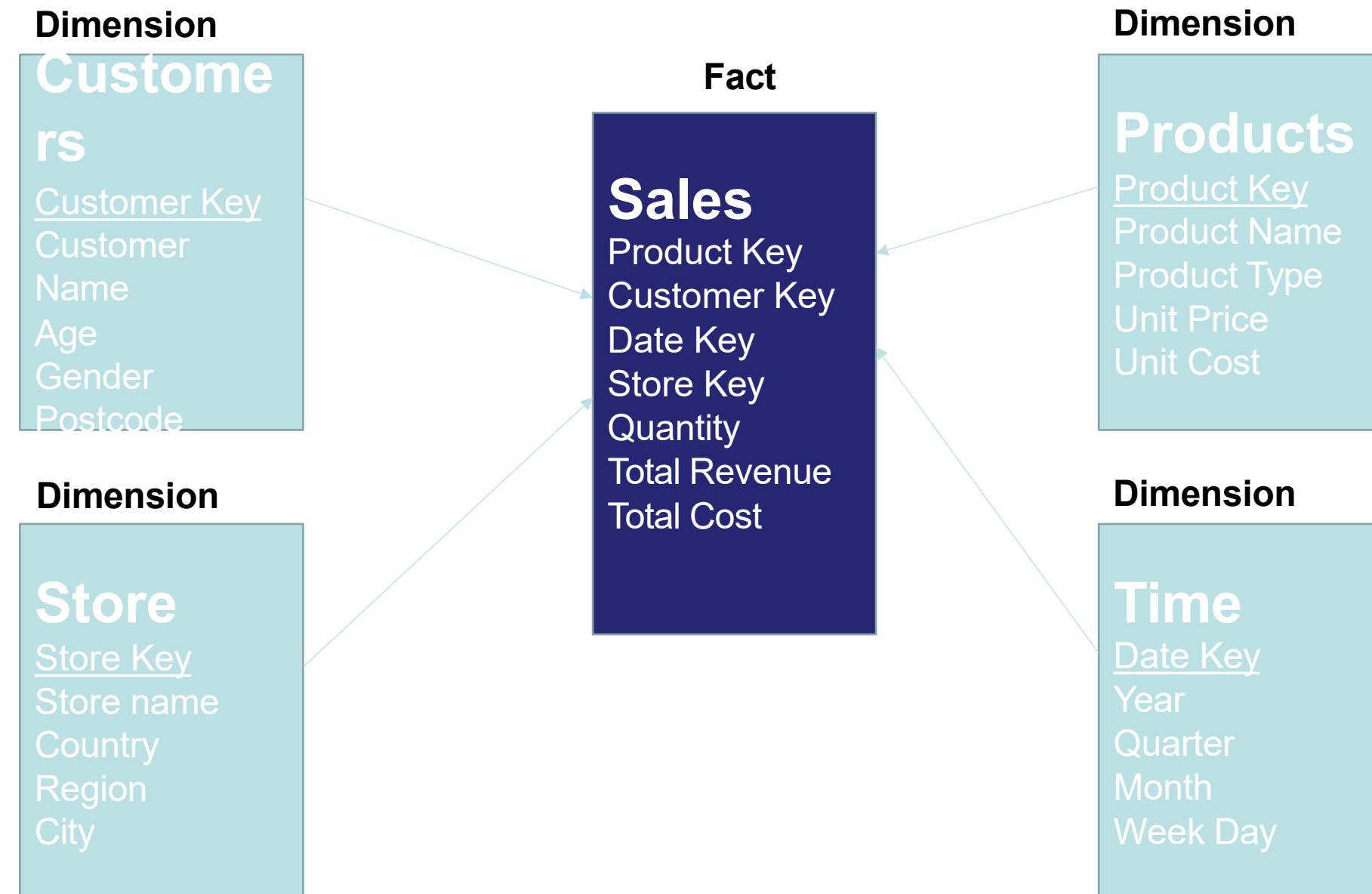
This figure compares OLTP and OLAP schemas, showing the detailed and normalized transactional structure of OLTP databases on the left, and the denormalized, dimensional model of OLAP databases designed for analytical queries on the right.



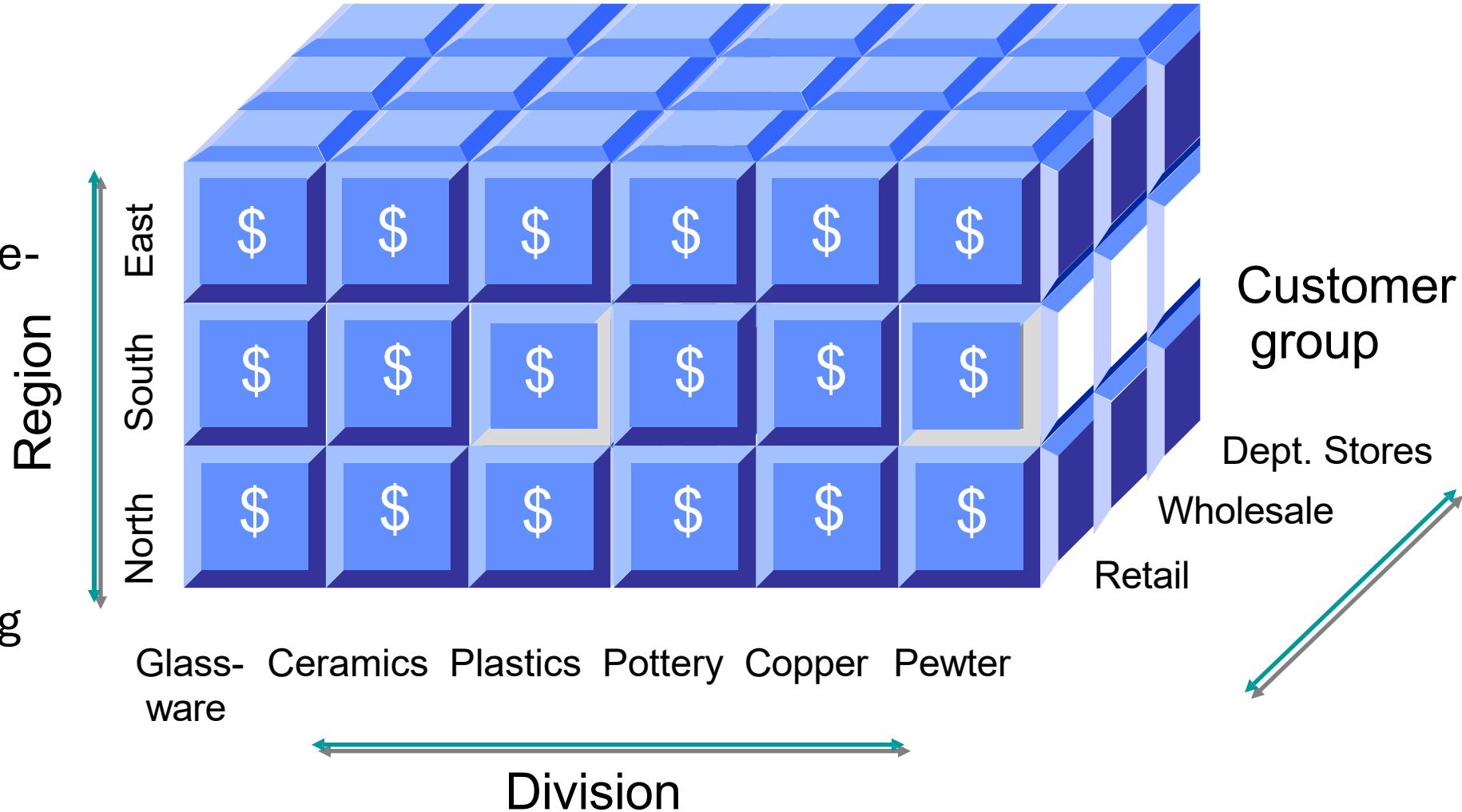
This figure shows a star schema used in OLAP databases, where the central fact table (Fact_Sales) containing transactional metrics is connected to surrounding dimension tables (Dim_Date, Dim_Store, Dim_Product) that provide descriptive attributes for querying and reporting.

Star Schema (Multi-dimensional)

This figure illustrates a star schema in a multi-dimensional data model, with a central fact table (Sales) containing key metrics linked to dimension tables (Customers, Products, Store, Time) that provide detailed contextual information for comprehensive data analysis.

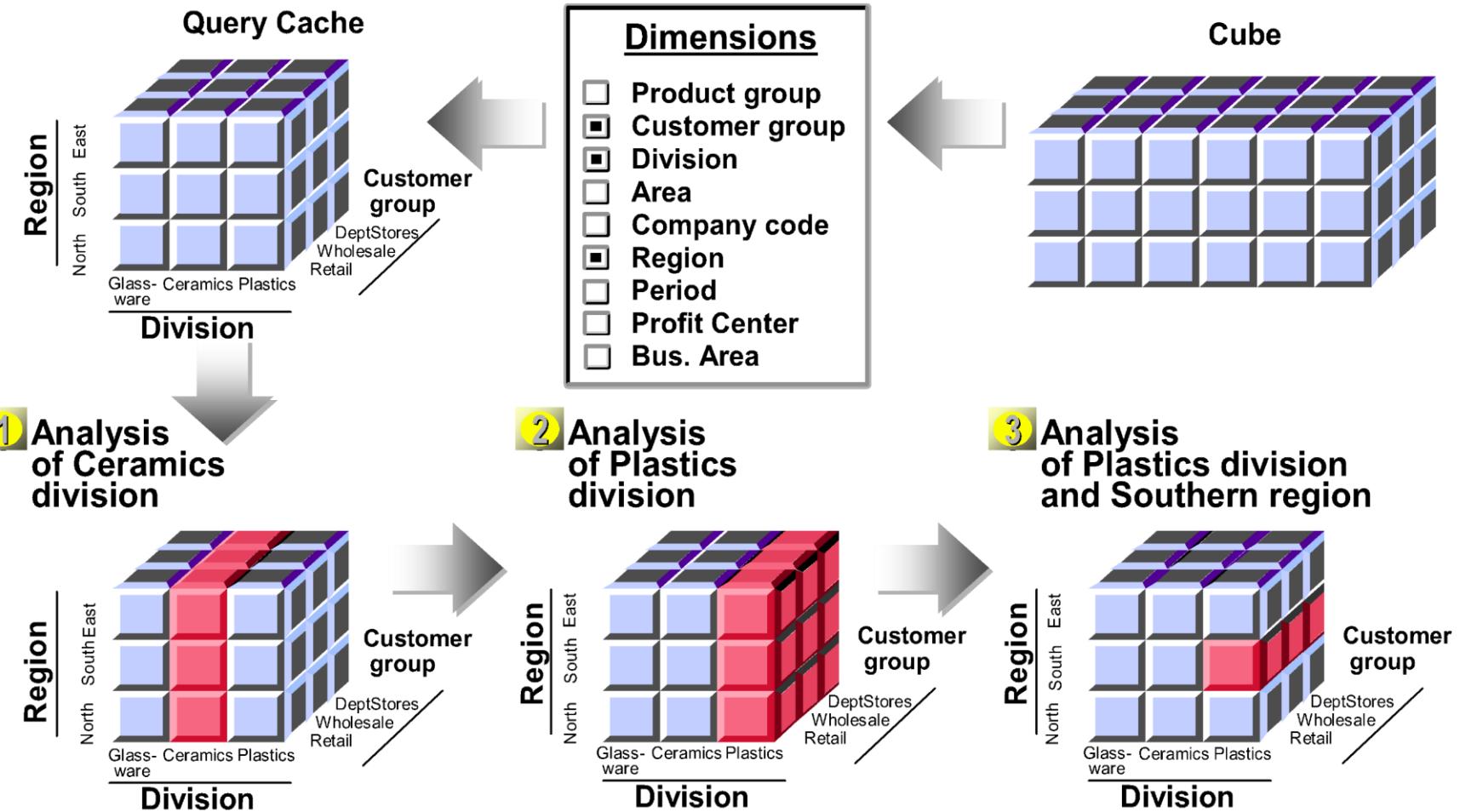


This figure illustrates multi-dimensional reporting using a data cube, which allows for drill-down, slice-and-dice analysis across various dimensions such as region, division, and customer group, providing a comprehensive view of financial metrics.



Multi-Dimensional Reporting – Drill Down, Slice and Dice

This figure demonstrates the process of slicing and dicing in multi-dimensional data analysis, allowing users to select specific dimensions and subsets of data from a data cube to gain focused insights and detailed reports.



Data Warehouse Terminology

- *Star Schema.*
- In a star schema, data falls into lookup tables and transaction tables. Or, for the data warehouse pro, dimensions and facts.
- *Historical Analysis.*
- The purpose of a data warehouse is historical analysis, and this shapes design decisions.
- *Platform Agnostic.* The data warehouse doesn't care how users connect.

Data Warehouse Terminology

- *Data Mart*
- Subset of data warehouse designed for specific scenarios.
- *Aggregations*.
- Data is summarized based on certain fields. Usually summation
- *Granularity*. The level of aggregation. The lower the granularity the more records are stored. ie Data is aggregated at either Year, Quarter, Month etc

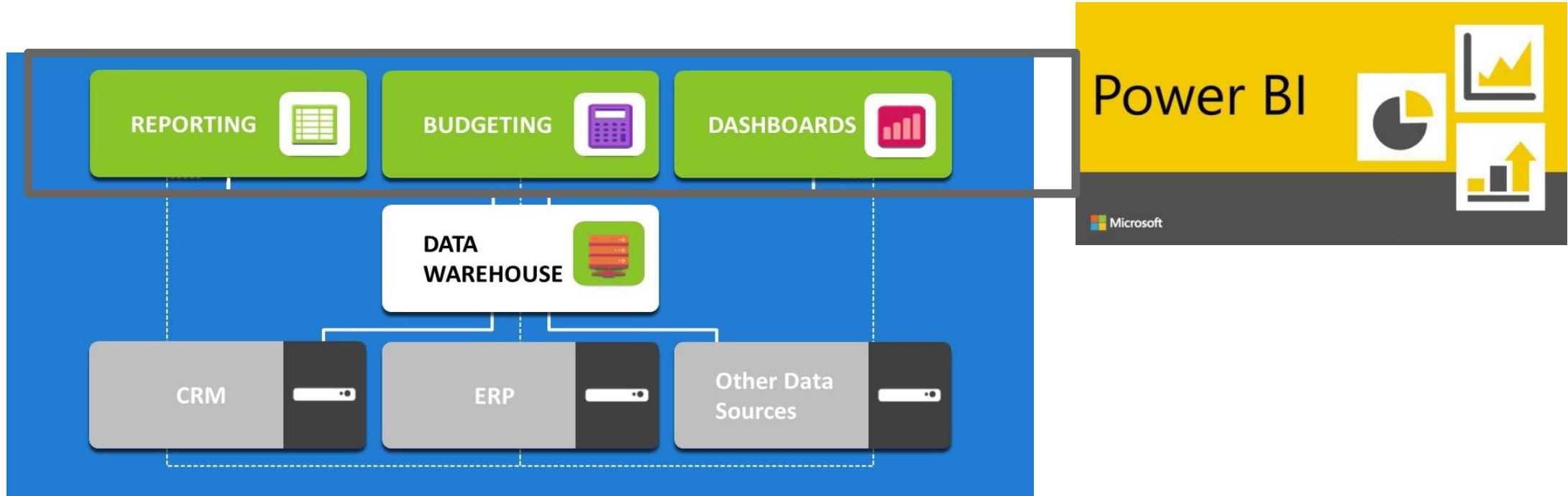
Vendors

This figure shows Gartner's Magic Quadrant for Analytics and Business Intelligence Platforms as of January 2020, categorizing vendors based on their ability to execute and completeness of vision, with Microsoft and Tableau positioned as leaders in the market.

Figure 1. Magic Quadrant for Analytics and Business Intelligence Platforms



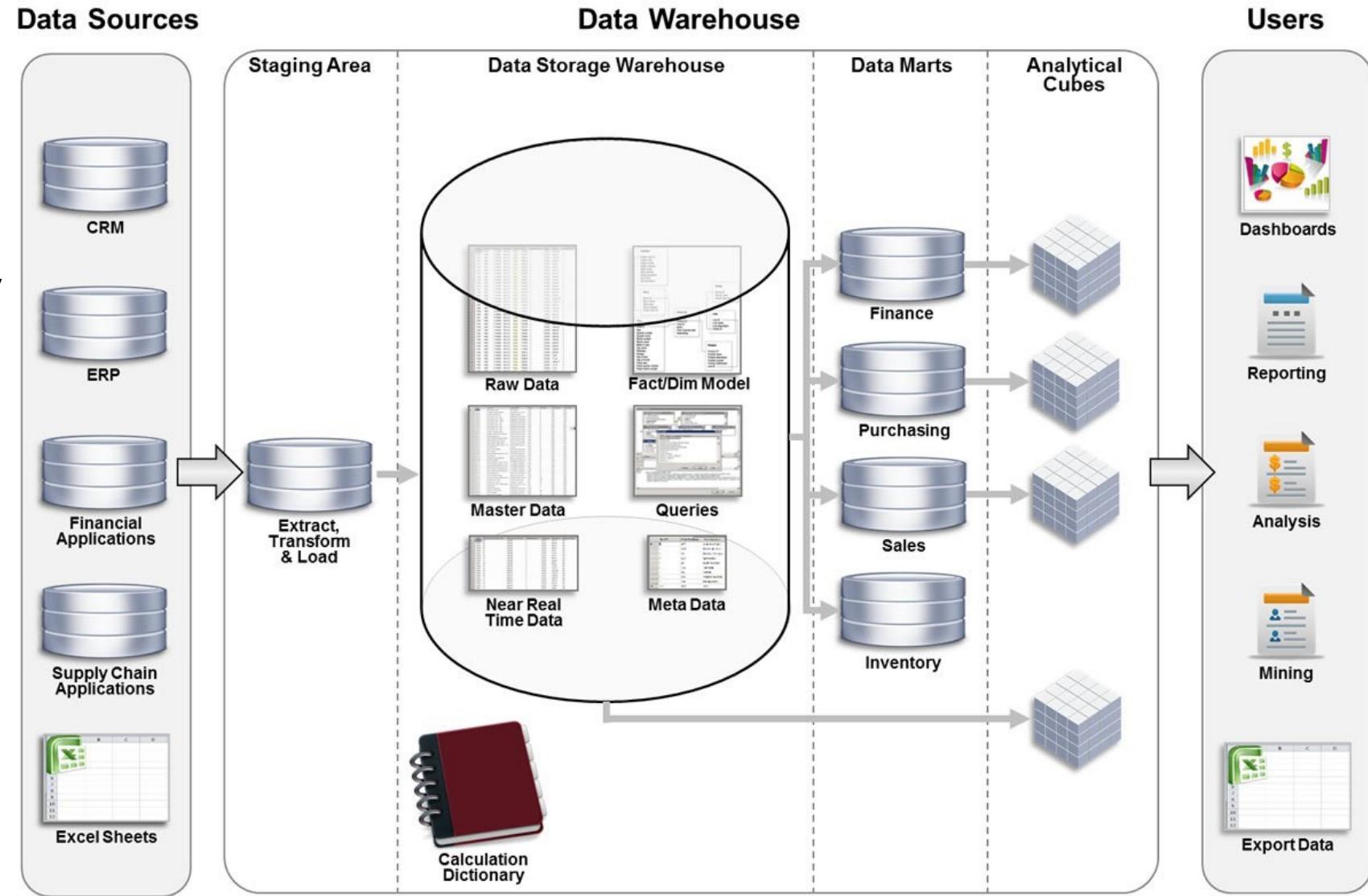
Power BI and Data Warehouse



This figure depicts the integration of various data sources (CRM, ERP, other data sources) into a data warehouse, which is then utilized by Power BI for reporting, budgeting, and dashboards to provide comprehensive business intelligence and insights.

Summary

This figure summarizes the data warehousing process, showing how data from various sources (CRM, ERP, financial applications, supply chain applications, Excel sheets) is extracted, transformed, and loaded into a data warehouse, organized into data marts and analytical cubes, and then used by end-users for dashboards, reporting, analysis, mining, and data export.



3. Tutorial week 8 – Create a Power BI dashboard from a report

A Power BI dashboard is a powerful visualization tool designed to display the most important insights from data on a single page, referred to as a canvas. It integrates various visual elements such as charts, graphs, and maps—collectively known as tiles—to summarize and present complex data in an easily digestible format. Each tile is linked to underlying reports and datasets, enabling users to delve deeper into the details as needed. This dashboard setup is particularly valuable for decision-makers and business analysts, as it provides a high-level overview of key metrics and trends at a glance, facilitating quick and informed decisions. The ability to customize and interact with these dashboards in real time enhances their utility, making them an essential component in business intelligence and data analysis workflows.



Create a Power BI dashboard from a report

You have created some simple dashboards from in the previous tutorial. This tutorial, we are going to more details of designing dashboard. To do so follow the steps:

1. Download all the data sets for this tutorial from the BB, Budget, Forecast, Actuals.

The data we will be working with is 12 months worth of budget and forecast data and 6 months worth of actual data for the IT department of a global company and this is a modified data set from obvience

Data

Budget					
Date	IT Dep.	CostElement	Country	Budget	
Wednesday, 1 January 2020	Business Intelligence	Hardware Maintenance	USA	125	
Saturday, 1 February 2020	Business Intelligence	Hardware Maintenance	USA	125	
Sunday, 1 March 2020	Business Intelligence	Hardware Maintenance	USA	125	
Wednesday, 1 April 2020	Business Intelligence	Hardware Maintenance	USA	125	
Friday, 1 May 2020	Business Intelligence	Hardware Maintenance	USA	125	
Monday, 1 June 2020	Business Intelligence	Hardware Maintenance	USA	125	
Wednesday, 1 July 2020	Business Intelligence	Hardware Maintenance	USA	125	
Saturday, 1 August 2020	Business Intelligence	Hardware Maintenance	USA	125	
Tuesday, 1 September 2020	Business Intelligence	Hardware Maintenance	USA	125	
Thursday, 1 October 2020	Business Intelligence	Hardware Maintenance	USA	125	
Sunday, 1 November 2020	Business Intelligence	Hardware Maintenance	USA	125	
Tuesday, 1 December 2020	Business Intelligence	Hardware Maintenance	USA	125	
Wednesday, 1 January 2020	Document Management	Hardware Maintenance	USA	125	
Saturday, 1 February 2020	Document Management	Hardware Maintenance	USA	125	
Sunday, 1 March 2020	Document Management	Hardware Maintenance	USA	125	
Wednesday, 1 April 2020	Document Management	Hardware Maintenance	USA	125	

Actuals					
Date	IT Department	Cost Element	Country	Actual	
Sunday, 1 March 2020	Administration	Employee Performance	USA	150	
Sunday, 1 March 2020	Administration	External Labor	USA	96,906	
Sunday, 1 March 2020	Administration	Hardware	USA	2,901	
Sunday, 1 March 2020	Administration	Internal Labor	USA	116,809	
Sunday, 1 March 2020	Administration	Legal	USA	562	
Sunday, 1 March 2020	Administration	Moving	USA	867	
Sunday, 1 March 2020	Administration	Other	USA	29,563	
Sunday, 1 March 2020	Administration	Supplies	USA	466	
Sunday, 1 March 2020	Administration	Telecomm	USA	1,073	
Sunday, 1 March 2020	Administration	Training	USA	88	
Sunday, 1 March 2020	Administration	Travel	USA	10,518	
Sunday, 1 March 2020	Architecture	Depreciation	USA	693	
Sunday, 1 March 2020	Architecture	Employee Performance	USA	4	
Sunday, 1 March 2020	Architecture	Hardware	USA	240	
Sunday, 1 March 2020	Architecture	Internal Labor	USA	45,385	
Sunday, 1 March 2020	Architecture	Other	USA	-1,583	
Sunday, 1 March 2020	Architecture	Supplies	USA	27	

Forecast					
Date	IT Dep.	CostElement	Country	Forecast	
Wednesday, 1 January 2020	Administration	Internal Labor	USA	90,994	
Saturday, 1 February 2020	Administration	Internal Labor	USA	103,135	
Sunday, 1 March 2020	Administration	Internal Labor	USA	116,809	
Wednesday, 1 April 2020	Administration	Internal Labor	USA	92,221	
Administration	Internal Labor	USA	126,128		
Administration	Internal Labor	USA	95,333		
Administration	Internal Labor	USA	107,178		
Administration	Internal Labor	USA	107,178		
Administration	Internal Labor	USA	107,178		
Administration	Internal Labor	USA	108,580		
Administration	Internal Labor	USA	108,580		
Administration	Internal Labor	USA	108,623		
Architecture	Internal Labor	USA	41,537		
Architecture	Internal Labor	USA	43,028		
Architecture	Internal Labor	USA	45,385		
Architecture	Internal Labor	USA	41,175		
Architecture	Internal Labor	USA	39,924		

Create a Power BI dashboard from a report

These datasets in csv formats have been exported from an accounting system. You can find them on the Blackboard. Each file contain records by date, department, cost element, country, and the amount.

Data

Budget						Actuals						Forecast					
Date	IT Dep.	CostElement	Country	Budget		Date	IT Department	Cost Element	Country	Actual		Date	IT Dep.	CostElement	Country	Forecast	
Wednesday, 1 January 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Employee Performance	USA	150		Wednesday, 1 January 2020	Administration	Internal Labor	USA	90,994	
Saturday, 1 February 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	External Labor	USA	96,906		Saturday, 1 February 2020	Administration	Internal Labor	USA	103,135	
Sunday, 1 March 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Hardware	USA	2,901		Sunday, 1 March 2020	Administration	Internal Labor	USA	116,809	
Wednesday, 1 April 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Internal Labor	USA	116,809		Wednesday, 1 April 2020	Administration	Internal Labor	USA	92,221	
Friday, 1 May 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Legal	USA	562		Wednesday, 1 April 2020	Administration	Internal Labor	USA	126,128	
Monday, 1 June 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Moving	USA	867		Wednesday, 1 April 2020	Administration	Internal Labor	USA	95,333	
Wednesday, 1 July 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Other	USA	29,563		Wednesday, 1 April 2020	Administration	Internal Labor	USA	107,178	
Saturday, 1 August 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Supplies	USA	466		Wednesday, 1 April 2020	Administration	Internal Labor	USA	107,178	
Tuesday, 1 September 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Telecomm	USA	1,073		Wednesday, 1 April 2020	Administration	Internal Labor	USA	108,580	
Thursday, 1 October 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Training	USA	88		Wednesday, 1 April 2020	Administration	Internal Labor	USA	108,623	
Sunday, 1 November 2020	Business Intelligence	Hardware Maintenance	USA	125		Sunday, 1 March 2020	Administration	Travel	USA	10,518		Wednesday, 1 April 2020	Architecture	Internal Labor	USA	41,537	
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						Sunday, 1 March 2020	Architecture	Supplies	USA	27							

Create a Power BI dashboard from a report

We also have dimension tables that contain further groupings for the cost element country and IT departments. Each table is named and these names will also be the names of the tables when we import them into Power BI.

The screenshot shows a Microsoft Excel spreadsheet titled "dim_tables" with three tables defined:

- Cost Element** (Table A):

Cost Element	Cost Element Group	Business Area
External Labor	Labor	BU
Internal Labor	Labor	BU
Employee Performance	Other	BU
Other	Other	BU
Recognition	Other	BU
Training	Other	BU
Travel	Other	BU
Administrative	Administrative	R&D
Amortization	Depr & Amort	R&D
Depreciation	Depr & Amort	R&D
Hardware	Hardware & Software	R&D
Hardware Maintenance	Hardware & Software	R&D
Software	Hardware & Software	R&D
Software Maintenance	Hardware & Software	R&D
Supplies	Other	R&D
Taxes	Other	R&D
Telecomm	Other	R&D
Vehicles	Other	R&D
Inbound Allocations	Shared Services	R&D
Outbound Allocations	Shared Services	R&D
Project Expenses	Other	BU
Severance	Other	BU
Moving	Other	BU
CAPEX	CAPEX	R&D
Legal	Other	Office & Administrative
- Country** (Table E):

Country	Region
Austria	Europe
Belgium	Europe
Brazil	Latin America
Canada	Canada
China	Africa & Asia
Czech Republic	Europe
Denmark	Europe
Finland	Europe
France	Europe
Germany	Europe
Hungary	Europe
Ireland	Europe
Israel	Africa & Asia
Italy	Europe
Japan	Africa & Asia
Mexico	Latin America
Netherlands	Europe
New Zealand	Aus and NZ
Poland	Europe
Portugal	Europe
Puerto Rico	USA
Spain	Europe
Sweden	Europe
Switzerland	Europe
Turkey	Africa & Asia
- IT Department** (Table H):

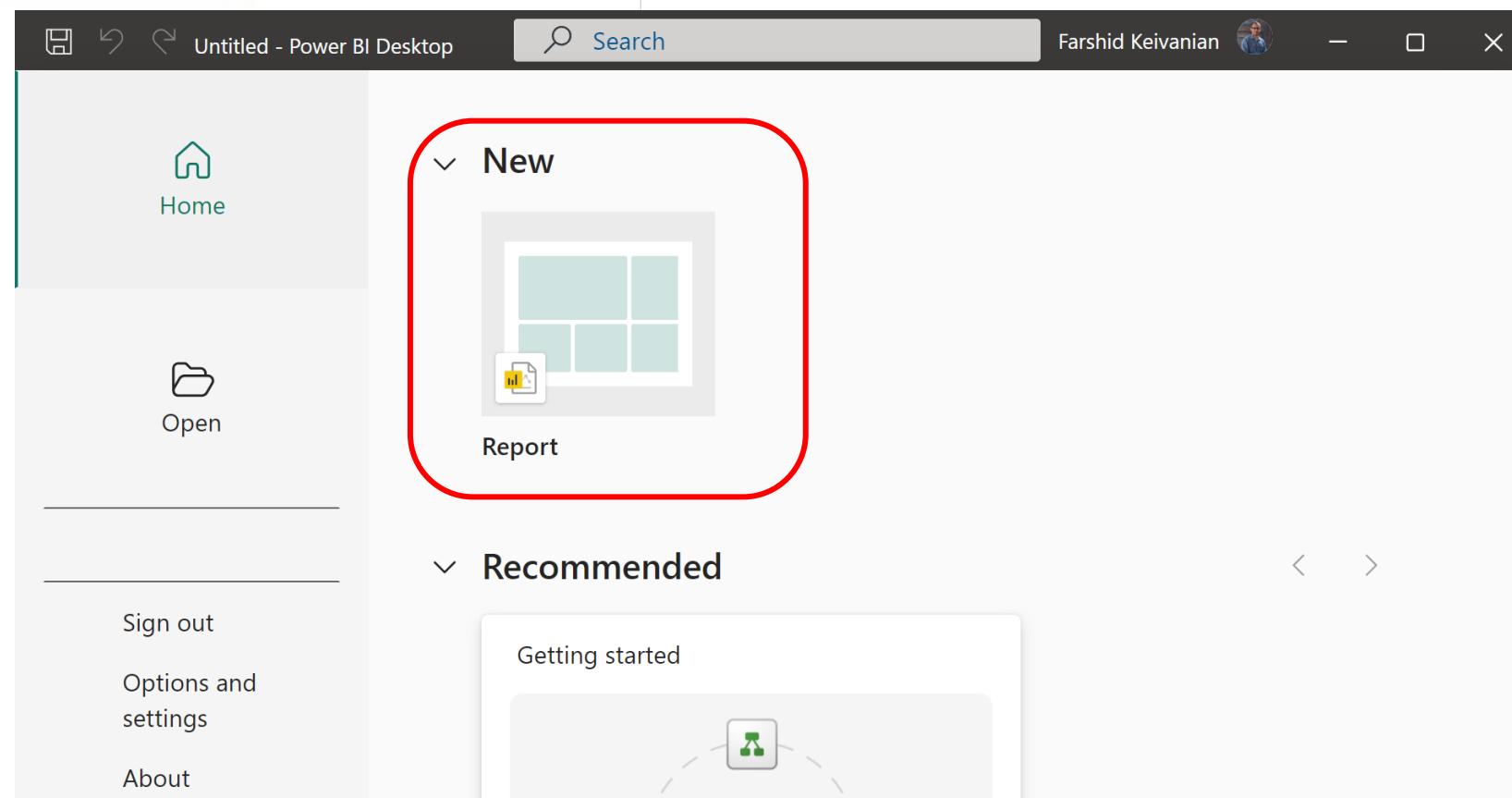
IT Department	IT Area	Dept. Manager
Core	BU Support	Sam Danks
Development	BU Support	Sam Danks
Distribution	BU Support	Linda Lee
Emerging	BU Support	Robert Nero
Manufacturing	BU Support	Mira Flores
Planning	BU Support	Mira Flores
Production	BU Support	Sam Danks
R&D	BU Support	Max Gin
Business Intelligence	Enablement	Raju Singh
Data Management	Enablement	Marcia Carr
Document Management	Enablement	Sean Peters
EIM	Enablement	Linda Lee
Enterprise Capabilities	Enablement	Max Gin
Innovation	Enablement	Max Gin
Mobility	Enablement	Bo Jones
Portals	Enablement	Jim Wheeler
Six Sigma	Enablement	Sam Danks
R1	Functional	Marcia Carr
R2	Functional	Raju Singh
R3	Functional	Jim Biggs
R5	Functional	Marcia Carr
Administration	Governance	Jim Biggs
Architecture	Governance	Sam Danks
GRC	Governance	Will Smith
Portfolio Management	Governance	Jane Beck

Create a Power BI dashboard from a report

We will be comparing performance against budget or plan if we prefer to call it that.

IT Costs - Budget vs Actual

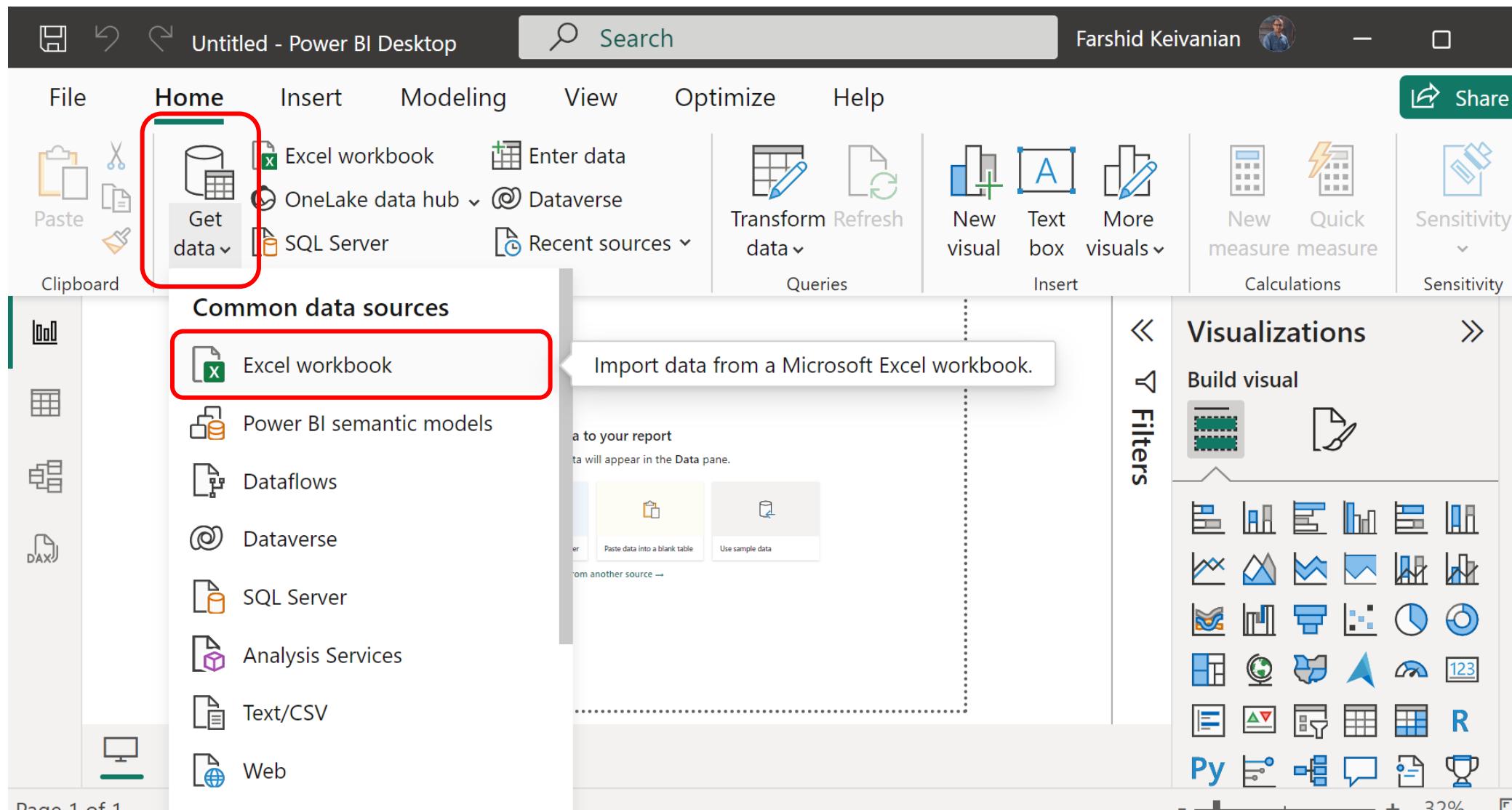
Actual	Budget	Variance
200	100	(100) Adverse
50	100	50 Favourable



- Click on New

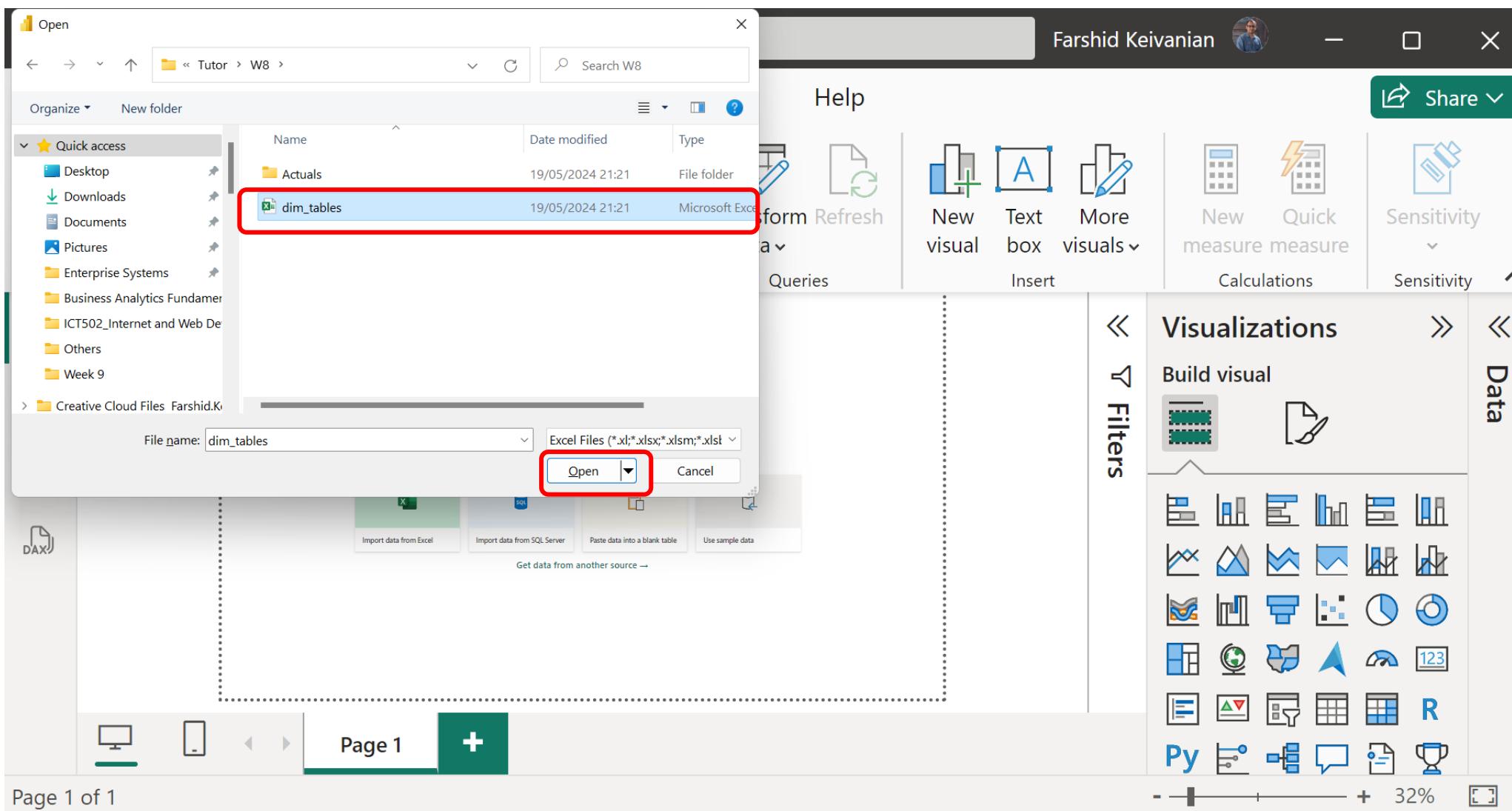
Create a Power BI dashboard from a report

- Click on Get data
- Click on Excel workbook



Create a Power BI dashboard from a report

- **Select dim_tables**
- **Click on Open**



Create a Power BI dashboard from a report

- Click and Check these three tables
- On the right hand side we see a preview of data (we can check what we are expecting)
- We can click on Transform button to clean the data before loading it, however in this case the data is ready so we will be clicking on Load (power BI will load that data into the power pivot model)

The screenshot shows the Power BI Navigator interface. On the left, there's a tree view under 'dim_tables.xlsx [4]' containing four checked tables: CostElements, Departments, Regions, and Dim Tables. A red box highlights this section. On the right, there's a preview table titled 'Regions' with columns 'Country' and 'Region'. The data includes Austria (Europe), Belgium (Europe), Brazil (Latin America), Canada (Canada), China (Africa & Asia), Czech Republic (Europe), Denmark (Europe), Finland (Europe), France (Europe), Germany (Europe), Hungary (Europe), and Ireland (Europe). A red box highlights the 'Load' button at the bottom right of the interface.

Country	Region
Austria	Europe
Belgium	Europe
Brazil	Latin America
Canada	Canada
China	Africa & Asia
Czech Republic	Europe
Denmark	Europe
Finland	Europe
France	Europe
Germany	Europe
Hungary	Europe
Ireland	Europe

Load Transform Data Cancel

Create a Power BI dashboard from a report

- Now we see the Tables in Data Pane (right side)

The screenshot shows the Power BI Desktop interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, and a Share button. The Home tab has options like Get data, Enter data, Transform data, and New visual. The Data pane on the right is highlighted with a red circle, showing a search bar and three hierarchical categories: CostElements, Departments, and Regions.

Untitled - Power BI Desktop

File Home Insert Modeling View Optimize Help

Get data

Enter data

Transform data

New visual

Text box

More visuals

Share

Queries

Insert

Calculations

Sensitivity

Visualizations

Build visual

Filters

CostElements

Departments

Regions

Page 1 of 1

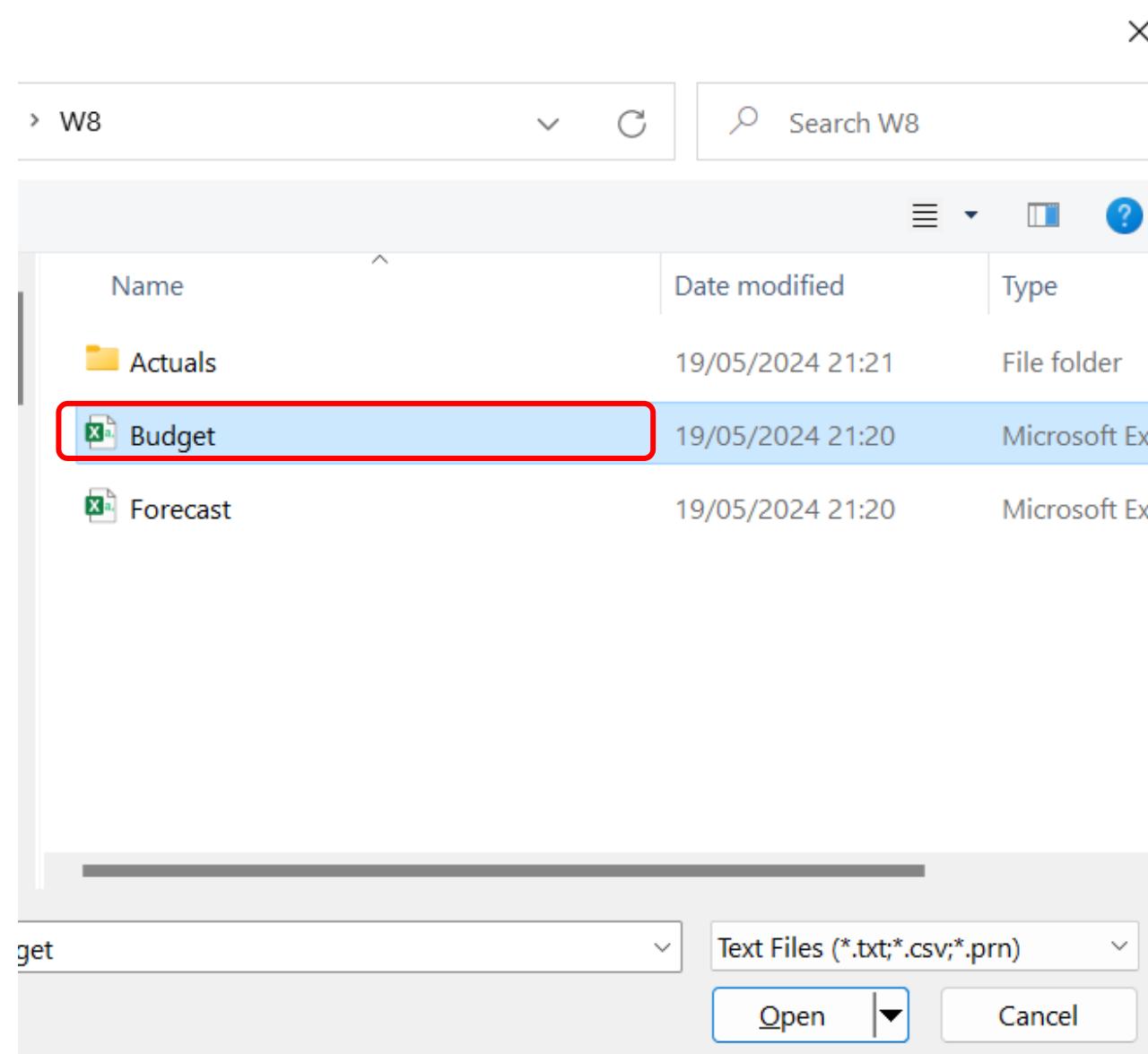
Create a Power BI dashboard from a report

- Now we grab CSV files for budget and forecast

The screenshot shows the Microsoft Power BI Desktop application interface. The ribbon at the top has tabs: File, Home (selected), Insert, Modeling, View, Optimize, and Help. The 'Home' tab has several icons: Paste, Get data (with dropdown options for Excel workbook, OneLake data hub, and SQL Server), Enter data, Transform data (with Refresh data dropdown), New visual, Text box, More visuals, New measure (with Quick measure dropdown), and Calculations. To the right of the ribbon is a 'Sensitivity' section with icons for Share, Home, and Sensitivity. Below the ribbon is a sidebar with sections: Common data sources (Excel workbook, Power BI semantic models, Dataflows, Dataverse, SQL Server, Analysis Services, Text/CSV, Web) and Visualizations (Build visual, Filters, various chart and map icons). A red box highlights the 'Text/CSV' option under 'Common data sources'. A tooltip for 'Text/CSV' says 'Import data from a text or CSV file.' The status bar at the bottom shows 'Page 1 of 1' and '32%'.

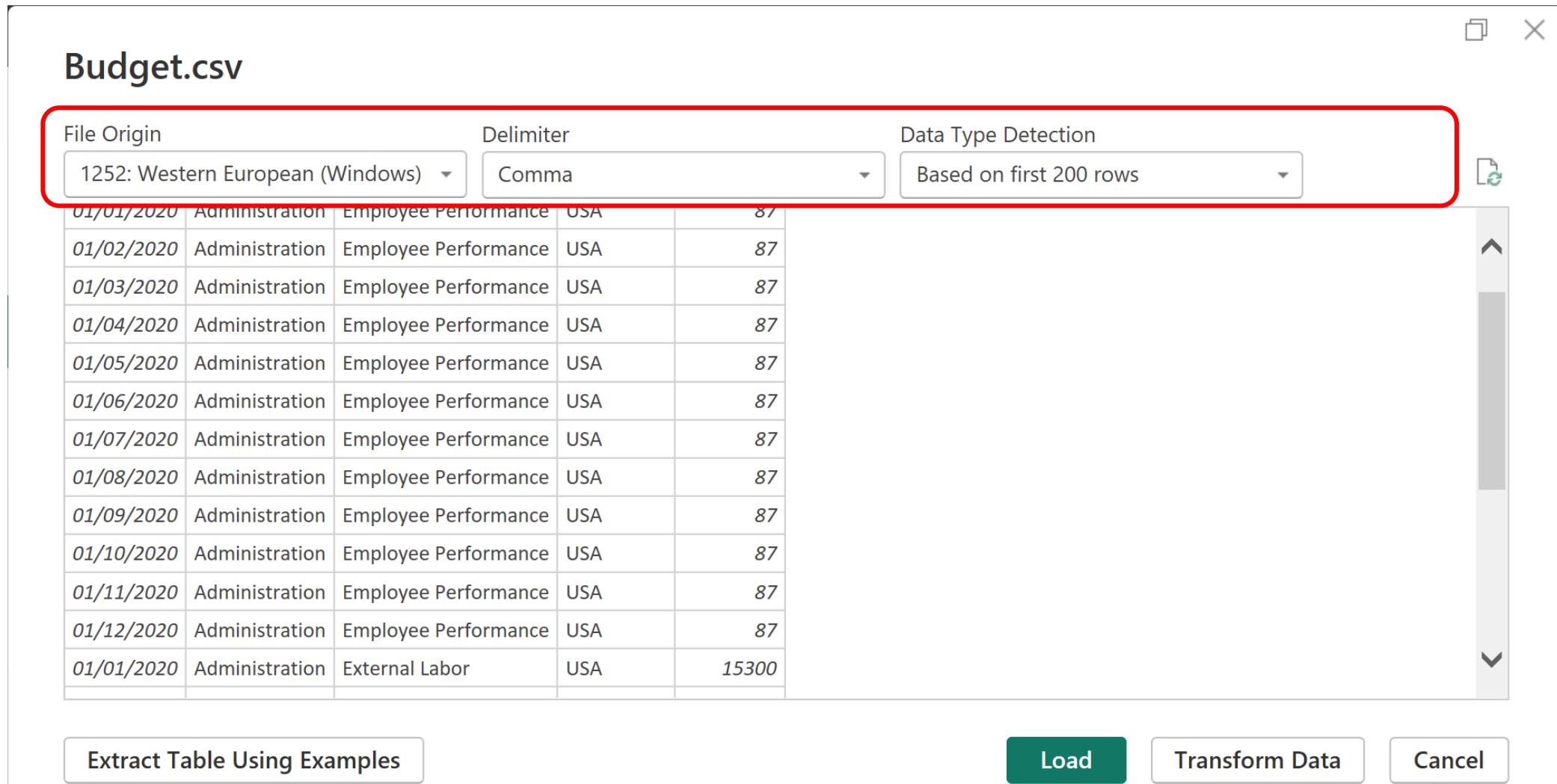
Create a Power BI dashboard from a report

- Now we grab CSV files for budget and forecast



Create a Power BI dashboard from a report

- We are happy with these options, the data is ready to go (so no need to click on Transform Data), so we will click on Load



Create a Power BI dashboard from a report

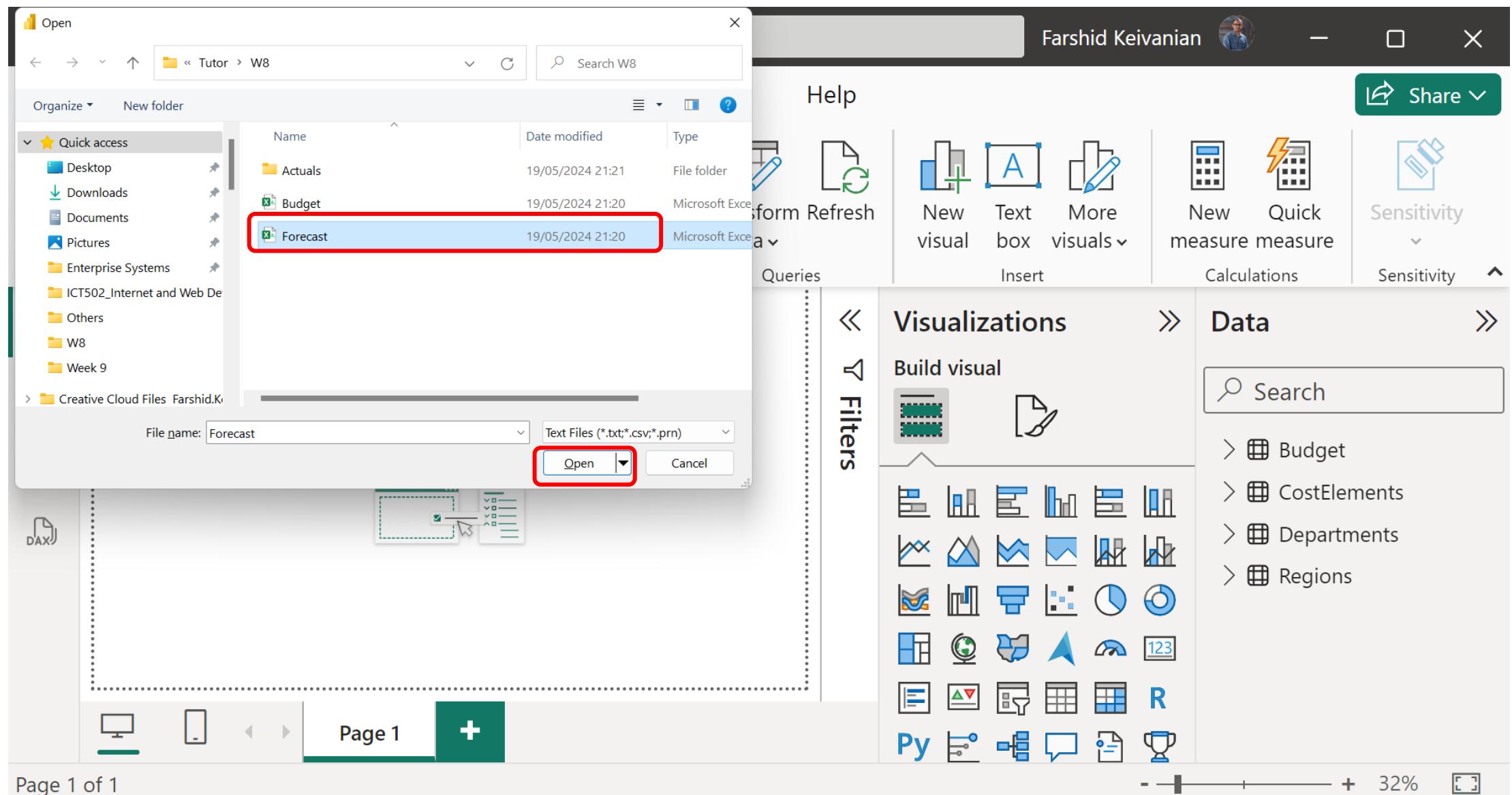
- Let's do the same for the Forecast data

The screenshot shows the Power BI Desktop interface with the following details:

- Top Bar:** Untitled - Power BI Desktop, Search, Farshid Keivanian, Share.
- Home Tab:** Selected.
- Get data icon:** Located in the Home tab ribbon, with a red box highlighting it.
- Get data dropdown menu:** Opened, showing options: Excel workbook, OneLake data hub, Dataverse, SQL Server, Text/CSV, and Web.
- Common data sources:** A list of data source types including Excel workbook, Power BI semantic models, Dataflows, Dataverse, SQL Server, and Analysis Services.
- Visualizations:** A grid of visualization icons.
- Data:** A list of data items including Budget, CostElements, Departments, and Regions.
- Bottom Status Bar:** Page 1 of 1, 32%, and a zoom control.

Create a Power BI dashboard from a report

- Select Forecast.csv



Create a Power BI dashboard from a report

- Load it straight in

The screenshot shows the Power BI Desktop interface with the 'Home' tab selected in the ribbon. A file named 'Forecast.csv' is currently loaded, as indicated by the title bar and the preview window. The preview window displays a table with columns: Date, IT Dep., CostElement, Country, and Forecast. The 'Load' button at the bottom right of the preview window is highlighted with a red box.

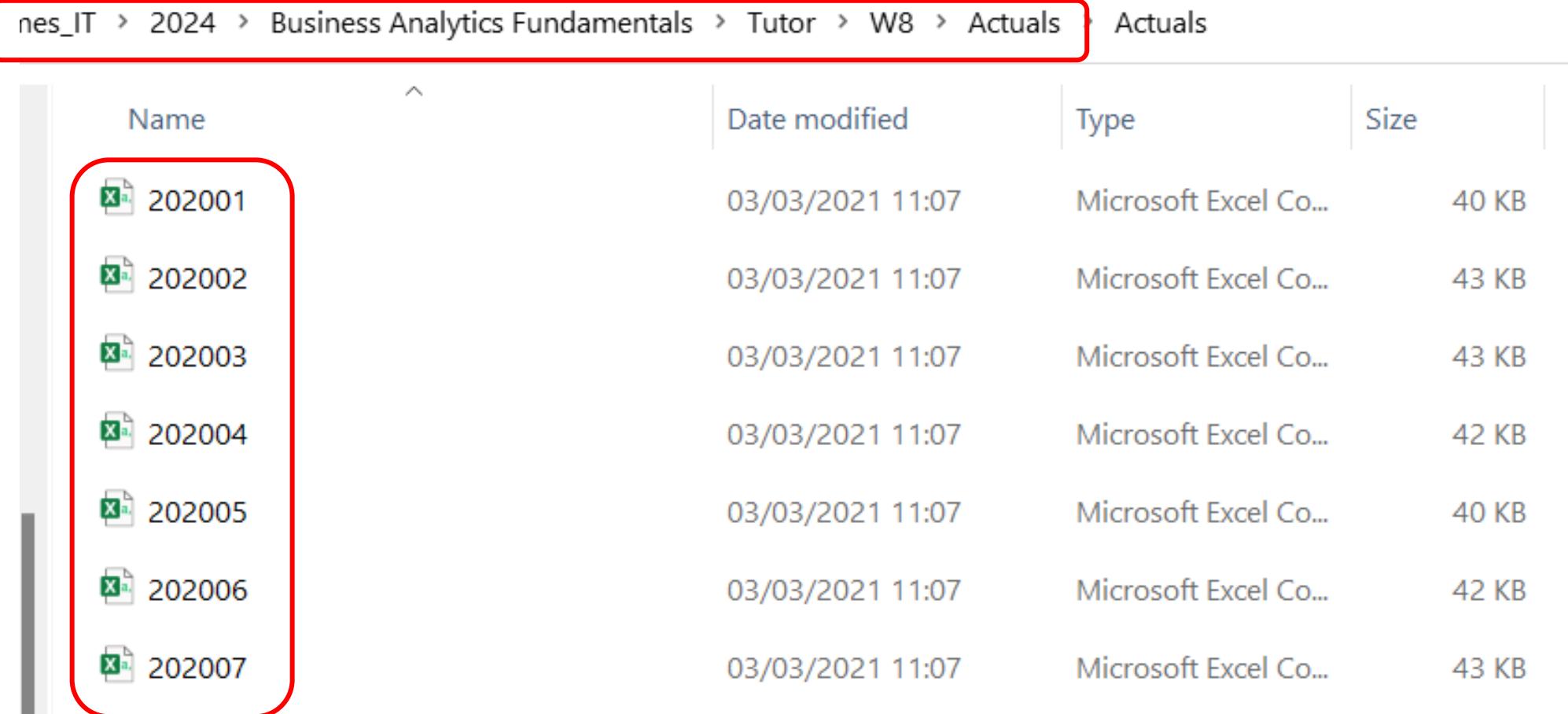
Date	IT Dep.	CostElement	Country	Forecast
01/07/2020	Administration	Administrative	USA	-21785
01/08/2020	Administration	Administrative	USA	-21785
01/09/2020	Administration	Administrative	USA	-21785
01/10/2020	Administration	Administrative	USA	-21785
01/11/2020	Administration	Administrative	USA	-21785
01/12/2020	Administration	Administrative	USA	-21785
01/02/2020	Administration	Employee Performance	USA	27
01/03/2020	Administration	Employee Performance	USA	150
01/04/2020	Administration	Employee Performance	USA	182

Extract Table Using Examples

Load Transform Data Cancel

Create a Power BI dashboard from a report

- We need to add actuals (each month's data is in a separate file)
- We need to consolidate these files into a single table



Name	Date modified	Type	Size
202001	03/03/2021 11:07	Microsoft Excel Co...	40 KB
202002	03/03/2021 11:07	Microsoft Excel Co...	43 KB
202003	03/03/2021 11:07	Microsoft Excel Co...	43 KB
202004	03/03/2021 11:07	Microsoft Excel Co...	42 KB
202005	03/03/2021 11:07	Microsoft Excel Co...	40 KB
202006	03/03/2021 11:07	Microsoft Excel Co...	42 KB
202007	03/03/2021 11:07	Microsoft Excel Co...	43 KB

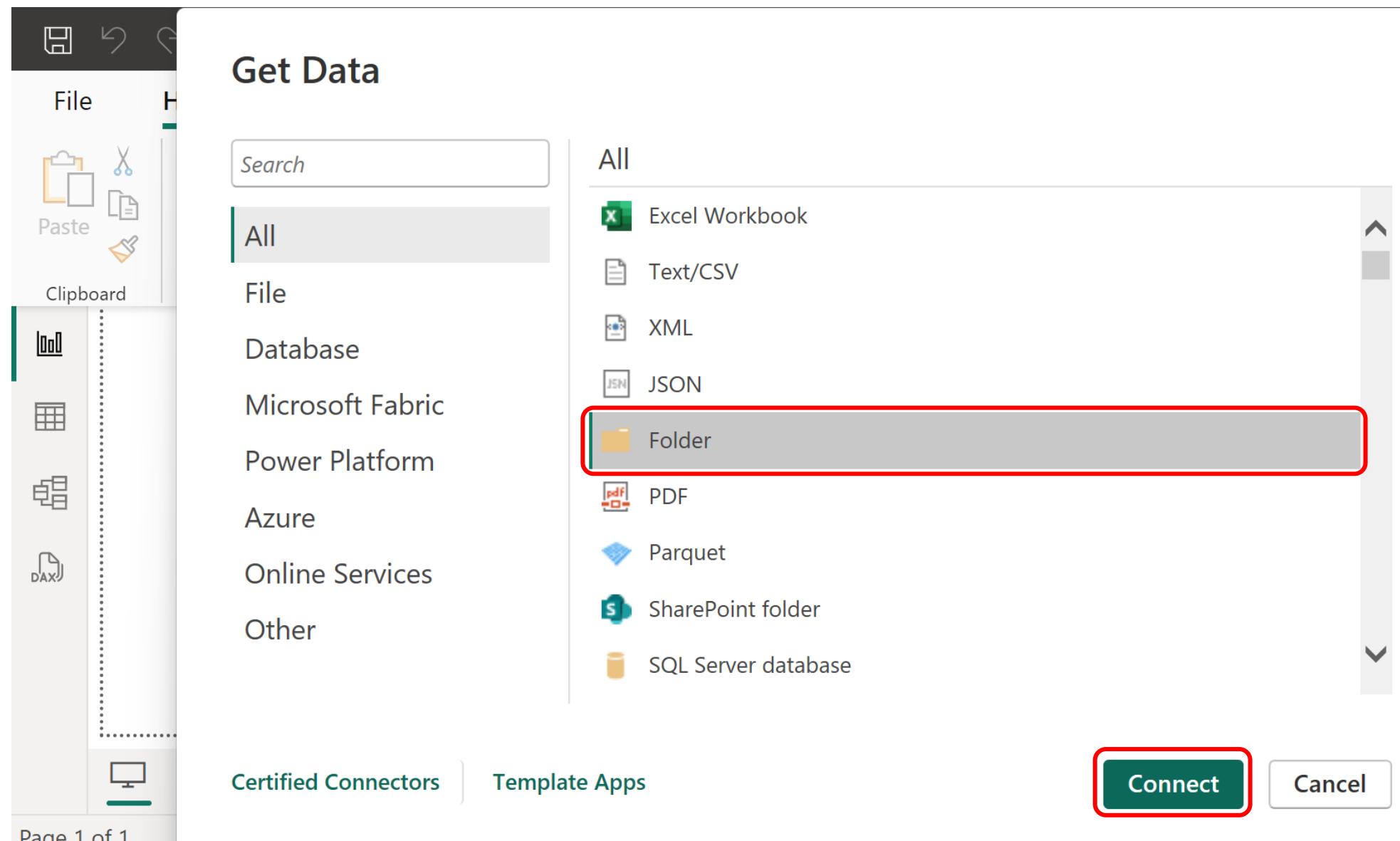
Create a Power BI dashboard from a report

- Copy the address

nes_IT > 2024 > Business Analytics Fundamentals > Tutor > W8 > Actuals

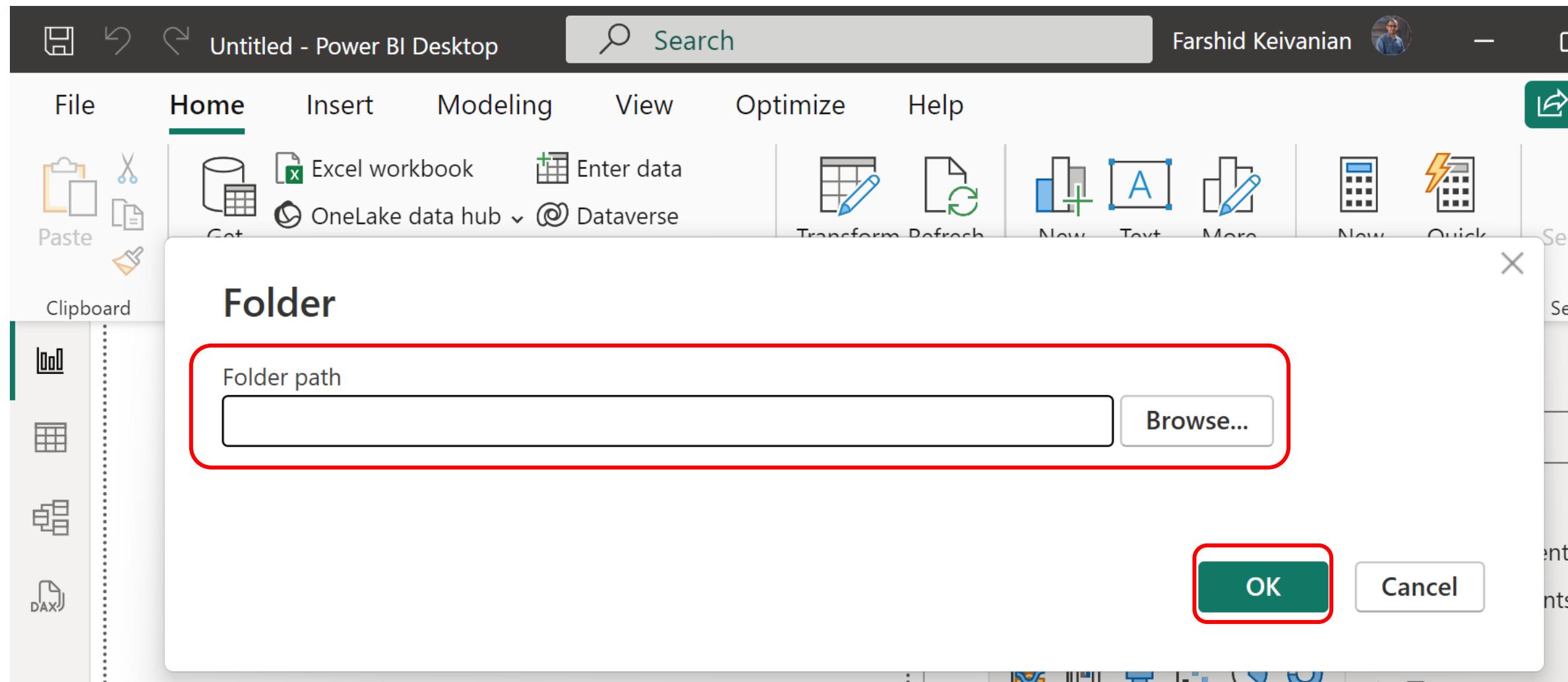
Create a Power BI dashboard from a report

- Click on Get Data
- Select More
- Click on Folder
- Click on Connect



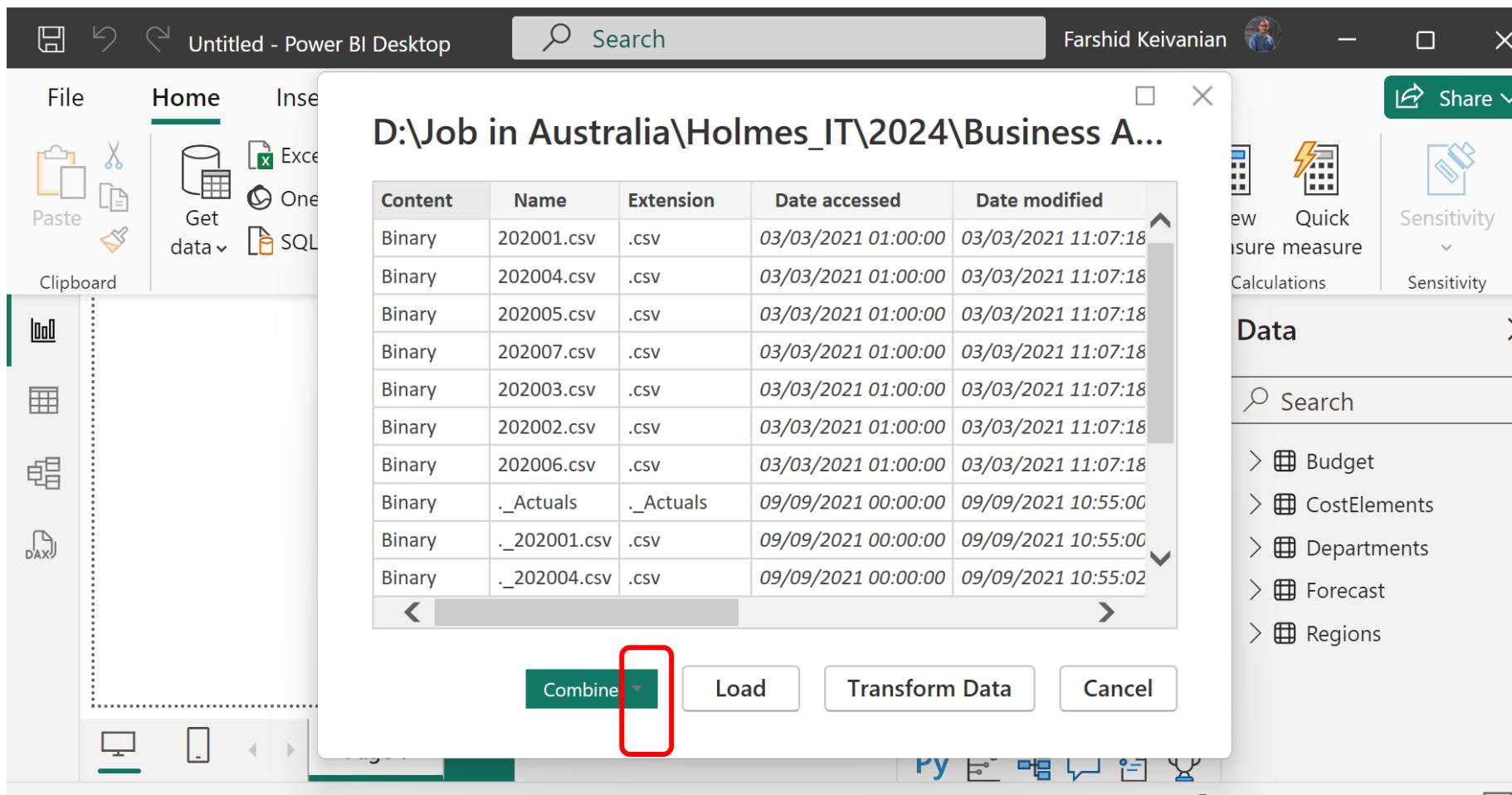
Create a Power BI dashboard from a report

- **Ctrl + V to paste the address in Folder path**
- **Click on OK**



Create a Power BI dashboard from a report

- Power Query shows us a list of files in that folder and some meta data (mouse move right) about those files
- Click on Combine & Transform



Create a Power BI dashboard from a report

- Click on Combine & Transform data so we can see the power query editor

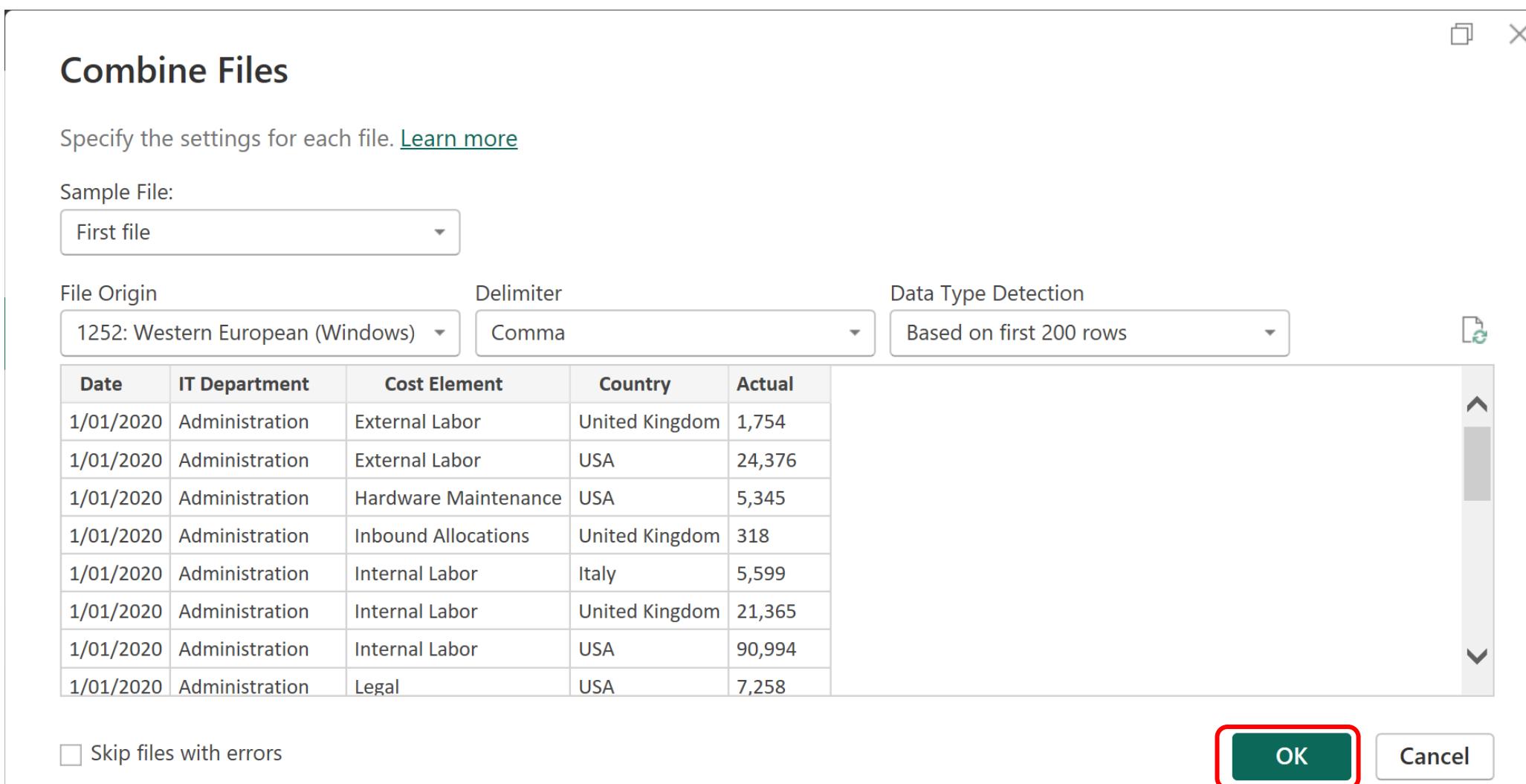
D:\Job in Australia\Holmes_IT\2024\Business A...

Content	Name	Extension	Date accessed	Date modified
Binary	202001.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	202004.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	202005.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	202007.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	202003.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	202002.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	202006.csv	.csv	03/03/2021 01:00:00	03/03/2021 11:07:18
Binary	._Actuals	._Actuals	09/09/2021 00:00:00	09/09/2021 10:55:00
Binary	._202001.csv	.csv	09/09/2021 00:00:00	09/09/2021 10:55:00
Binary	._202004.csv	.csv	09/09/2021 00:00:00	09/09/2021 10:55:02



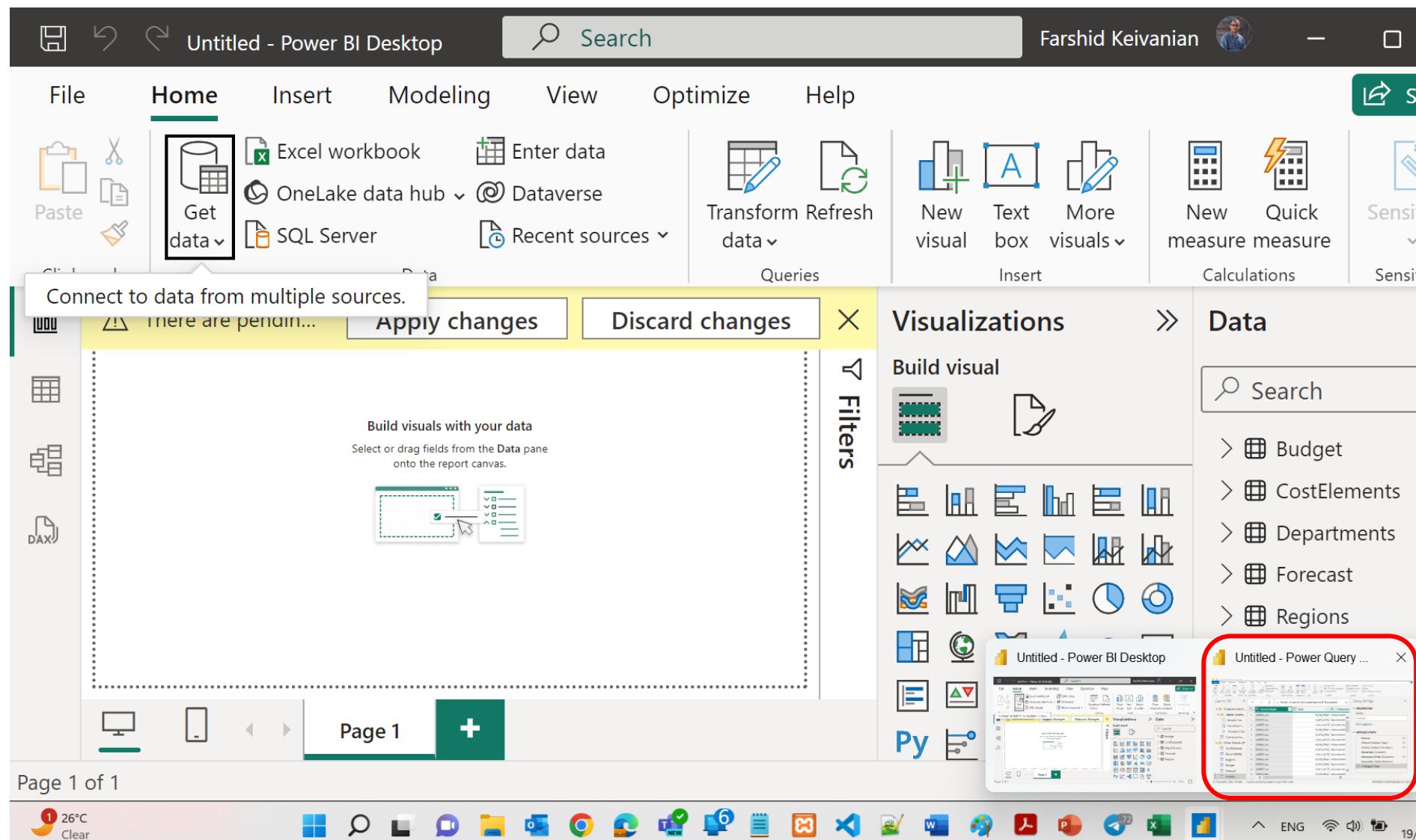
Create a Power BI dashboard from a report

- Similar to the csv file we get a preview, the first file is fine for this example, we click on OK



Create a Power BI dashboard from a report

- Power Query opens a separate window and we can clean and transform the data before loading it to our model



Create a Power BI dashboard from a report

- List of Queries are on the left side
- List of Steps are on the right side

The screenshot shows the Power Query Editor interface with several key components highlighted:

- Queries [10] (Left Side):** A list of 10 queries, including "Transform File fr...", "Helper Querie...", "Sample File", "Parameter1 (...)", "Transform File", "Transform Sa...", "Other Queries [6]", "CostElements", "Departments", "Regions", "Budget", "Forecast", and "Actuals". The "Actuals" query is currently selected.
- Query Editor Area (Center):** Displays a preview of the data with the formula `= Table.TransformColumnTypes(#"Expanded", {{"Source.Name", "Text"}, {"Date", "Text"}, {"IT Department", "Text"}})`. The data shows 13 rows of "202001.csv" entries with "01/01/2020" dates and "Administrative" IT departments.
- Query Settings (Right Side):** A panel showing "PROPERTIES" for the selected "Actuals" query, with the "Name" set to "Actuals". It also includes a "All Properties" link.
- Applied Steps (Right Side):** A list of steps applied to the query, including "Source", "Filtered Hidden Files1", "Invoke Custom Function1", "Renamed Columns1", "Removed Other Columns1", "Expanded Table Column1", and "Changed Type". The "Changed Type" step is highlighted with a red box.

Create a Power BI dashboard from a report

- We do not need the first column in this table it contains the filename
- Press Del Key to remove that column

The screenshot shows the Power Query Editor interface with the following details:

- File Bar:** Home, Transform, Add Column, View, Tools, Help.
- Toolbars:** Close & Apply, New Source, Refresh Preview, Manage Columns, Data Type: Text, Sort, Transform.
- Queries [10] List:** Transform File fr..., Helper Querie..., Sample File, Parameter1 ..., Transform File, Transform Sa..., Other Queries [6]: CostElements, Departments, Regions, Budget, Forecast, Actuals.
- Table Preview:** Shows a table with 14 rows and 3 columns: "Source.Name", "Date", and "IT Department". The first column is highlighted with a red box.
- Query Settings Panel:** Properties section shows "Name: Actuals". Applied Steps list includes: Source, Filtered Hidden Files1, Invoke Custom Function1, Renamed Columns1, Removed Other Columns1, Expanded Table Column1, and Changed Type.
- Bottom Status:** 6 COLUMNS, 999+ ROWS, Column profiling based on top 1000 rows.

Create a Power BI dashboard from a report

- We will see this

The screenshot shows the Power Query Editor interface with the following details:

- File** | **Untitled - Power Query Editor**
- Home** tab selected.
- Transform** ribbon tab.
- Queries [10]** pane on the left:

- Transform File fr...
- Helper Querie...
- Sample File
- Parameter1 (...)
- Transform File
- Transform Sa...
- Other Queries [6]
- CostElements
- Departments
- Regions
- Budget
- Forecast
- Actuals** (selected)

Date column highlighted with a red box in the main table area.

	Date	IT Department	Cost Element
1	01/01/2020	Administration	External Labo
2	01/01/2020	Administration	External Labo
3	01/01/2020	Administration	Hardware Ma
4	01/01/2020	Administration	Inbound Allo
5	01/01/2020	Administration	Internal Labo
6	01/01/2020	Administration	Internal Labo
7	01/01/2020	Administration	Internal Labo
8	01/01/2020	Administration	Legal
9	01/01/2020	Administration	Moving
10	01/01/2020	Administration	Other
11	01/01/2020	Administration	Other
12	01/01/2020	Administration	Other
13	01/01/2020	Administration	Outbound Al

Query Settings pane on the right:

- PROPERTIES**
 - Name: Actuals
- All Properties**
- APPLIED STEPS**
 - Source
 - Filtered Hidden Files1
 - Invoke Custom Function1
 - Renamed Columns1
 - Removed Other Columns1
 - Expanded Table Column1
 - Changed Type
 - Removed Columns** (highlighted)

Create a Power BI dashboard from a report

- Filter out country column e.g., in order to analyse data only for USA deselect other countries and just select USA

The screenshot shows the Power Query Editor interface with the following details:

- Queries [10]**: A tree view of queries including Transform File fr..., Helper Querie..., Sample File, Parameter1 ..., Transform File, Transform Sa..., Other Queries [6], CostElements, Departments, Regions, Budget, Forecast, and **Actuals**.
- Query Settings**: Properties for the **Actuals** query, including Name set to **Actuals**.
- Applied Steps**: A list of steps: Source, Filtered Hidden Files1, Invoke Custom Function1, Renamed Columns1, Removed Other Columns1, Expanded Table Column1, **Changed Type**, and **Removed Columns**.
- Table View**: A preview of the data table with three columns: **Element**, **Country**, and **Actual**. The **Country** column has a red box around its dropdown arrow.

Element	Country	Actual
1 Labor	United Kingdom	
2 Labor	USA	
3 e Maintenance	USA	
4 Allocations	United Kingdom	
5 labor	Italy	
6 labor	United Kingdom	
7 labor	USA	
8	USA	
9	USA	
10	Italy	
11	United Kingdom	
12	USA	
13 d Allocations	United Kingdom	

Create a Power BI dashboard from a report

- Filter out country column e.g., if we want to analyse data only for USA, we can deselect other countries and just select USA (we just show how it works, we do not click on OK, so

cancel it)

- It will filter the data before loading it to our data model (it is important to not bring data which is not going to be used)

The screenshot shows the Power Query Editor interface with the 'File' tab selected. The main area displays a list of queries under 'Queries [10]'. The 'Actuals' query is currently selected, showing its formula: `= Table.RemoveColumns(#"Changed Type", {1, 2, 3})`. A context menu is open over the 'Actuals' query, with 'USA' selected and highlighted by a red box. At the bottom of the dropdown, there is a message: 'List may be incomplete.' and a 'Load more' button. The 'OK' button at the bottom right of the dropdown is also highlighted by a red box.

Queries [10]

- Transform
- Helper Queries
- Sample
- Parameters
- Transform
- Other Queries
- CostElements
- Departments
- Regions
- Budget
- Forecast
- Actuals

`= Table.RemoveColumns(#"Changed Type", {1, 2, 3})`

Actuals

Sort Ascending

Sort Descending

Clear Sort

Clear Filter

Remove Empty

Text Filters

Search

Puerto Rico

Spain

Switzerland

United Kingdom

USA

List may be incomplete.

Load more

OK Cancel

Query Settings

PROPERTIES

Name: Actuals

All Properties

APPLIED STEPS

Source: Filtered Hidden Files1

Invoke Custom Function1

Renamed Columns1

Removed Other Columns1

Expanded Table Column1

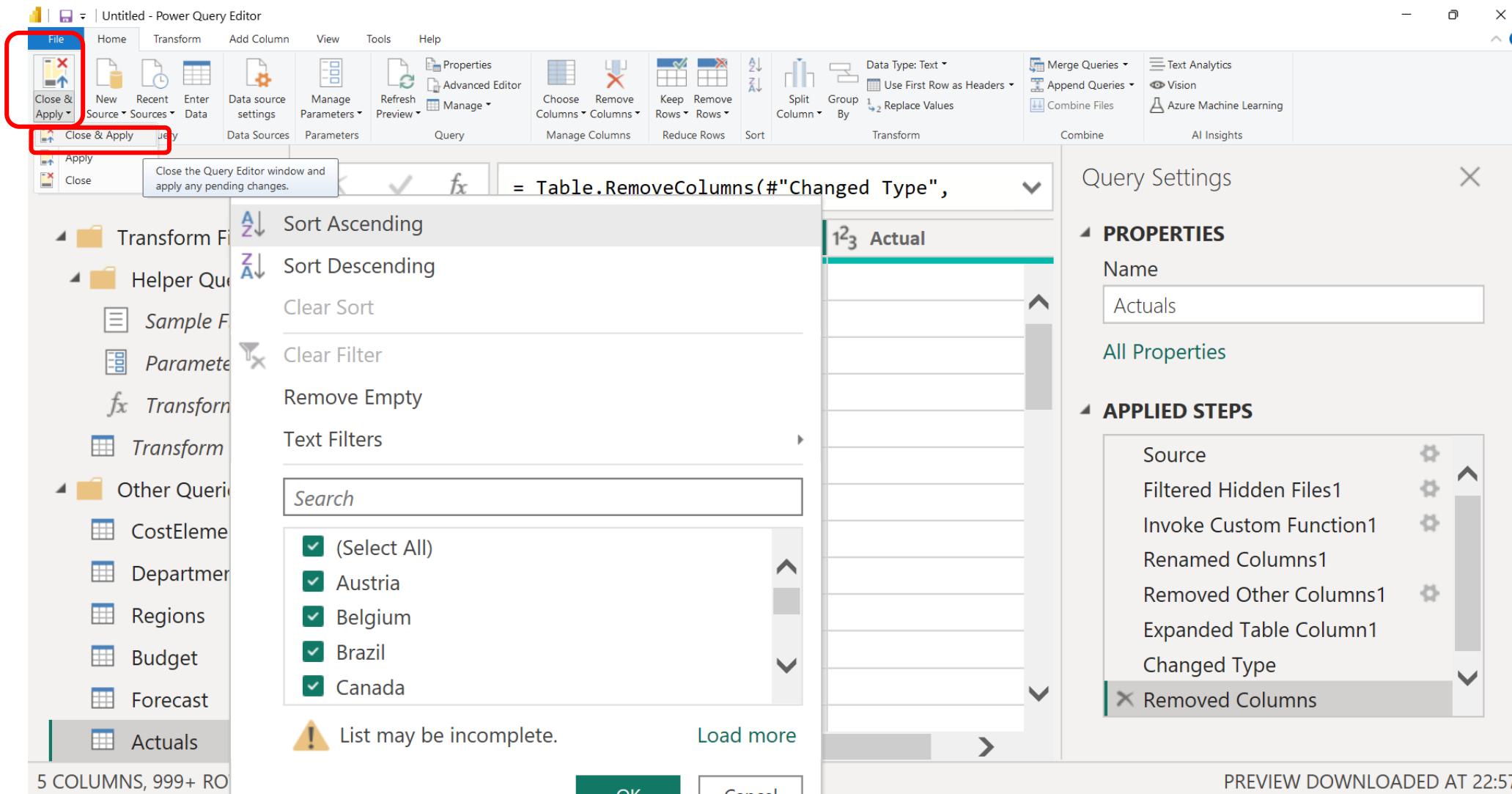
Changed Type

Removed Columns

PREVIEW DOWNLOADED AT 22:57

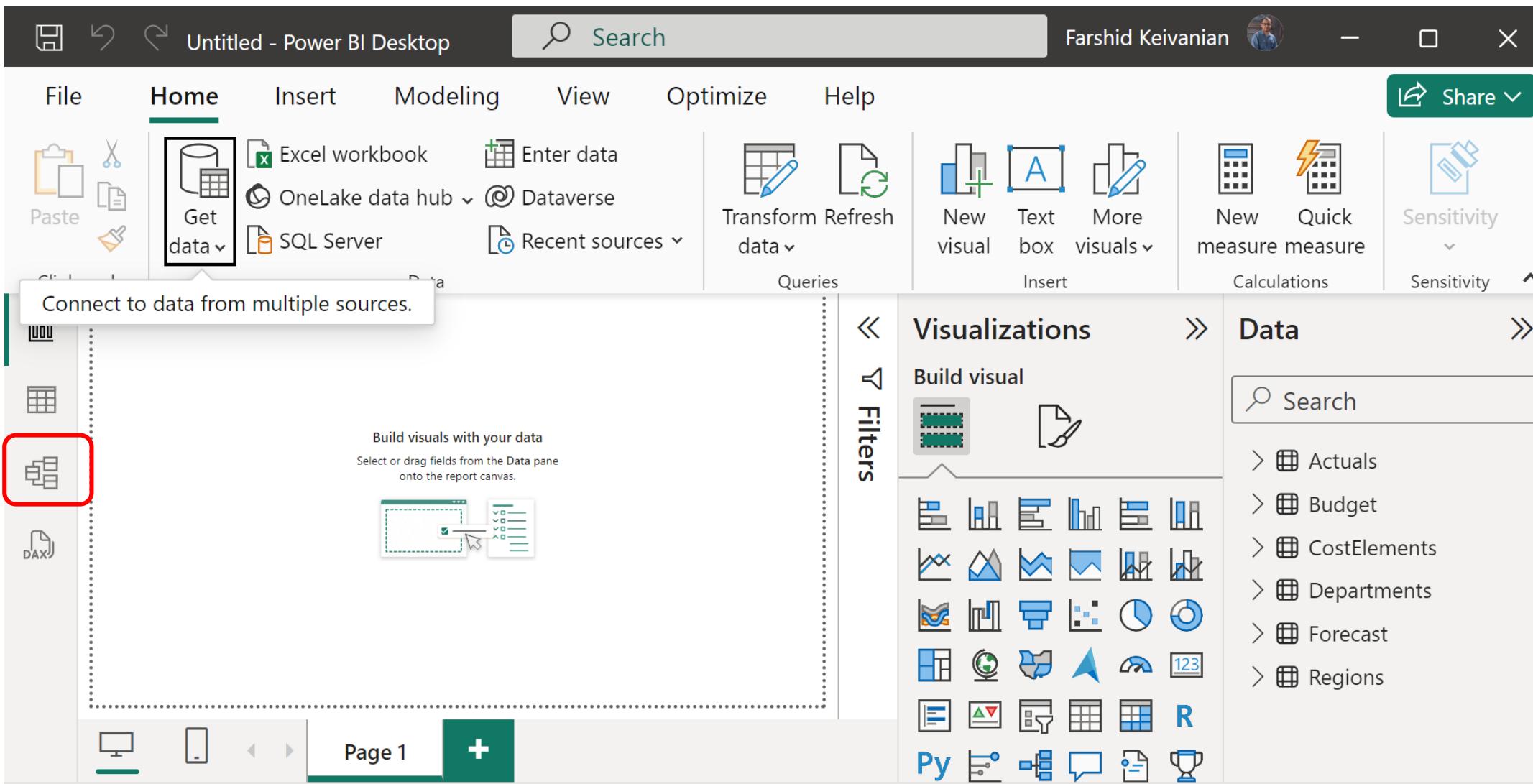
Create a Power BI dashboard from a report

- We are ready to load out data to our power pivot data model in Power BI
- Click on Close and Apply (top left corner)



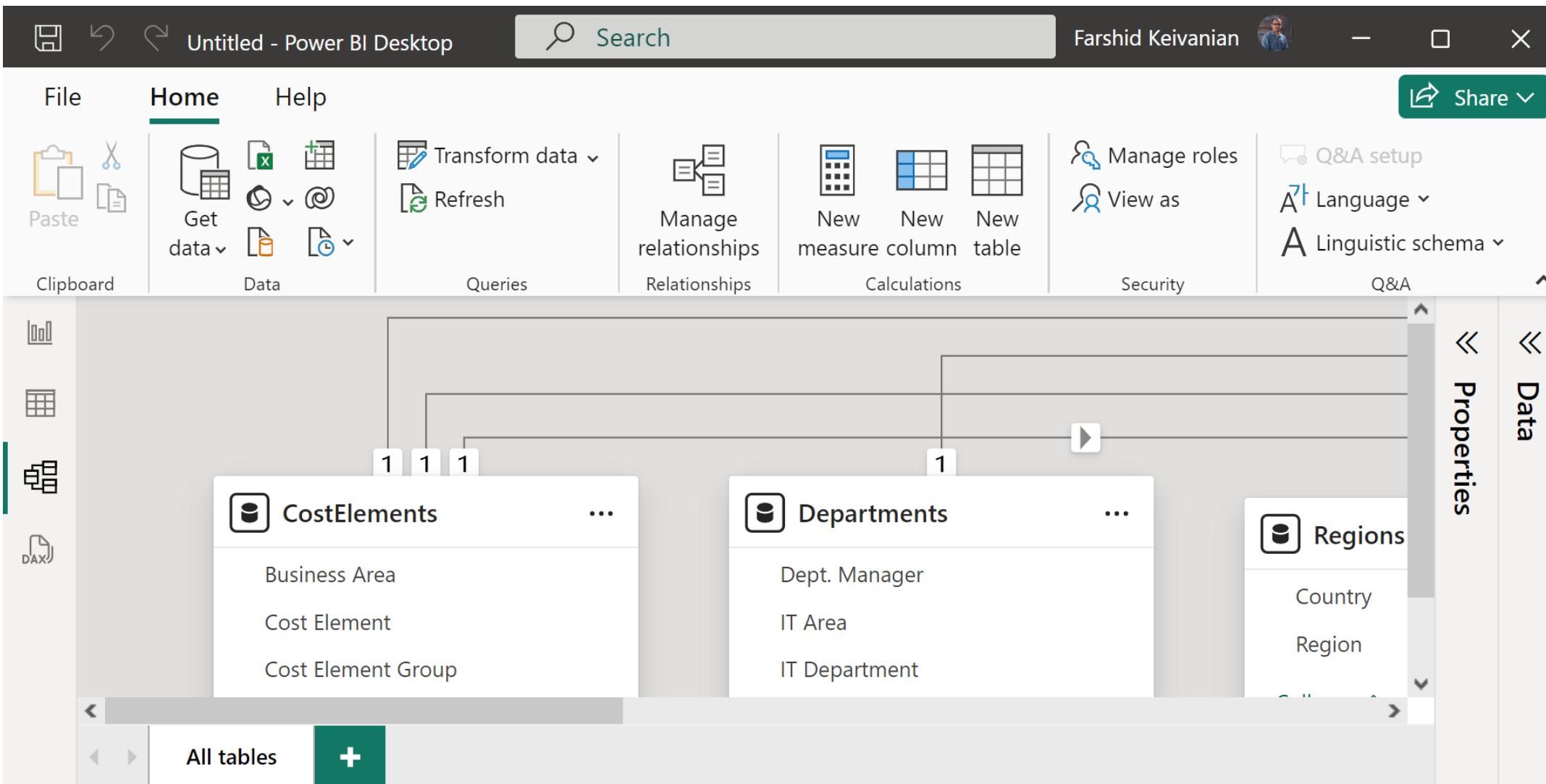
Create a Power BI dashboard from a report

- All our data are ready to work with (See Data Field)
- To see if the relationship between the tables are set correctly, we Click on Model View



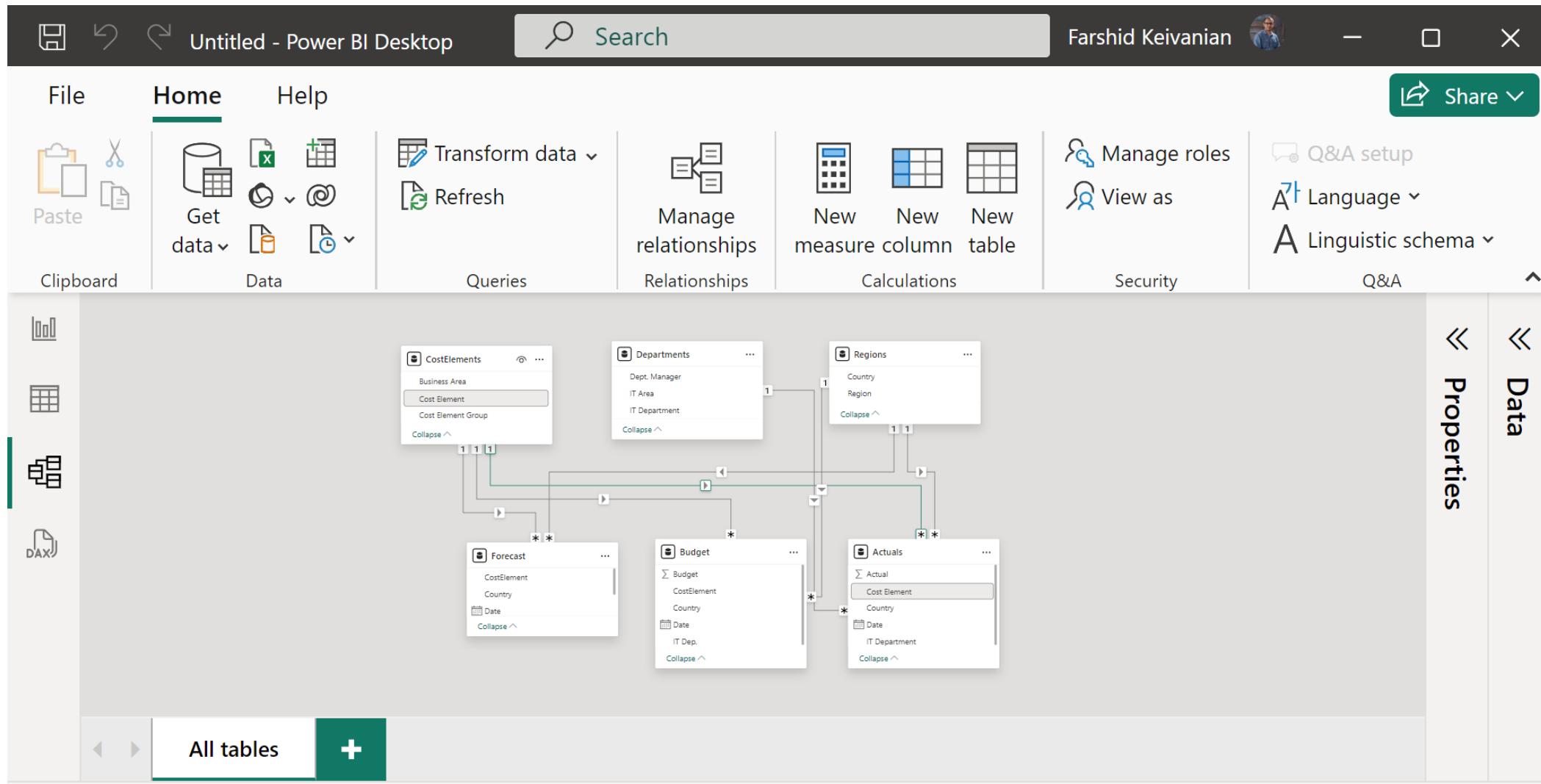
Create a Power BI dashboard from a report

- Collapse the Visualisation and Data panes (right side)
- Zoom out and Rearrange the tables (fact tables at the bottom, dimension tables at the top)



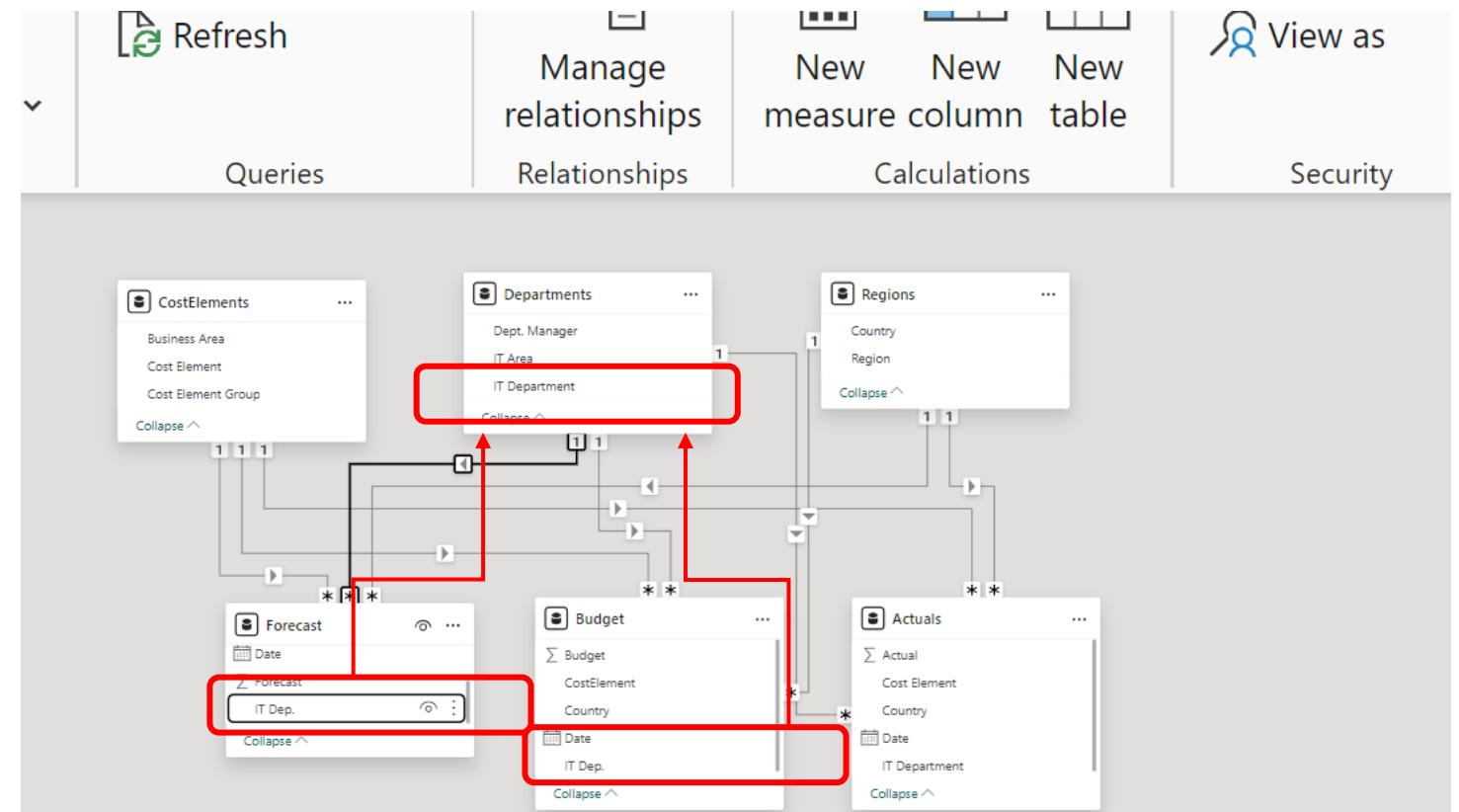
Create a Power BI dashboard from a report

- Hover over a connector line to highlights the related fields
- If you want to change the relationships, you can double click on these connection lines



Create a Power BI dashboard from a report

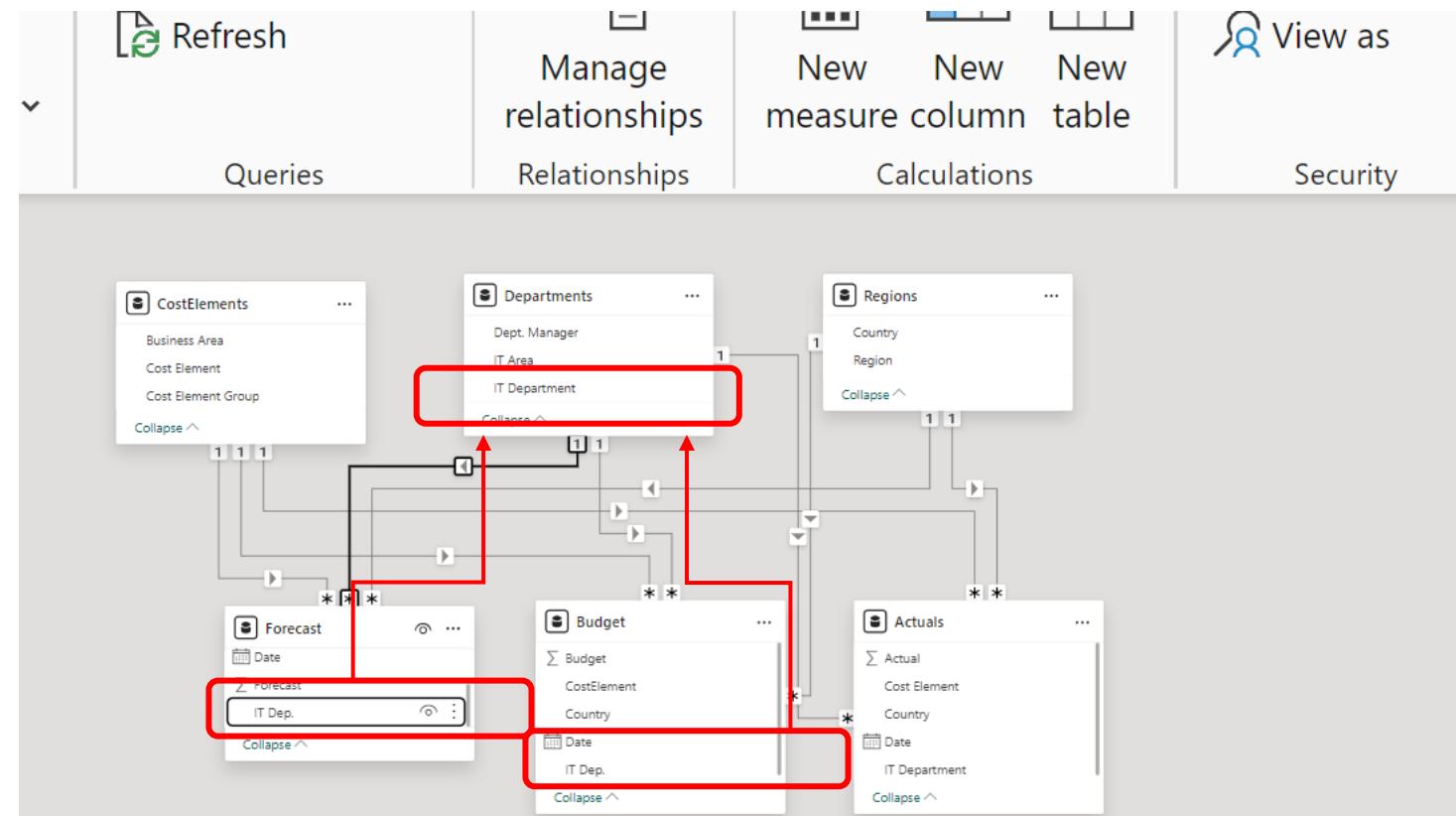
- The department's table only has one relationship with the Actuals table
- It is missing relationship between the budget and forecast (because the column name in the budget and forecast tables is spelled slightly differently, we can create those relationships):
- Left Click on IT Dep in Budget and Drag it and Release it on top of field that it corresponds with (in Departments)
- Left Click on IT Dep in Forecast and Drag it and Release it on top of field that it corresponds with (in Departments)
- Now the relationships are setup



Create a Power BI dashboard from a report

- We also need a calendar table because we have three fact tables and we want to visualize data from each table in a single visual we need a dedicated Dimension table that contains a list of dates one for every day of the calendar of fiscal years that we want to report on

- We can create this table in power query or in Power BI we can use the calendar or calendar Auto Dax functions (these functions are not available in power pivot in Excel)



Create a Power BI dashboard from a report

- Click on Data View (Table View)

The screenshot shows the Power BI Data View interface. The top navigation bar includes File, Home (selected), Help, Share, Paste, Get data, Transform data, Refresh, Manage relationships, New measure column, New table, Manage roles, View as, Language, Linguistic schema, Security, Q&A, and a search bar. On the left, there's a sidebar with icons for Table view (highlighted with a red box), DAX, and Properties. The main area displays a data model diagram with tables: CostElements, Departments, Regions, Forecast, Budget, and Actuals. Relationships are shown between these tables, such as Forecast linking to Departments and Budget, and Budget linking to Actuals. Each table has its properties listed below it, including columns like Business Area, Dept. Manager, Country, etc. At the bottom, there are buttons for All tables and a plus sign, and a status bar showing zoom levels and a refresh icon.

Create a Power BI dashboard from a report

- Select Table Tools >> New Table

The screenshot shows the Power BI ribbon interface. The 'Home' tab is selected. On the far left, there's a vertical toolbar with icons for Paste, Clipboard, Get data, Data, Queries, Relationships, Calculations, Security, Q&A, and Properties. The 'Data' icon (a grid) is highlighted with a red box, and a tooltip labeled 'Table view' points to it. The main area displays a data model diagram with tables: CostElements, Departments, Regions, Forecast, Budget, and Actuals. Relationships are shown between these tables, such as 'CostElements' linking to 'Forecast' and 'Budget', and 'Regions' linking to 'Actuals'. At the bottom, there are navigation buttons for 'All tables' and a '+' button, along with a status bar showing '36%' and a refresh icon.

Create a Power BI dashboard from a report

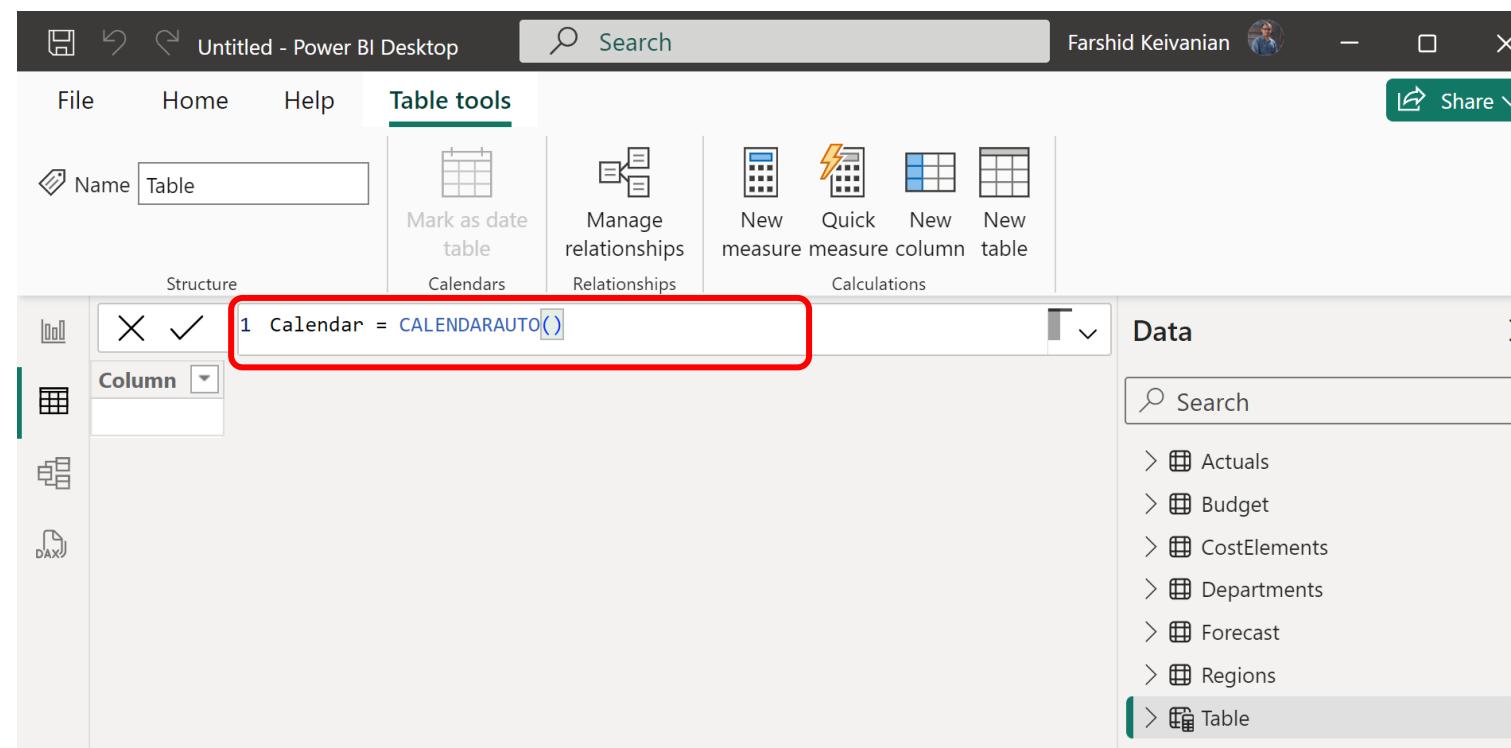
- Select Table Tools >> New Tables

The screenshot shows the Power BI Desktop interface. The top navigation bar includes icons for file operations, a search bar, and user information. Below the bar, the ribbon has tabs: File, Home, Help, and Table tools, which is currently selected. A sub-menu under Table tools shows options: Name (with 'Actuals' entered), Mark as date table, Manage relationships, New measure, Quick measure, New column, and New table. The 'New table' option is highlighted with a red box. A tooltip below the sub-menu says 'Write a DAX expression to create a new table.' On the left, there's a data view pane with a table view icon, showing a preview of data with columns: IT Department, Cost Element, Country, and Actual. The data itself lists various departments and their costs. To the right of the table is a 'Data' pane containing a search bar and a list of data models: Actuals, Budget, CostElements, Departments, Forecast, and Regions.

IT Department	Cost Element	Country	Actual
Administration	Internal Labor	USA	90994
Architecture	Internal Labor	USA	41537
Business Intelligence	Internal Labor	USA	64388
Core	Internal Labor	USA	20476
Core Infrastructure	Internal Labor	USA	55695
Data Centers	Internal Labor	USA	138204
Development	Internal Labor	USA	149259
Distribution	Internal Labor	USA	75649
Document Management	Internal Labor	USA	198600

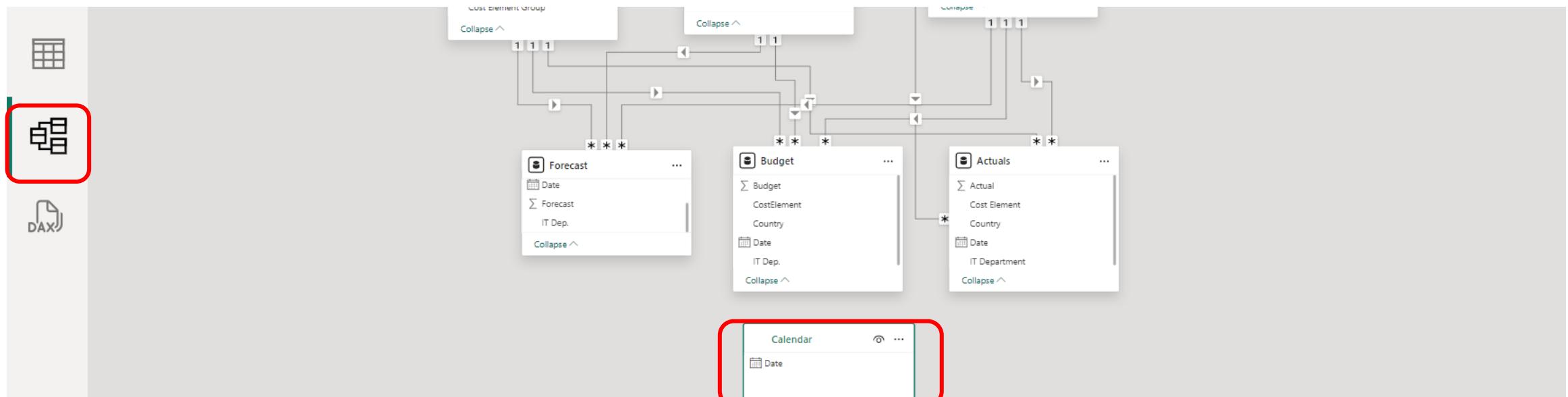
Create a Power BI dashboard from a report

- Type Calendar as for table name
- Type CalendarAUTO function
- For a table based on a fiscal period, our fiscal year starts in January we can leave it blank, but for starting in July we would type 7 as for the start
- Press Enter to create the calendar table



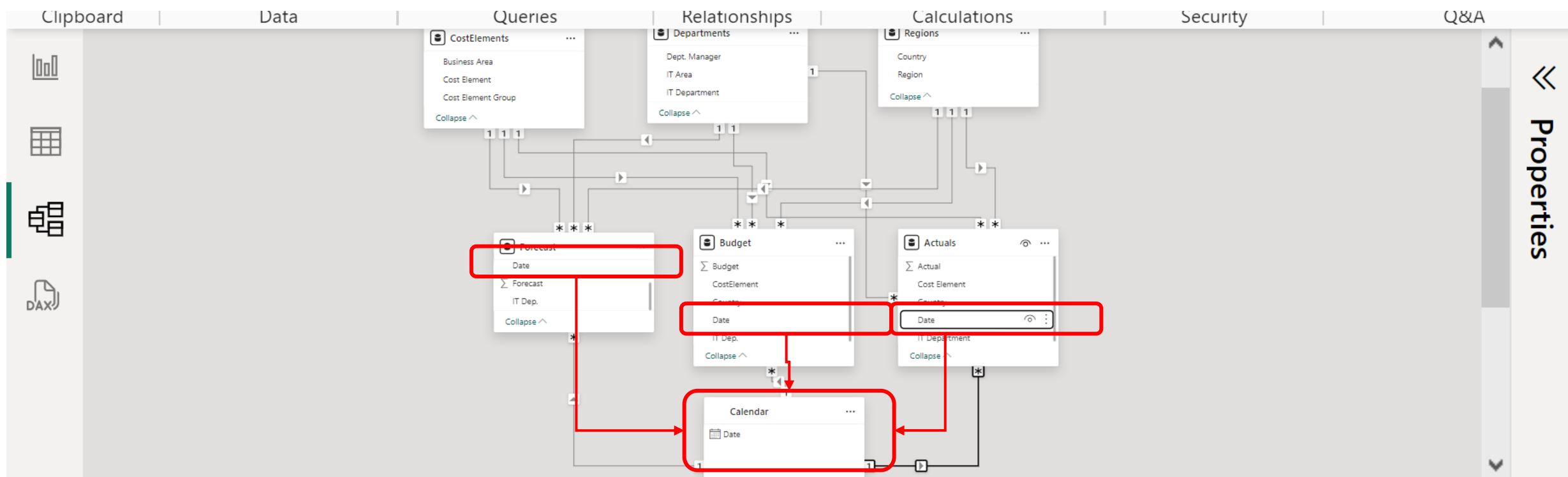
Create a Power BI dashboard from a report

- The CalendarAUTO function always starts with the first day of the calendar year or fiscal year and it ends at the last day of the calendar year or fiscal year
- Our model has dates from 1st of January to the 31st of December 2020
- We need to create the relationships between the fact tables
- Click on Model view and move Calendar table down



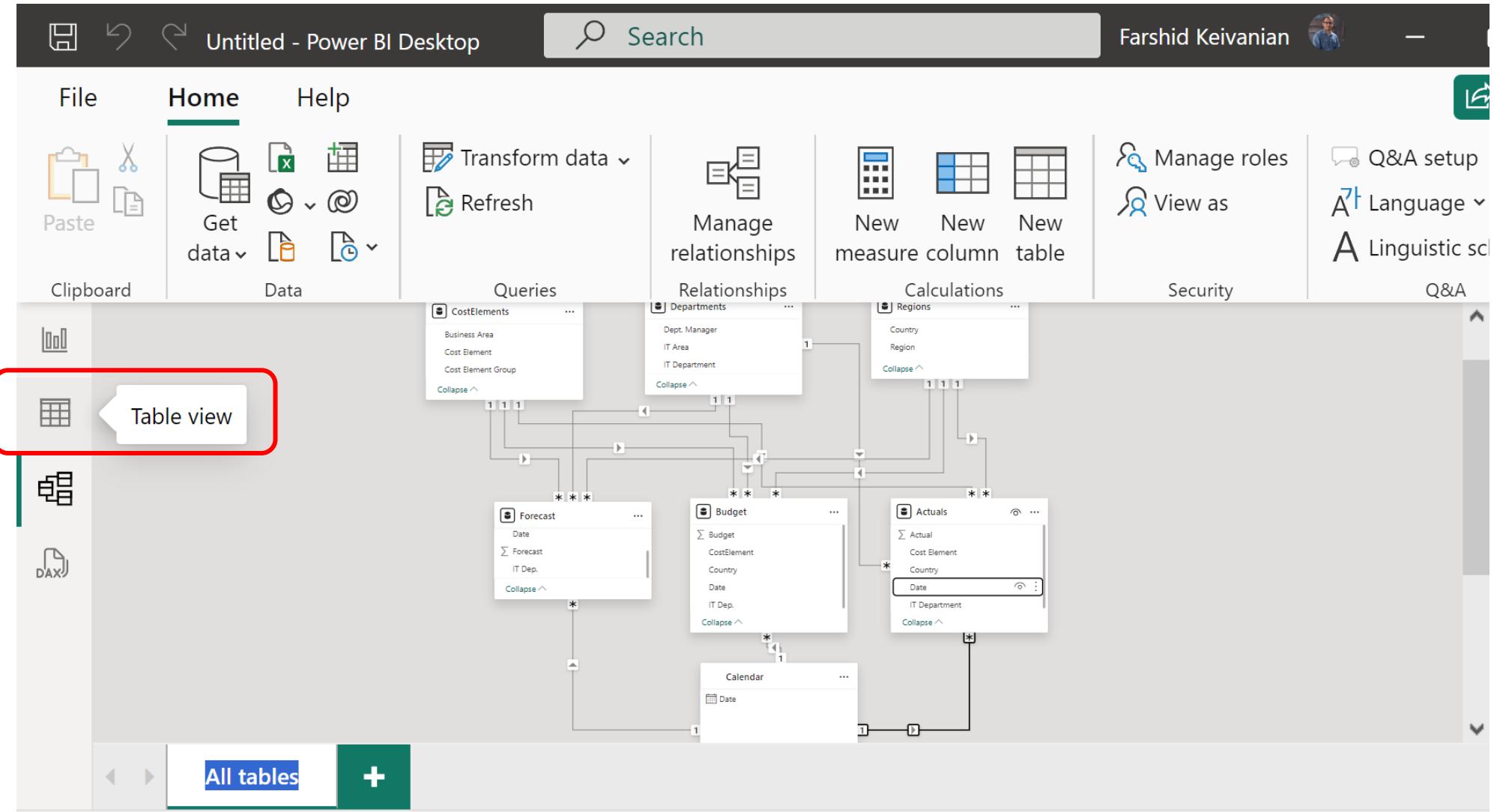
Create a Power BI dashboard from a report

- **Left Click and Drag each of the date fields from Forecast, Budget, and Actuals up to the Calendar dimension field**



Create a Power BI dashboard from a report

- Click on Data (Table) View
- Select comma separator for Actual



Create a Power BI dashboard from a report

- Click on Data (Table) View
- Select Actual from Data Pane and Column, then Select comma separator for it

The screenshot shows the Power BI Desktop interface. The ribbon is at the top with 'Table tools' selected. In the 'Column tools' section, the 'Actual' column is selected. A dropdown menu is open over the column selector, showing the option 'Display the values in this column with commas as a thousands separator.' Below the ribbon, there's a table with columns: Date, IT Department, Cost Element, Country, and Actual. The 'Actual' column has a dropdown arrow pointing down, which is also highlighted with a red box. To the right of the table is the 'Data' pane, which lists various fields under 'Actuals'. The field 'Σ Actual' is highlighted with a red box. The table below has 11 rows, each starting with 'Wednesday, 1 January 2020'.

Date	IT Department	Cost Element	Country	Actual
Wednesday, 1 January 2020	Administration	Internal Labor	USA	90994
Wednesday, 1 January 2020	Architecture	Internal Labor	USA	41537
Wednesday, 1 January 2020	Business Intelligence	Internal Labor	USA	64388
Wednesday, 1 January 2020	Core	Internal Labor	USA	20476
Wednesday, 1 January 2020	Core Infrastructure	Internal Labor	USA	55695
Wednesday, 1 January 2020	Data Centers	Internal Labor	USA	138204
Wednesday, 1 January 2020	Development	Internal Labor	USA	149259
Wednesday, 1 January 2020	Distribution	Internal Labor	USA	75649
Wednesday, 1 January 2020	Document Management	Internal Labor	USA	198600
Wednesday, 1 January 2020	FIM	Internal Labor	USA	112270

Table: Actuals (6,251 rows) Column: Actual (3,822 distinct values)

Create a Power BI dashboard from a report

- You will see this

The screenshot shows the Power BI Desktop interface with the 'Column tools' tab selected in the ribbon. In the 'Formatting' section, the thousands separator is set to a comma (,). The 'Actual' dropdown in the Data pane is also highlighted with a red box.

Actual

Date	IT Department	Cost Element	Country	Actual
Wednesday, 1 January 2020	Administration	Internal Labor	USA	90,994
Wednesday, 1 January 2020	Architecture	Internal Labor	USA	41,537
Wednesday, 1 January 2020	Business Intelligence	Internal Labor	USA	64,388
Wednesday, 1 January 2020	Core	Internal Labor	USA	20,476
Wednesday, 1 January 2020	Core Infrastructure	Internal Labor	USA	55,695
Wednesday, 1 January 2020	Data Centers	Internal Labor	USA	138,204
Wednesday, 1 January 2020	Development	Internal Labor	USA	149,259
Wednesday, 1 January 2020	Distribution	Internal Labor	USA	75,649
Wednesday, 1 January 2020	Document Management	Internal Labor	USA	198,600

Data

- Actuals
 - Σ Actual
- Cost Element
- Country
- Date
- IT Department

Actual

Create a Power BI dashboard from a report

- Click on Budget and Select comma

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Help, Table tools, and Column tools. The Column tools tab is selected, with the 'Budget' column currently active. In the 'Formatting' section of the Column tools ribbon, there is a dropdown menu for currency and percentage symbols. A red box highlights the comma symbol in this dropdown. The main workspace displays a table with columns: Date, IT Dep., CostElement, Country, and Budget. The 'Budget' column values are all 1,425. To the right, the Data pane shows the data model with 'Budget' selected. A red box highlights the 'Σ Budget' entry in the data pane's search results.

Date	IT Dep.	CostElement	Country	Budget
Wednesday, 1 January 2020	R5	Hardware	Puerto Rico	1,425
Saturday, 1 February 2020	R5	Hardware	Puerto Rico	1,425
Sunday, 1 March 2020	R5	Hardware	Puerto Rico	1,426
Wednesday, 1 April 2020	R5	Hardware	Puerto Rico	1,425
Friday, 1 May 2020	R5	Hardware	Puerto Rico	1,425
Monday, 1 June 2020	R5	Hardware	Puerto Rico	1,426
Wednesday, 1 July 2020	R5	Hardware	Puerto Rico	1,425
Saturday, 1 August 2020	R5	Hardware	Puerto Rico	1,425
Tuesday, 1 September 2020	R5	Hardware	Puerto Rico	1,426
Thursday, 1 October 2020	R5	Hardware	Puerto Rico	1,425

Table: Budget (10,593 rows) Column: Budget (1,736 distinct values)

Create a Power BI dashboard from a report

- Click on Forecast and Select comma

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Help, Table tools, Column tools (which is currently selected), and Share. The Column tools ribbon has sections for Structure, Forecast, Whole number, and Formatting. The Forecast section is highlighted with a red box. The Formatting section contains dropdowns for currency (\$), percentage (%), and decimal places (0). Below the ribbon is a table with columns: Date, IT Dep., CostElement, Country, and Forecast. The Forecast column values are: 90,994, 103,135, 116,809, 92,221, 92,221, 95,333, 107,178, 107,178, 107,178, 108,580. This table is also highlighted with a red box. To the right is the Data pane, which lists tables: Country, Date, IT Dep., Forecast (selected and highlighted with a red box), CostElements, Departments, and CostElement.

Date	IT Dep.	CostElement	Country	Forecast
Wednesday, 1 January 2020	Administration	Internal Labor	USA	90,994
Saturday, 1 February 2020	Administration	Internal Labor	USA	103,135
Sunday, 1 March 2020	Administration	Internal Labor	USA	116,809
Wednesday, 1 April 2020	Administration	Internal Labor	USA	92,221
Friday, 1 May 2020	Administration	Internal Labor	USA	92,221
Monday, 1 June 2020	Administration	Internal Labor	USA	95,333
Wednesday, 1 July 2020	Administration	Internal Labor	USA	107,178
Saturday, 1 August 2020	Administration	Internal Labor	USA	107,178
Tuesday, 1 September 2020	Administration	Internal Labor	USA	107,178
Thursday, 1 October 2020	Administration	Internal Labor	USA	108,580

Table: Forecast (11,027 rows) Column: Forecast (4,341 distinct values)

Create a Power BI dashboard from a report

- Click on Actuals >> Country >> Properties >> Select Country

The screenshot shows the Power BI Data Editor interface. The top navigation bar includes File, Home, Help, Table tools, and Column tools. The Column tools tab is active, indicated by a green underline. A red box highlights the 'Properties' button in the toolbar. Below it, the 'Country' column dropdown menu is open, listing options such as Address, Place, City, County, State or Province, and Postal code. Another red box highlights the 'Country' option in this list. The main data grid displays the 'Country' column with values like USA, 90,994; USA, 41,537; USA, 64,388; USA, 20,476; USA, 55,695; USA, 138,204; USA, 149,259; USA, 75,649; USA, 198,600. The 'Actual' column shows corresponding numerical values. To the right, the 'Data' pane lists categories: Actuals, Cost Element, and Budget. The 'Country' category is highlighted with a red box. Other visible categories include Date, IT Department, and Budget.

Country	Actual
USA	90,994
USA	41,537
USA	64,388
USA	20,476
USA	55,695
USA	138,204
USA	149,259
USA	75,649
USA	198,600
USA	112,270

Create a Power BI dashboard from a report

- Click on Budget >> Country >> Properties >> Select Country

The screenshot shows the Power BI interface with the 'Column tools' ribbon selected. The 'Properties' button in the ribbon is highlighted with a red box. Below the ribbon, the 'Country' column properties are displayed, with the 'Data category' dropdown set to 'Uncategorized' and the 'Summarization' dropdown set to 'Don't summarize'. The 'Country' column itself is highlighted with a red box. To the right, the 'Data' pane shows the 'Country' column selected in the list.

Table: Budget (10,593 rows) Column: Country (16 distinct values)

Country	Budget
USA	123

Search

IT Department

Budget

Budget

CostElement

Country

Date

IT Dep.

Create a Power BI dashboard from a report

- Click on Forecast >> Country >> Properties >> Select Country

The screenshot shows the Power BI desktop application interface. The ribbon at the top has 'Table tools' selected. In the 'Column tools' section, the 'Properties' button is highlighted with a red box. Below it, the 'Data category' dropdown is also highlighted with a red box and set to 'Country'. A tooltip for the 'Forecast' column shows its name as "'Forecast'[Forecast]'. To the right, the 'Data' pane is open, showing the 'Country' column under the 'Forecast' node, which is also highlighted with a red box.

Date	Category	Subcategory	Country	Forecast
Wednesday, 1 January 2020	Administration	Internal Labor	USA	90,994
Saturday, 1 February 2020	Administration	Internal Labor	USA	103,135
Sunday, 1 March 2020	Administration	Internal Labor	USA	116,809
Wednesday, 1 April 2020	Administration	Internal Labor	USA	92,221
Friday, 1 May 2020	Administration	Internal Labor	USA	126,128
Monday, 1 June 2020	Administration	Internal Labor	USA	95,333
Wednesday, 1 July 2020	Administration	Internal Labor	USA	...
Saturday, 1 August 2020	Administration	Internal Labor	USA	107,178
Tuesday, 1 September 2020	Administration	Internal Labor	USA	108,580
Thursday, 1 October 2020	Administration	Internal Labor	USA	...

Table: Forecast (11,027 rows) Column: Country (18 distinct values)

Create a Power BI dashboard from a report

- Click on Regions >> Country >> Properties >> Select Country

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Help, Table tools, Column tools (which is currently selected), and Share. The main area displays a table with two columns: Country and Region. The 'Country' column is highlighted with a red box. A context menu is open over the 'Country' column header, with 'Properties' also highlighted by a red box. The 'Data category' dropdown in this menu is set to 'Uncategorized'. A second red box highlights the 'Country' option in the list of categories. To the right, the 'Data' pane shows various data elements, with 'Country' selected and highlighted by a red box.

Table: Regions (27 rows) Column: Country (27 distinct values)

Country	Region
Austria	Europe
Belgium	Europe
Brazil	Latin America
Canada	Canada
China	Africa & Asia
Czech Republic	Europe
Denmark	Europe
Finland	Europe
France	Europe
Germany	Europe

Column tools

File Home Help Table tools Column tools

Share

Properties

Summarization: Don't summarize

Data category: Uncategorized

Uncategorized

Address

Place

City

County

State or Province

Postal code

Country

Sort by column

Data groups

Manage relationships

New column

Relationships

Calculations

Search

CostElement

Country

Date

Forecast

IT Dep.

Regions

Country

Region

Create a Power BI dashboard from a report

- Notice an icon beside each of these country fields

The screenshot shows the Power BI interface with the 'Column tools' ribbon selected. Two columns are highlighted: 'Country' and 'Text'. The 'Country' column has a globe icon next to its name in both the 'Structure' and 'Data' panes.

Structure:

Country	Region
Austria	Europe
Belgium	Europe
Brazil	Latin America
Canada	Canada
China	Africa & Asia
Czech Republic	Europe
Denmark	Europe
Finland	Europe
France	Europe
Germany	Europe

Data:

- Country Date
- IT Department
- Budget
 - Budget
 - CostElement
- Country Date

Table: Regions (27 rows) Column: Country (27 distinct values)

Create a Power BI dashboard from a report

- Let's start our visuals: Click on Report View

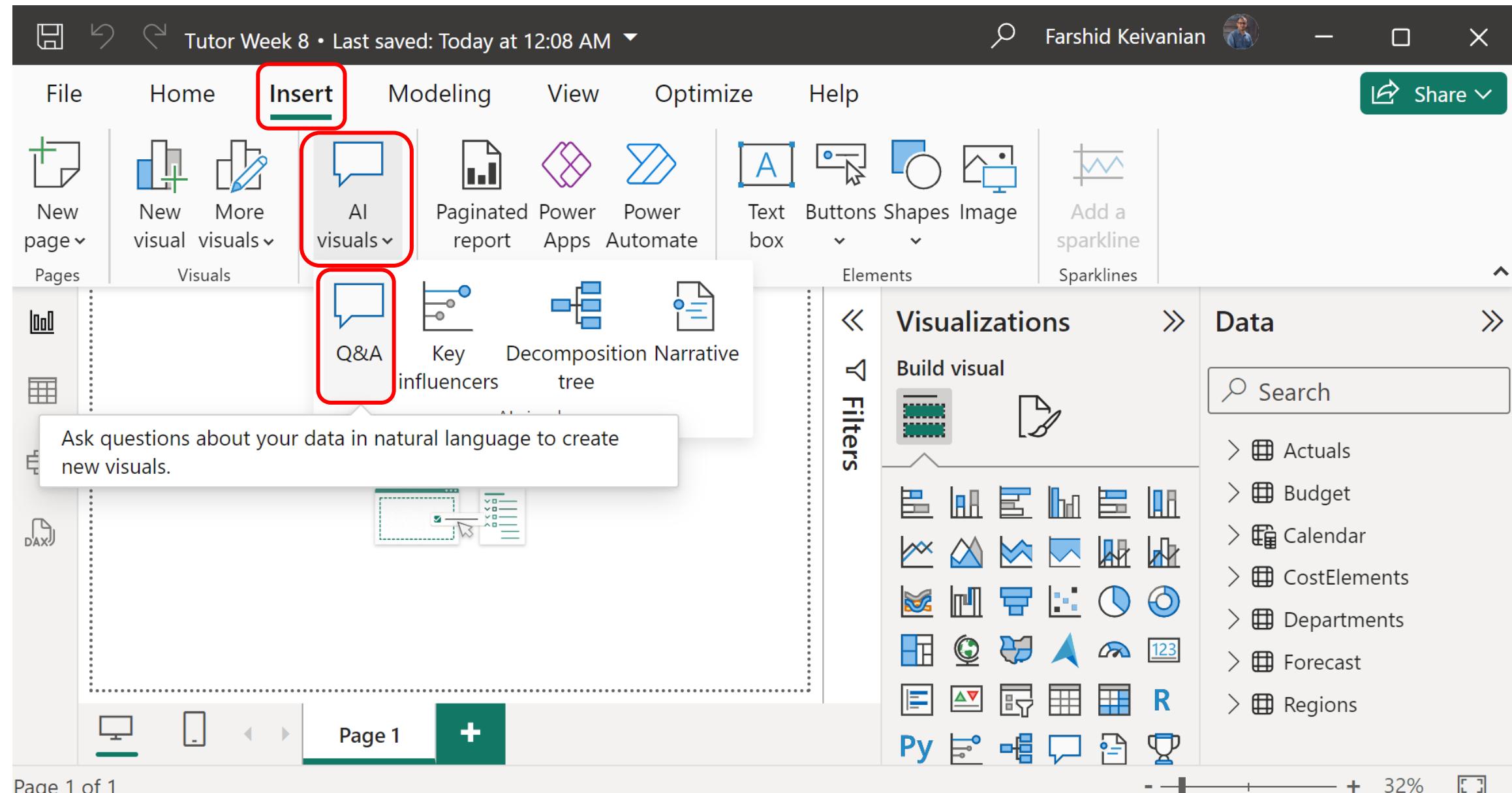
The screenshot shows the Microsoft Power BI desktop application interface. The ribbon at the top has the 'Column tools' tab selected. On the left, there is a table visualization with columns 'Country' and 'Region'. The 'Country' column is currently selected. The ribbon also includes sections for 'Structure', 'Formatting', 'Properties', 'Sort by column', 'Groups', 'Relationships', and 'Calculations'. To the right of the table, there is a 'Data' pane containing a search bar and a list of data items: Country, Date, IT Department, Budget, CostElement, and another Country and Date entry. The status bar at the bottom indicates 'Table: Regions (27 rows) Column: Country (27 distinct values)'.

Country	Region
Austria	Europe
Belgium	Europe
Brazil	Latin America
Canada	Canada
China	Africa & Asia
Czech Republic	Europe
Denmark	Europe
Finland	Europe
France	Europe
Germany	Europe

Table: Regions (27 rows) Column: Country (27 distinct values)

Create a Power BI dashboard from a report

- In Desktop Power BI, we can use the built-in AI to ask a question about our data



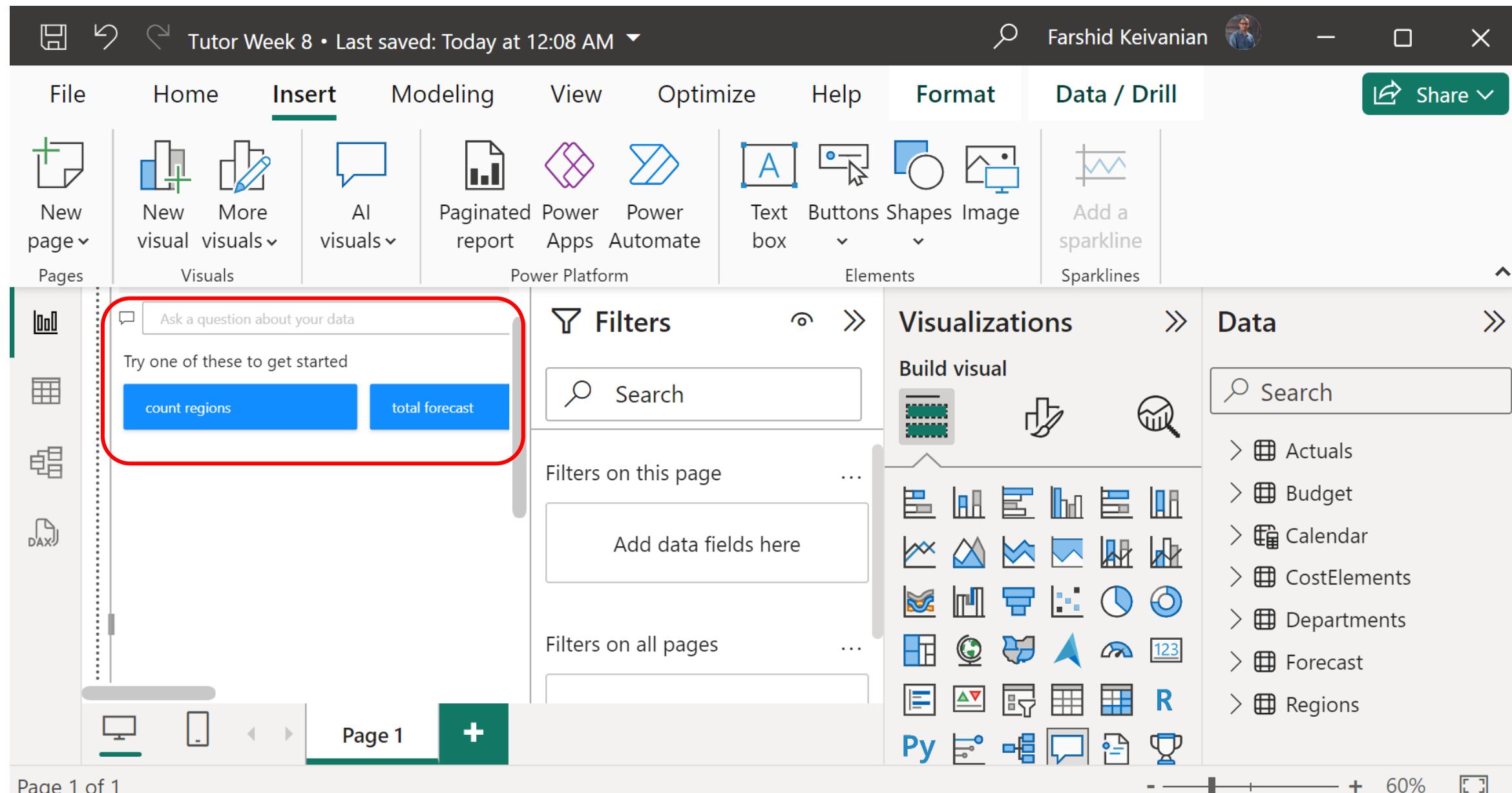
Create a Power BI dashboard from a report

- We will see this

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home, Insert (selected), Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The main area is divided into several sections: Pages (New page, Visuals, AI visuals), Power Platform (Paginated report, Power Apps, Power Automate), Elements (Text box, Buttons, Shapes, Image), and Sparklines. On the left, there's a sidebar with icons for DAX, Ask a question about your data, Try one of these to get started (with buttons for count regions and total forecast), Filters, Visualizations (Build visual), and Data (with a search bar and a list of data sources: Actuals, Budget, Calendar, CostElements, Departments, Forecast, Regions). The bottom of the screen shows a navigation bar with Page 1, a plus sign for adding new pages, and a zoom slider set at 60%.

Create a Power BI dashboard from a report

- We want to see the actual year-to date versus the four year budget



The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home, Insert (selected), Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The main area has sections for Pages, Visuals, Power Platform, Elements, and Sparklines. On the left, there's a sidebar with icons for New page, Visuals, AI visuals, Paginated report, Power Apps, Power Automate, Text box, Buttons, Shapes, Image, and Add a sparkline. The Visuals section is highlighted with a red box, containing buttons for 'count regions' and 'total forecast'. The Power Platform section includes filters, visualizations, and data sources like Actuals, Budget, and Forecast. The Elements section shows various UI elements like text boxes, buttons, and shapes. The Sparklines section provides tools for creating small charts. The bottom of the screen shows a preview area with 'Page 1' and a plus sign, and a status bar at the bottom right.

Create a Power BI dashboard from a report

- Type: **Type: actual vs budget**
- Click on the item below to commit that as a standard visual

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has options for Paste, Get data, OneLake data hub, Dataverse, SQL Server, and Recent sources. The Data tab has options for Transform, Refresh data, New visual, Text box, More visuals, New measure, Quick measure, and Calculations. The Visualizations tab is currently selected, displaying various chart and table icons under 'Build visual'. The Data tab on the right lists categories like Actuals, Budget, Calendar, CostElements, Departments, Forecast, and Regions. A tooltip message 'Turn this Q&A result into a standard visual.' is displayed above a red box highlighting the 'actual vs budget' text in the Q&A pane. The Q&A pane itself shows two numerical values: '144,618,853 Sum of Actual' and '155,309,019 Sum of Budget'. The bottom navigation bar includes Page 1, a plus sign for adding new pages, and zoom controls.

Create a Power BI dashboard from a report

- Move it down

The screenshot shows the Microsoft Power BI desktop application. The top navigation bar is visible with tabs: File, Home (selected), Insert, Modeling, View, Optimize, and Help. The Home tab has several options: Paste, Get data (with sub-options for Excel workbook, OneLake data hub, and SQL Server), Enter data, Transform (with Refresh data dropdown), New visual, Text box, More visuals, New measure, Quick measure, and Sensitivity. The left sidebar has icons for Report, Canvas, Data, and DAX. In the center, there are three main sections: 'Filters' (with a search bar and 'Add data fields here' button), 'Visualizations' (with a 'Build visual' button and a grid of visualization icons), and 'Data' (with a search bar and a list of data sources: Actuals, Budget, Calendar, CostElements, Departments, Forecast, and Regions). At the bottom, there's a summary card with the text '144,618,853 Sum of Actual' and '155,309,019 Sum of Budget'. The bottom navigation bar includes icons for monitor, smartphone, and tablet, followed by 'Page 1' and a plus sign. The status bar at the bottom right shows 'Page 1 of 1', a zoom slider, and a scale of 60%.

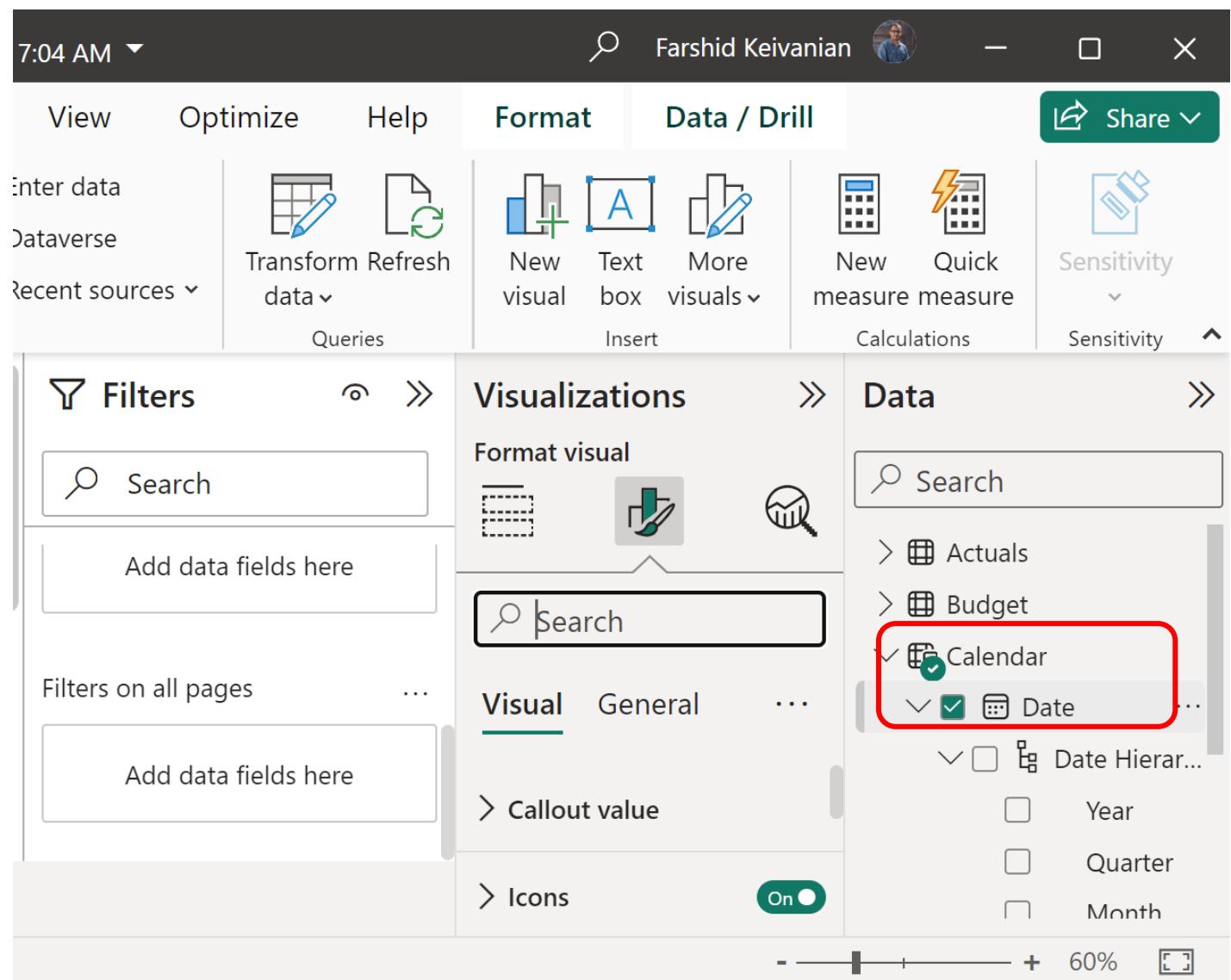
Create a Power BI dashboard from a report

- Select another visual: KPI

The screenshot shows the Microsoft Power BI desktop application interface. The ribbon at the top has the "Home" tab selected. The main canvas area contains a KPI visual with two numerical values: "144,618,853 Sum of Actual" and "155,309,019 Sum of Budget". To the left of the canvas is a ribbon bar with icons for Paste, Get data, and various clipboard operations. The "Data" tab is also visible in the ribbon. On the right side, there is a "Visualizations" pane containing a grid of visualization icons. One specific icon, which is a KPI icon, is highlighted with a red box. The overall theme is light gray with blue and green accents.

Create a Power BI dashboard from a report

- Click on Calendar in Data Field (right side) and Tick Date



Create a Power BI dashboard from a report

- Click On Forecast, Select it, Drag it to left (the indicator will be Forecast)

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is selected.

The main area displays a dashboard with a large green text visual showing "21,603,8". A red box highlights the text "Σ Forecast" at the bottom of this visual. Below the visual, there are sections for "Add data fields here" and "Filters on all pages".

To the right of the dashboard, the "Visualizations" pane is open, showing various chart and report icons. A red box highlights the "Σ Forecast" icon in this list.

The "Data" pane on the far right lists data sources: Departments, Forecast (selected), CostElement, Country, Date, IT Dep., and others. The "Forecast" item has a checked checkbox next to it, also highlighted by a red box.

The bottom of the screen shows the page navigation bar with "Page 1" and a plus sign icon.

Create a Power BI dashboard from a report

- Click On Budget, Select it, Drag it to left (the target will be Budget)

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has sections for Clipboard, Data, Queries, Insert, Calculations, and Sensitivity. The Data section on the right lists fields like Actuals, Budget (selected), CostElement, Country, Date, IT Dep., and Calendar. The Visualizations section shows a large yellow card with the value **21,603,89** and a goal of **21,603,896, 20,660,778**. Below the card are filters for Sum of Forecast, Sum of Forec, and Sum of Budget by Date. The bottom navigation bar includes monitor, mobile, back, forward, Page 1, and a plus sign.

Create a Power BI dashboard from a report

- Move it down the bottom

The screenshot shows the Microsoft Power BI desktop application. The ribbon is visible at the top with tabs: File, Home (selected), Insert, Modeling, View, Optimize, and Help. The Home tab has several data source options: Excel workbook, OneLake data hub, Data, Get data, and SQL Server. Below the ribbon is a sidebar with icons for Paste, Get data, Transform data, New visual, Text box, More visuals, New measure, Quick measure, and Sensitivity. The main area displays a yellow callout bubble containing the text "Sum of Forecast, Sum of Forecast and Sum of Budget by Date" and the value "21,603,896". Below this, it says "Goal: 21,603,896, 20,660,778". At the bottom of the callout are two rows of values: "144,618,853" and "Sum of Actual", and "155,309,019" and "Sum of Budget". A red rectangular box highlights the entire callout bubble. To the right of the main area, there are tabs for Filters, Visualization, and Data. An "Expand" button is located near the bottom right of the visualization area. The bottom navigation bar includes icons for monitor, smartphone, back, forward, Page 1, and a plus sign. The status bar at the bottom shows "Page 1 of 1", a zoom slider, and "60%".

Create a Power BI dashboard from a report

- While KPI is selected, From Visualisation>>Format your visual>>Find Distance direction

The screenshot shows the Power BI desktop application interface. The top navigation bar includes 'File', 'Home' (selected), 'Insert', 'Modeling', 'View', 'Optimize', 'Help', 'Format', 'Data / Drill', and 'Share'. The 'Home' tab has sub-options like 'Excel workbook', 'OneLake data hub', 'SQL Server', and 'Clipboard'. The 'Format' tab is active, showing options for 'New visual', 'Text box', 'More visuals', 'Transform', 'Refresh data', 'Recent sources', 'Queries', 'Insert', 'Calculations', and 'Sensitivity'. On the left, there's a ribbon of visualization icons (Bar chart, Grid, Clustered bars, DAX). A central workspace contains a KPI visual with the value '21,603,896' and a goal of '21,603,896, 20,660,778'. Below it are details: 'Sum of Actual' (144,618,853) and 'Sum of Budget' (155,309,019). To the right is the 'Visualizations' pane, which includes a 'Format visual' section with icons for 'New visual', 'Edit visual', and 'Search'. It also features a 'Filters' section and tabs for 'Visual' (selected) and 'General'. A red box highlights the 'Distance direction' dropdown under the 'Visual' tab, which is set to 'Increasing is positive'. The bottom of the screen shows a navigation bar with icons for monitor, phone, and arrows, and a page indicator 'Page 1'.

Create a Power BI dashboard from a report

- Select Decreasing is positive

The screenshot shows the Power BI desktop application interface. At the top, the title bar displays "Tutor Week 8 • Last saved: Today at 7:41 AM". The ribbon menu is open, with the "Home" tab selected. The "Data" tab is also visible. On the left, a navigation pane lists "Clipboard", "Sum of Forecast, Sum of Forecast and Sum of Budget by Date" (selected), "144,618,853 Sum of Actual", and "155,309,019 Sum of Budget". The main workspace contains a single visual card showing the value "21,603,896". The "Format" ribbon is open, showing sections for "Visualizations", "Filters", "Format visual", and "Search". A red box highlights the "Distance direction" dropdown, which is set to "Decreasing is positive". The bottom right corner shows zoom controls at 40%.

Create a Power BI dashboard from a report

- From Trend Axis >> Select Low is Good

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has sections for Clipboard (Paste, Get data, SQL Server), Data (Excel workbook, OneLake data hub, Dataverse, Recent sources), Queries (Transform data, Refresh data), Insert (New visual, Text box, More visuals), Calculations (New measure, Quick measure), and Sensitivity. A dashboard is visible on the left, featuring a large yellow number '21,603,896' with a callout showing 'Sum of Forecast, Sum of Forecast and Sum of Budget by Date'. Below it are 'Sum of Actual' (144,618,853) and 'Sum of Budget' (155,309,019). The bottom of the dashboard has icons for monitor, smartphone, and a plus sign, with 'Page 1' selected.

The right side of the screen displays the 'Visualizations' pane, which includes sections for Format visual, Filters, and Data. Under Visualizations, there is a search bar and tabs for Visual and General. In the Direction section, the setting 'High is good' is currently selected. A red box highlights the 'Low is good' option in the list below it.

Create a Power BI dashboard from a report

- Next Visual to add is Line Chart: Click Line Chart

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has options for Paste, Get data (with sub-options for Excel workbook, OneLake data hub, and SQL Server), Enter data, Transform (with Refresh data dropdown), and New visual (with sub-options for Text box, More visuals, New measure, Quick measure, and Sensitivity). The Data tab has options for Recent sources, Queries, Insert, Calculations, and Sensitivity. The bottom ribbon has icons for Monitor, Phone, and Page navigation, followed by Page 1 and a plus sign for adding new pages. The main workspace shows a line chart visual on the canvas, which is highlighted with a red box. To the right, the Visualizations pane displays various chart types, with the 'Line chart' icon highlighted with another red box. The pane also includes sections for Build visual, Filters, and Data.

Create a Power BI dashboard from a report

- Move it to right and Make it a bit wider

The screenshot shows the Microsoft Power BI desktop application interface. The ribbon at the top includes the following tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is currently selected. The main workspace displays a line chart visual and a summary card for 'Sum of F'. The summary card shows the value 1,603,896 with a goal of 21,603,896, 20,660,778. Below the summary card, it lists 44,618,853 as 'Sum of Actual' and 155,309,019 as 'Sum of Budget'. A red box highlights the line chart visual in the workspace. The Data / Drill tab is also visible, showing options for Transform, Refresh, New visual, Text box, More visuals, New measure, Quick measure, and Sensitivity. The Share tab is located at the top right. On the right side, the Visualizations pane is open, displaying various chart and report icons. A specific 'Line chart' icon is highlighted with a red box. The Data pane is partially visible on the far right.

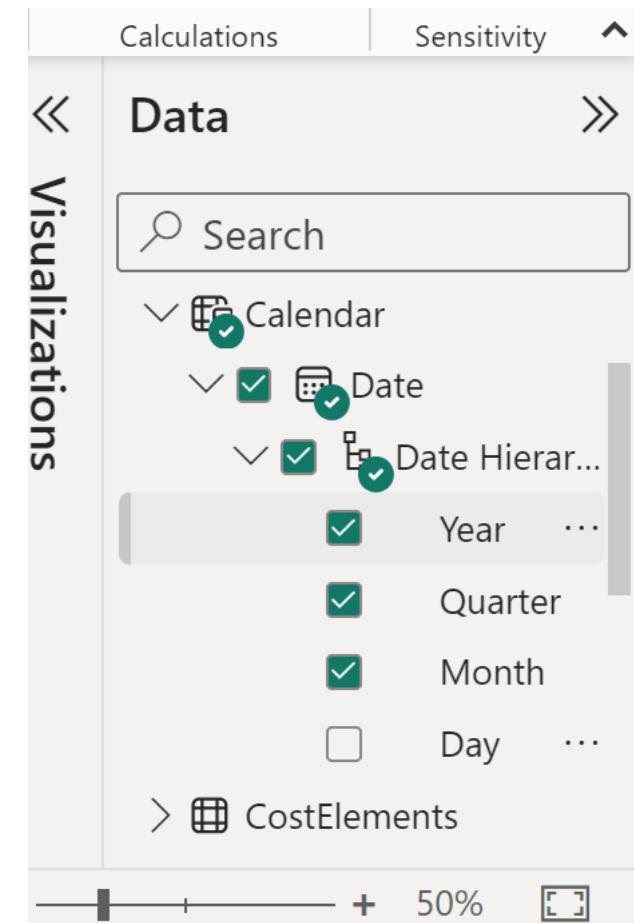
Create a Power BI dashboard from a report

- Move it to right and Make it a bit wider

The screenshot shows the Microsoft Power BI desktop application. The ribbon is visible at the top with tabs: File, Home (selected), Insert, Modeling, View, Optimize, and Help. The Home tab has sections for Clipboard (Paste, Get data from, SQL Server), Data (Excel workbook, OneLake data hub, Dataverse, Recent sources), Queries (Transform, Refresh data), Insert (New visual, Text box, More visuals), Calculations (New measure, Quick measure), and Sensitivity. On the left, there's a navigation pane with icons for DAX, Sum of Forecast, Sum of Forecast and Sum of Budget by Date, and a large yellow value of 21,603,896. Below this are details for Sum of Actual and Sum of Budget. The main workspace contains a line chart placeholder with the instruction "Select or drag fields to populate this visual". To the right is a "Visualizations" pane displaying various chart and report icons, and a "Filters" pane. A red oval highlights the area around the main workspace, and a red border surrounds the entire application window.

Create a Power BI dashboard from a report

- Collapse Visualisations
- While the Line Chart is selected >> Click on Calendar in the Data Pane >> Click on Date
- Deselected Day



Create a Power BI dashboard from a report

- Click on Actual
- Click on Budget
- Click on Forecast

The screenshot shows the Microsoft Power BI desktop application interface. The ribbon is visible at the top with tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is selected.

The main area displays a scatter plot titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year". The plot shows three data series: "Sum of Actual" (blue dots), "Sum of Budget" (orange dots), and "Sum of Forecast" (red dots). The Y-axis ranges from 0.1bn to 0.3bn, and the X-axis shows the year 2020. A callout box highlights the "Sum of Forecast" data point at approximately 0.25bn.

Below the plot, a large yellow box displays the value "21,603,896" with a subtitle "Goal: 21,603,896, 20,660,778". Below this, it shows "144,618,853 Sum of Actual" and "155,309,019 Sum of Budget".

The right side of the screen features the "Visualizations" pane, which lists available visualizations: "Sum of Forecast, Sum of Forecast and Sum of Budget by Date" (selected), "Sum of Actual, Sum of Budget and Sum of Forecast by Year" (selected), and "Text box". It also shows a "Name 'Forecast'[Date]" entry.

The "Data" pane on the right lists data sources and filters:

- Departments
- Forecast (selected)
- CostElement
- Country
- Date
- Σ Forecast
- IT Dep.
- Regions

At the bottom, the status bar shows "Page 1" and a plus sign icon. The bottom right corner includes zoom controls and a "50%" scale indicator.

Create a Power BI dashboard from a report

- Click on Expand all down one level in the hierarchy

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is selected. The ribbon below the navigation bar has sections for Clipboard, Get data, Recent sources, Transform data, Insert, Calculations, and Sensitivity.

A tooltip is displayed over a button labeled "Expand all down one level in the hierarchy". This button is part of a larger icon set that includes arrows for navigating levels up and down in a hierarchy, a filter icon, and a more options icon.

The main workspace contains a scatter chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year". The chart displays three data series: Sum of Actual (blue dot), Sum of Budget (orange dot), and Sum of Forecast (red dot). The Y-axis is labeled "Sum of Act..." and ranges from 0.1bn to 0.3bn. The X-axis is labeled "2020".

To the left of the chart, there is a summary card with the value "21,603,896" and a note "Goal: 21,603,896, 20,660,778". Below the card, it shows "144,618,853 Sum of Actual" and "155,309,019 Sum of Budget".

The right side of the interface features a "Visualizations" pane with a search bar and a "Data" pane. The "Data" pane lists various data sources and measures, with "Forecast" selected. Other listed items include CostElement, Country, Date, Forecast (with a checked checkbox), and IT Dep. Below the "Data" pane, there is a section for Regions.

The bottom of the screen shows a navigation bar with icons for monitor, mobile, back, forward, "Page 1", and a plus sign. A status bar at the bottom right indicates "50%" and has zoom controls.

Create a Power BI dashboard from a report

- Click on Expand all down one level in the hierarchy

The screenshot shows the Power BI desktop application interface. The ribbon is visible at the top with tabs like File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is selected. On the left, there's a navigation pane with sections for Data, Visualizations, and Filters. A line chart visualization is selected in the Visualizations section. A context menu is open over the chart, with the "More options" option highlighted. A red box highlights this menu and the chart area. The chart title is "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". It shows three lines: Sum of Actual (blue), Sum of Budget (orange), and Sum of Forecast (red). The x-axis shows dates from Jan 2020 to Oct 2020. The y-axis shows values from 0M to 80M. In the bottom left corner, there's a large yellow callout with the number "21,603,896" and a goal of "21,603,896, 20,660,778". The bottom navigation bar includes icons for monitor, smartphone, back, forward, page, and a plus sign.

Tutor Week 8 • Last saved: Today at 8:26 AM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server OneLake data hub Data

Clipboard Transform Refresh data New visual Text box More visuals

Enter data Dataverse Recent sources

Transform Refresh data New visual Text box More visuals

Enter data Dataverse Recent sources

New measure Quick Sensitivity

Measure Sensitivity

More options

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Actual Sum of Budget Sum of Forecast

Jan 2020 Apr 2020 Jul 2020 Oct 2020

80M 60M 40M 20M 0M

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896 Goal: 21,603,896, 20,660,778

Page 1 +

Visualizations

Filters

Data

Search

Departments

Forecast

CostElement

Country

Date

Σ Forecast

IT Dep.

Regions

Create a Power BI dashboard from a report

- Visualisations >> X-Axis >> Title-off

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has sections for Clipboard (Paste, Get data, SQL Server), Data (Excel workbook, OneLake data hub, Dataverse, Recent sources), and Queries (Transform, Refresh data). The main workspace displays a line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart tracks three metrics over time from Jan 2020 to Oct 2020. A large yellow callout at the bottom left highlights a value of "21,603,896" with a goal of "21,603,896, 20,660,778". On the right side, the "Format" pane is open, specifically the "Visualizations" section under "Visual". The "Title" setting is highlighted with a red box and has its "Off" button checked.

Tutor Week 8 • Last saved: Today at 8:41 AM

Farshid Keivanian

File Home Insert Modeling View Optimize Help Format Data / Drill Share

Paste Get data SQL Server

Clipboard

Clipboard

Excel workbook OneLake data hub Dataverse Recent sources

Transform Refresh data

New visual Text box More visuals

New measure Quick measure

Sensitivity

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896
Goal: 21,603,896, 20,660,778

Page 1 +

Visualizations

Format visual

Filters

Search

Visual General

> Title Off

Reset to default

Page 1 of 1

50%

Create a Power BI dashboard from a report

- Visualisations >> Y-Axis >> Title-off

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has sections for Clipboard (Paste, Get data, SQL Server), Data (Excel workbook, OneLake data hub, Dataverse, Recent sources), Queries (Transform, Refresh data), Insert (New visual, Text box, More visuals), Calculations (New measure, Quick measure), and Sensitivity. A search bar and user profile are also present.

The main workspace displays a line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart tracks three metrics over time from Jan 2020 to Oct 2020. The Y-axis ranges from 0M to 80M. The legend indicates: Sum of Actual (blue line), Sum of Budget (orange line), and Sum of Forecast (red line). The chart shows the budget remaining relatively stable around 60M, while actuals and forecasts show a slight downward trend from early 2020 to July 2020.

To the right, the "Format" ribbon is open, specifically the "Visualizations" section under the "Visual" tab. A red box highlights the "Y-axis" button in the "Visual" tab's controls.

At the bottom, there are navigation icons for monitor, mobile, back, forward, and page controls (Page 1, +).

Create a Power BI dashboard from a report

- From Field Pane: Actuals >> New Measure

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is selected. The ribbon also shows sections for Data, Queries, Insert, Calculations, and Sensitivity.

The main workspace displays a dashboard with two charts:

- Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter:** A line chart showing financial data from Jan 2020 to Oct 2020. The Y-axis ranges from 20M to 80M. The legend indicates three series: Sum of Actual (blue), Sum of Budget (orange), and Sum of Forecast (red).
- Running Total (RT):** A line chart showing the running total of actuals and budgets from Jan 2020 to Oct 2020. The Y-axis ranges from 0.0bn to 0.2bn. The legend indicates Actual RT (blue) and Budget RT (dark blue).

A large yellow callout at the bottom left of the dashboard displays the value **21,603,896** and the text "Goal: 21,603,896, 20,660,778". Below this, it shows "Sum of Actual" and "Sum of Budget" with their respective values.

The right side of the interface features the **Visualizations** pane, which is currently expanded to show the **Actuals** section. This section contains several items, some of which are highlighted with a red rectangle:

- Σ Actual**
- Actual RT**
- Cost Element
- Country
- Date
- IT Department

The bottom of the interface shows a navigation bar with icons for monitor, phone, back, forward, and a plus sign, along with the text "Page 1".

Create a Power BI dashboard from a report

- From Field Pane: Actuals >> Click on ... (More options) >> New Measure

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab is selected. The ribbon also shows sections for Data, Queries, Insert, Calculations, and Sensitivity.

The main workspace displays a dashboard with two line charts:

- Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter:** A line chart showing three data series over time from Jan 2020 to Oct 2020. The Y-axis ranges from 0M to 80M. The legend indicates: Sum of Actual (blue), Sum of Budget (dark blue), and Sum of Forecast (orange). The actual and budget lines are relatively flat around 60M, while the forecast line shows a slight downward trend from approximately 60M to 55M.
- Running Total (RT):** A line chart showing Actual RT (blue) and Budget RT (dark blue) over the same period. The Y-axis ranges from 0.bn to 0.2.bn. Both lines show a steady upward trend, starting near 0.bn in Jan 2020 and reaching approximately 0.1.bn by Oct 2020.

A large yellow callout at the bottom left of the dashboard displays the total value: **21,603,896**. Below it, the goal is listed as **Goal: 21,603,896, 20,660,778**.

The bottom right corner of the image highlights the **More options** button in the Field pane, which is circled in red.

Field pane details:

- Data:** Search bar with placeholder "Search".
- Visualizations:** A list of items:
 - \sum Actual
 - Actual RT
 - Cost Element
 - Country
 - Date

Create a Power BI dashboard from a report

- From Field Pane: Actuals >> New Measure

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, and a search bar with the name 'Farshid Keivani'. The Home tab has several options: Paste, Get data (with sub-options for Excel workbook, OneLake data hub, and SQL Server), Enter data, Transform, Refresh data, New visual, Text box, More visuals, and Insert. On the left, there's a ribbon with icons for DAX, Data, and Visualizations, and a sidebar with filters. In the center, there are two visualizations: a line chart titled 'Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter' and a card titled 'Sum of Forecast, Sum of Forecast and Sum of Budget by Date' showing the value '21,603,896'. A context menu is open over the line chart, with the 'Select' option expanded. The 'New measure' option is highlighted with a red box. Other options in the menu include New column, New quick measure, Refresh data, Edit query, Manage relationships, Incremental refresh, Manage aggregations, Rename, Delete from model, Hide, Mark as date table, View hidden, Unhide all, and Collapse all.

Select

- New measure
- New column
- New quick measure
- Refresh data
- Edit query
- Manage relationships
- Incremental refresh
- Manage aggregations
- Rename
- Delete from model
- Hide
- Mark as date table
- View hidden
- Unhide all
- Collapse all

Tutor Week 8 • Last saved: Today at 12:12 PM

File Home Insert Modeling View Optimize Help

Paste Get data Enter data Transform Refresh data New visual Text box More visuals Insert

Clipboard

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

Sum of Forecast, Sum of Forecast and Sum of Budget by Date

21,603,896

Goal: 21,603,896, 20,660,778

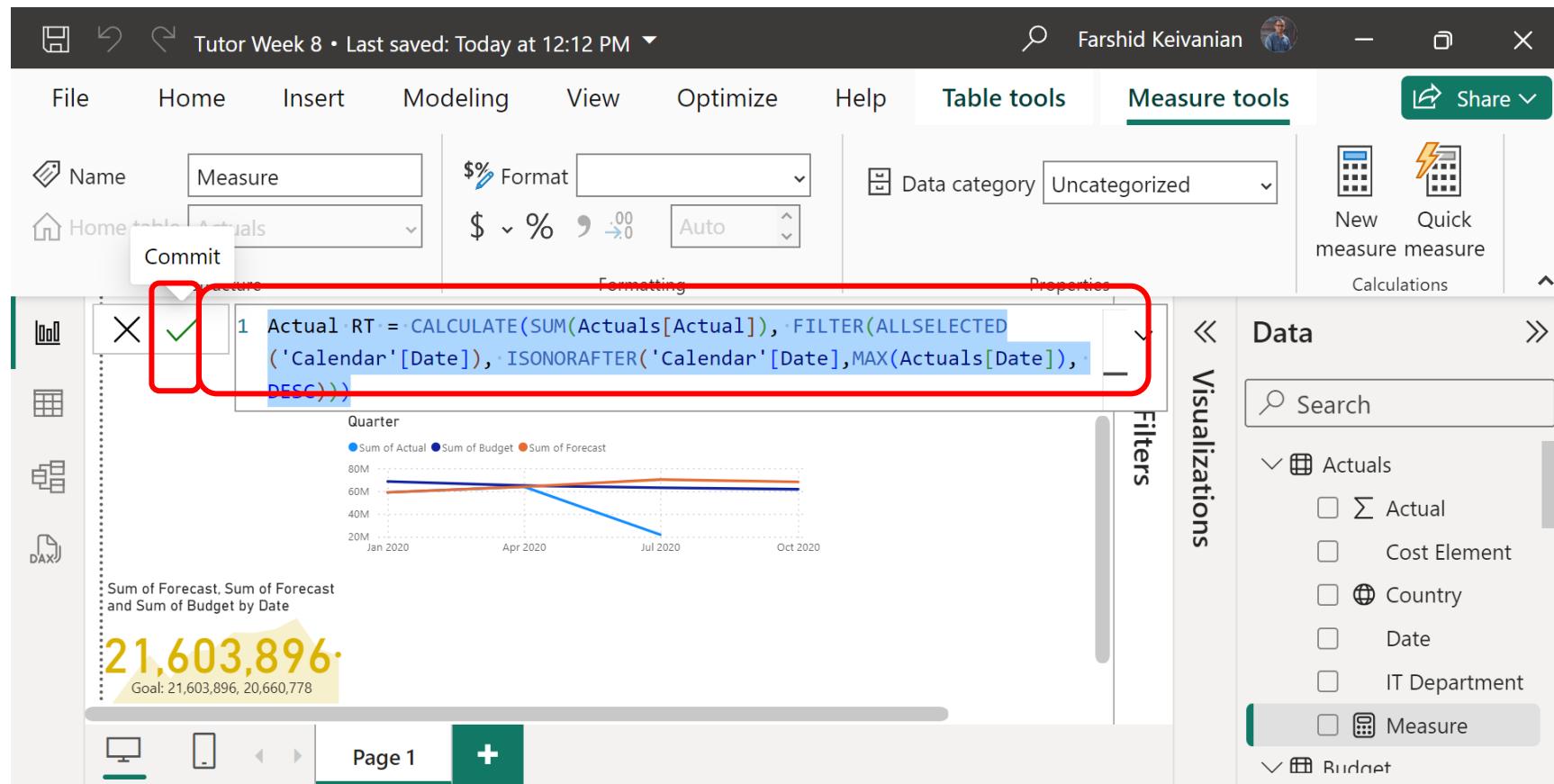
Page 1 +

> Title

On

Create a Power BI dashboard from a report

- Type: Actual RT = `CALCULATE(SUM(Actuals[Actual]),
FILTER(ALLSELECTED('Calendar'[Date]),
ISONORAFTER('Calendar'[Date],MAX(Actuals[Date]), DESC)))`
- Click on Tick to Commit the changes



Create a Power BI dashboard from a report

- Click on Actual RT and Copy its measure

The screenshot shows the Power BI desktop application interface. The ribbon is visible at the top with tabs like File, Home, Insert, Modeling, View, Optimize, Help, Table tools, and Measure tools. The Measure tools tab is currently selected. In the center, there's a visual representation of a line chart showing financial data over time. On the left, the DAX editor is open, displaying the formula for the 'Actual RT' measure:

```
1 Actual RT = CALCULATE(SUM(Actuals[Actual]), FILTER(ALLSELECTED('Calendar'[Date]), ISONORAFTER('Calendar'[Date], MAX(Actuals[Date]), DESC)))
```

A red box highlights this formula. To the right of the visual, the 'Visualizations' pane shows the measure 'Actual RT' selected. A second red box highlights this selection. The right side of the screen contains the 'Data' pane, which lists tables like 'Actuals' and 'Budget' with their respective columns.

Create a Power BI dashboard from a report

- Select ... three dots (more options) >> New Measure in Budget Then Paste it there

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, and Table tools. The Table tools tab is currently selected. A sub-menu under Table tools shows 'Name' set to 'Budget'. Below the ribbon, there are sections for Structure (Mark as date table, Calendars, Relationships), Calculations (New measure, Quick measure, New measure column, New table), and Data (Search, Cost Element, Country, Date, IT Department). On the left, a sidebar lists DAX, Sum of Actual, Sum of Budget, and Sum of Forecast by Year and Quarter, and Sum of Forecast by Date. A large yellow value card displays '21,603,896.' with a goal of '21,603,896, 20,660,778'. The main workspace contains a line chart titled 'Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter' showing data from Jan 2020 to Oct 2020. The right side features a 'Data' pane with filters for Cost Element, Country, Date, and IT Department, and a 'Visualizations' pane where the 'Budget' item is highlighted with a red box. The bottom of the screen shows page navigation, a plus sign for new visualizations, and a status bar indicating 'Page 1 of 1', '40%', and a zoom control.

Create a Power BI dashboard from a report

- Confirm it by Clicking on Check

Budget RT = `CALCULATE(SUM(Budget[Budget]), FILTER(ALLSELECTED('Calendar'[Date]), ISONORAFTER('Calendar'[Date],MAX(Budget[Date]), DESC)))`

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Table tools, Measure tools (which is underlined in green), and Share. The ribbon also shows settings for a measure named "Budget RT" which is associated with the "Budget" table and has a whole number format.

In the center, there is a DAX editor window containing the following DAX code:

```
Budget RT = CALCULATE(SUM(Budget[Budget]), FILTER(ALLSELECTED('Calendar'[Date]), ISONORAFTER('Calendar'[Date],MAX(Budget[Date]), DESC)))
```

The code is highlighted with a red rectangle. To the left of the code, there is a small icon with a checkmark and an X, both enclosed in a red box. Below the code, there is a chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The chart shows three lines: "Sum of Actual" (blue), "Sum of Budget" (orange), and "Sum of Forecast" (red). The Y-axis ranges from 20M to 80M, and the X-axis shows dates from Jan 2020 to Oct 2020. A callout bubble at the bottom left of the chart displays the value "21,603,896" and a goal of "21.603.896, 20.660.778".

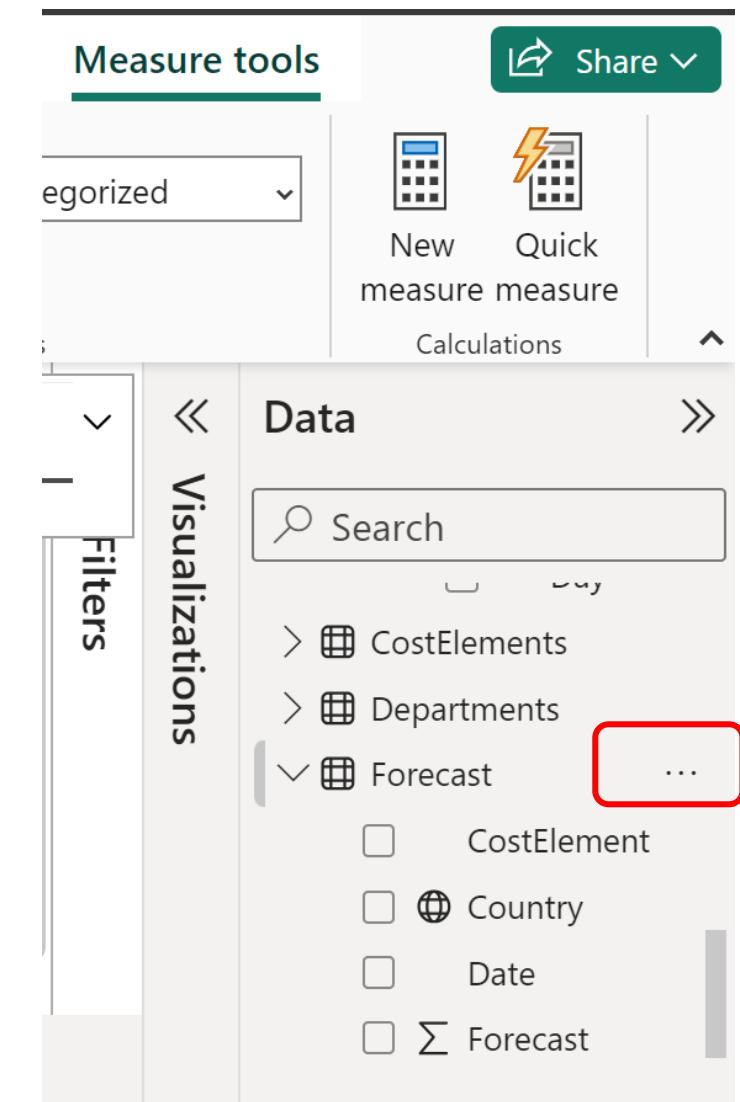
On the right side, there is a "Visualizations" pane with a "Data" section containing a search bar and a list of fields: Cost Element, Country, Date, IT Department, Budget, ∑ Budget, Budget RT (which is selected and highlighted in grey), and CostElement. There is also a "Filters" section below the visualizations.

At the bottom, there are navigation icons for monitor, smartphone, back, forward, and a plus sign, along with a "Page 1" indicator.

Create a Power BI dashboard from a report

- Select Forecast >> Click on ... three dots >> New Measure in Forecast >> Paste it there as well

```
Forecast RT = CALCULATE(SUM(Forecast[Forecast]),  
FILTER(ALLSELECTED('Calendar'[Date]),  
ISONORAFTER('Calendar'[Date],MAX(Forecast[Date]),  
DESC)))
```



Create a Power BI dashboard from a report

- You will see this

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, and a Share button. The Home tab has options for Excel workbook, OneLake data hub, SQL Server, and Data sources. The Data tab has options for Transform, Refresh, New visual, Text box, More visuals, New measure, Quick measure, and Calculations. The ribbon also includes Paste, Get data, Recent sources, and Sensitivity dropdowns. On the left, there's a sidebar with icons for Grid, Table, Matrix, and DAX. The main workspace displays a line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter" with three lines: blue for Actual, dark blue for Budget, and orange for Forecast. Below the chart is a large yellow box containing the number "21,603,896" and a goal of "Goal: 21,603,896, 20,660,778". At the bottom, there are filters, visualizations, and page navigation controls.

Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter

● Sum of Actual ● Sum of Budget ● Sum of Forecast

80M
60M
40M
20M
Jan 2020 Apr 2020 Jul 2020 Oct 2020

21,603,896

Goal: 21,603,896, 20,660,778

144,618,853 155,309,019

Sum of Actual Sum of Budget

Page 1

40%

Create a Power BI dashboard from a report

- Click on Area Chart

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, Help, and Share. The Home tab has sections for Data (Clipboard, Get data, OneLake data hub, SQL Server, Enter data, Dataverse, Recent sources) and Queries (Transform data, Refresh data). The Insert tab has sections for Insert (New visual, Text box, More visuals, New measure, Quick measure, Sensitivity), Calculations, and Sensitivity.

The main workspace displays two visualizations:

- A line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". The Y-axis ranges from 20M to 80M. The X-axis shows Jan 2020, Apr 2020, Jul 2020, and Oct 2020. It includes three series: Sum of Actual (blue line), Sum of Budget (orange line), and Sum of Forecast (red line).
- A large yellow callout bubble titled "Sum of Forecast, Sum of Forecast and Sum of Budget by Date" containing the value "21,603,896". Below it, it says "Goal: 21,603,896, 20,660,778" and lists values "144,618,853" and "155,309,019".

The right side of the screen features the Visualizations pane with a "Filters" section and a "Visualizations" section. The "Visualizations" section contains a grid of icons for various chart types, with the "Area chart" icon highlighted by a red box. Other visible icons include Bar chart, Line chart, Stacked area chart, Stacked bar chart, Treemap, Map, Gauge, Card, Timeline, and more.

Create a Power BI dashboard from a report

- Click on Area Chart and Move it down

The screenshot shows the Power BI desktop application interface. The ribbon menu is visible at the top, with the 'Home' tab selected. The main workspace displays a dashboard containing several visualizations, including a large area chart with a red box around its placeholder area and a smaller area chart icon with a red circle around it in the 'Visualizations' pane. The 'Visualizations' pane also shows other chart types like bar charts, line charts, and pie charts. The bottom navigation bar includes icons for monitor, mobile, back, forward, page number (Page 1), and add.

Create a Power BI dashboard from a report

- Click on Actual RT Chart, Budget RT, and Forecast RT

- Click on Date

The screenshot shows the Power BI Data view interface. On the left, there's a sidebar with arrows pointing left and right, and the word "Visualizations" below it. The main area has a header "Data" with arrows on either side and a search bar below it. A list of items is displayed, each with a checkbox and a small icon. The "Date" item under the "Calendar" section is highlighted with a red rectangle and has a checked checkbox. To its right, under "Date Hierar...", are "Year", "Quarter", and "Month", each with a checked checkbox. On the far right of the interface, there are tabs for "CALCULATIONS" and "SENSITIVITY".

Actual RT Chart, Budget RT, and Forecast RT

Date

Search

Date

IT Dep.

Calendar

Date

IT Department

Budget

Σ Budget

Budget RT

CostElement

Country

Date

Year

Quarter

Month

40%

Create a Power BI dashboard from a report

- You will see this
- Find Y-axis in Visualisation Pane

The screenshot shows the Power BI desktop application interface. The ribbon menu is visible at the top, with the 'Home' tab selected. The main workspace displays a dashboard containing two visualizations:

- A line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". It shows three data series: "Sum of Actual" (blue), "Sum of Budget" (orange), and "Sum of Forecast" (red). The Y-axis ranges from 0M to 80M. The X-axis shows years and quarters.
- A second visualization titled "Actual RT and Budget RT by Year, Quarter, Month and Day". It compares "Actual RT" (blue) and "Budget RT" (orange) over time from January 2020 to October 2020. The Y-axis ranges from 0.0bn to 0.2bn.

In the bottom left corner, there is a large yellow callout box highlighting the value "21,603,896" and the text "Goal: 21,603,896, 20,660,778". Below the dashboard, there are navigation icons for monitor, mobile, back, forward, and a green plus sign for adding new content.

The right side of the interface features the "Visualizations" pane, which includes sections for "Format visual" (with icons for grid lines and a paintbrush), a search bar, and tabs for "Visual" (selected) and "General". A "Y-axis" section is also present. The "Filters" pane is also visible on the right.

Create a Power BI dashboard from a report

- Title Off (for both x-axis and y-axis)

The screenshot shows the Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, Share, and Sensitivity. The Home tab is selected. The Data ribbon section contains Paste, Get data, Enter data, OneLake data hub, Dataverse, Transform, Refresh data, New visual, Text box, More visuals, New measure, Quick measure, and Calculations. The Sensitivity ribbon section contains Sensitivity. On the left, there's a ribbon of visualization icons: Bar chart, Grid, Matrix, and DAX. Below the ribbon, there are two charts: a stacked area chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter" and a line chart titled "Actual RT and Budget RT by Year, Quarter, Month and Day". A large yellow callout box highlights the value "21,603,896". The bottom navigation bar includes Page 1 and a plus sign icon. The right side of the screen displays the "Visualizations" pane with sections for Format visual, Filters, and Visual. The "Title" section in the Visual pane is highlighted with a red box and has an "Off" toggle switch.

Format visual

Filters

Visual General

> Title Off

Reset to default

Create a Power BI dashboard from a report

- Find Title in General Tab (Visualisations): Change it to Running Total

The screenshot shows the Power BI desktop application interface. At the top, the title bar displays "Tutor Week 8 • Last saved: Today at 2:27 PM". The ribbon menu is visible with tabs: File, Home (selected), Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The Home tab has options like Paste, Get data, and Recent sources. The Data tab has options like Enter data, OneLake data hub, Dataverse, and SQL Server. The Queries tab has Transform and Refresh data. The Insert tab has New visual, Text box, More visuals, New measure, Quick measure, and Calculations. The Share tab has Sensitivity. On the left, there's a vertical ribbon with icons for DAX, DAX, DAX, and DAX. The main workspace contains two visualizations: a treemap chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter" and a line chart titled "Actual RT and Budget RT by Year, Quarter, Month and Day". The line chart shows a value of 21,603,896. The bottom navigation bar includes icons for monitor, smartphone, and a plus sign, followed by "Page 1". To the right, the "Visualizations" pane is open, showing the "General" tab selected under "Visual". A red box highlights the "Title" section, which currently displays "Text" and "Actual RT and Budget RT by Year, Quarter, Month and Day".

Create a Power BI dashboard from a report

- You*

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes icons for file operations (New, Open, Save, etc.), a search bar, and a user profile for Farshid Keivani. The ribbon menu is visible, with the "Home" tab selected. The main workspace displays two visualizations:

- A line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". It shows three data series: Actual (blue), Budget (orange), and Forecast (red). The Y-axis ranges from 0M to 80M. The X-axis shows quarters from Jan 2020 to Oct 2020. A callout box highlights the value "21,603,896".
- A second visualization titled "Sum of Forecast, Sum of Forecast and Sum of Budget by Date" showing a trend from Jan 2020 to Oct 2020. It includes a "Running Total (RT)" section with a blue line and a purple shaded area representing the budget.

The bottom of the screen features a ribbon with icons for monitor, mobile, and other options, along with page navigation controls (Page 1, +, etc.). On the right side, there is a "Visualizations" pane containing a "Filters" section and a "General" tab for the currently selected visualization. The "Text" tab is also visible in the pane. A red box highlights the title "Running Total (RT)" in the General tab.

Create a Power BI dashboard from a report

- You can change font colour and size

The screenshot shows the Power BI desktop application interface. At the top, the title bar displays "Tutor Week 8 • Last saved: Today at 2:27 PM". The ribbon menu is open, with "Home" selected. The "Format" tab is also visible. On the left, the ribbon has sections for File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and Share. The "Data" section contains icons for Paste, Get data, and SQL Server. The "Queries" section contains Transform and Refresh data. The "Insert" section contains New visual, Text box, More visuals, and Calculations. The "Calculations" section contains New measure and Quick measure. The "Sensitivity" section is partially visible.

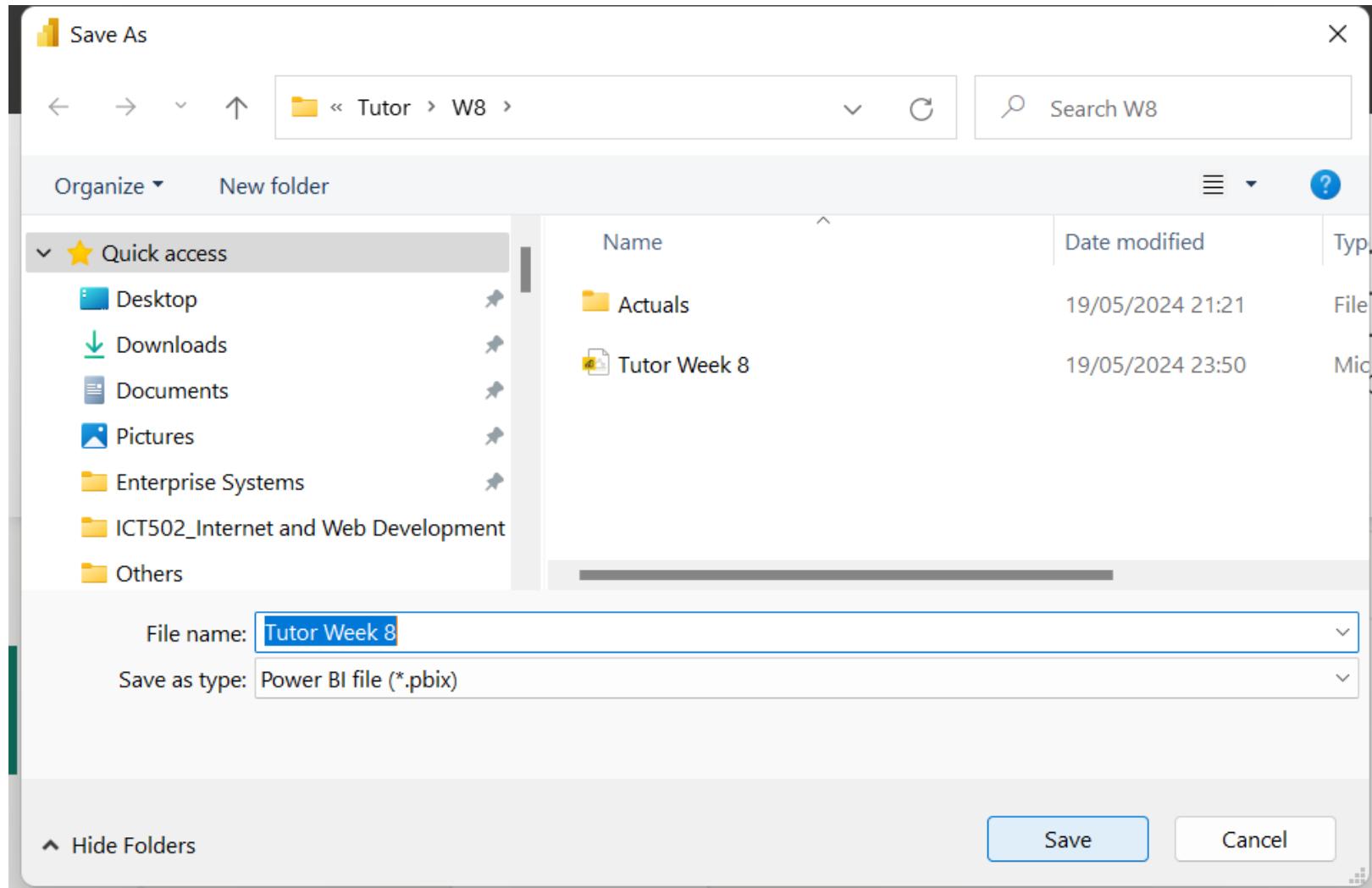
The main workspace displays two visualizations:

- A line chart titled "Sum of Actual, Sum of Budget and Sum of Forecast by Year and Quarter". It shows three lines: Actual (blue), Budget (orange), and Forecast (red). The Y-axis ranges from 0M to 80M. The X-axis shows quarters from Jan 2020 to Oct 2020. A callout highlights the value "21,603,896".
- A second chart titled "Sum of Forecast, Sum of Forecast and Sum of Budget by Date". It shows a blue area representing the sum of forecast for the period from Jan 2020 to Oct 2020. The Y-axis ranges from 0.0bn to 0.2bn. The X-axis shows months from Jan 2020 to Oct 2020. A callout highlights the value "144,618,853".

At the bottom, there are navigation icons for monitor, mobile, back, forward, and a plus sign. The page is labeled "Page 1".

The "Format" ribbon is currently active, specifically the "General" tab under the "Text color" section. This section includes a color swatch and an "fx" button, which is highlighted with a red box.

- Please save it as Tutor Week 8.pbix and exit
- We then need to open and continue our work



- At the end of the tutorial, you should have created 3 dashboards, Headline, Regions, Decompositions.
- Click to save your report as you need to use it in the next tutorials.

Attendance & Tutorial Questions - Recognising student participation and engagement specifically identifying those who are most actively involved!

Take a screenshot of your results in discussion forum Tutorial Week 8

Thank you,
Happy a Learning
Day

