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Course Reference Handout

MICROSOFT EXCEL - POWER PIVOT

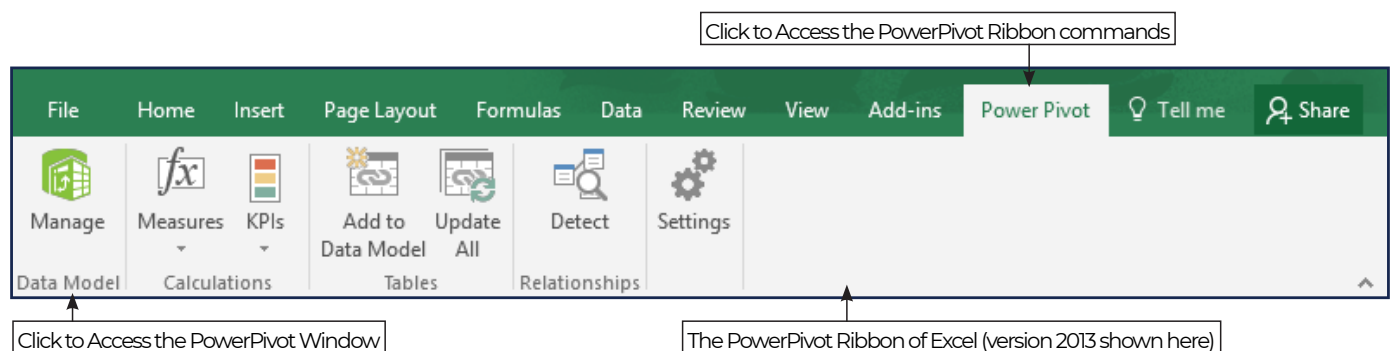
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What is PowerPivot?

PowerPivot is an Excel add-in used for importing data from various sources, relating tables and analyzing data using PivotTables and Pivot Charts in Microsoft Excel. Unlike Excel, PowerPivot allows you integrate and analyze data from multiple sources and manipulate large data sets that might exceed the limits one encounters when using Excel.

PowerPivot Keypoints:

- Unlike previous versions, PowerPivot is automatically integrated into the Excel 2013 Ribbon interface.
- You can import and analyze data from more than one source into PowerPivot. For example, you can import data from multiple tables of a relational database and then analyze the data using Excel's PivotTables and Pivot Charts.
- With PowerPivot, you can analyze data which exceeds the one million row limit of Microsoft Excel.
- You cannot edit or enter any data within PowerPivot; you must switch to the source application to edit imported data.
- Data imported into PowerPivot is saved in the Excel format and can only be opened in Excel; however the data is only visible in the PowerPivot Window, and cannot be viewed in an Excel worksheet.
- To download and read more about PowerPivot, go to www.powerpivot.com.



Introduction to PowerPivot Window:

1 The File Tab:

Provides common commands applicable to the PowerPivot add-on, such as Save, Save As, and Close.

2 The Quick Access Toolbar:

A customizable toolbar that provides easy access to frequently used commands while working in PowerPivot.

3 Title Bar:

Displays the name of the associated Excel file to which the data in the PowerPivot is connected.

4 Ribbon:

A panel which displays commands relevant to a particular set of tasks. Ribbon commands are organized into various tabs across the top of the Ribbon, and groups within each Ribbon tab.

5 Formula Bar:

A bar located below the Ribbon which displays the contents of the selected cell in the PowerPivot worksheet as well as the active worksheet column.

6 Worksheet Area:

The area in which the imported data appears within PowerPivot.

7 Calculation Area:

An area just below the Worksheet Area where Calculated Fields, or Measures, can be created to calculate PowerPivot data using Data Analysis Expression (DAX) functions.

8 Table Tabs:

The names of the tables containing data imported from various data sources.

9 Record Navigation Bar:

A bar that allows you to navigate through the various records of the active worksheet.

Importing Data into PowerPivot:

PowerPivot allows you to import data from numerous data sources. The data sources can be broadly classified into four categories:

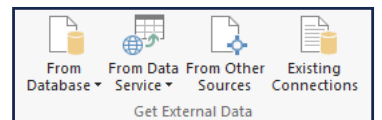
- Relational Databases: you can import data from tables or views within a database or use data returned by a query into PowerPivot.
- Multidimensional Sources: you can create a connection between PowerPivot and a SQL Server Analysis Services cube and then import the data returned by a multidimensional expression query.
- Data Feeds: you can connect to various data feeds, such as Microsoft Reporting Services reports and Azure DataMarket data sets, and then import the data into PowerPivot.
- Text Files: you can import data from Excel files and text files, such as tab delimited or comma separated value files.

1. PowerPivot button in the ribbon
2. Get External Data button
3. Refresh button
4. PivotTable button
5. Data View button
6. Add to Data Model button
7. DimChannel table in the bottom pane
8. Status bar showing 'Record: 1 of 4'

ChannelKey	ChannelLabel	ChannelName	ChannelDescription	ETLLoadID	LoadDate	UpdateDate
1	01	Store	Store	1	7/11/2009 2...	7/11/2009 2
2	02	Online	Online	1	7/11/2009 2...	7/11/2009 2
3	03	Catalog	Catalog	1	7/11/2009 2...	7/11/2009 2
4	04	Reseller	Reseller	1	7/11/2009 2...	7/11/2009 2

To begin Importing Data into PowerPivot from an external data source:

- Switch to the PowerPivot window by clicking the PowerPivot button from the PowerPivot Ribbon in Microsoft Excel.
- From the Home Tab of the Ribbon in PowerPivot, select from options available in the Get External Data group.



To create a Linked table from excel in PowerPivot:

- Click a cell in the list or table in the Excel worksheet you want to link in PowerPivot.
- From the PowerPivot Ribbon of Excel, click the Add to Data Model button.

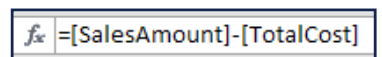


Creating Calculated Columns:

You can create new columns in the PowerPivot worksheets that contain values based on calculations using other columns.

To create a Calculated Column:

- Select the worksheet containing the PowerPivot Table for which you want to create a calculated column.
- Click the Add Column header of the last column of the table.
- In the Formula Bar, enter a formula to be calculated. Reference columns in your formula by clicking the column's header.
- If necessary, rename the calculated column by right-clicking the column header and selecting Rename Column or by double-clicking the name and entering a new name.

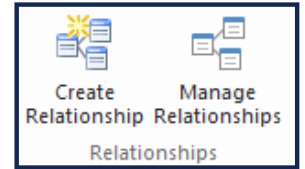


Establishing Table Relationships:

When using data stored in more than one table, before the data can be properly analyzed, PowerPivot will need to know how records in one table relate to records in another table. Therefore, table relationships must be established between the tables you plan on referencing in your PivotTable or Pivot Chart reports.

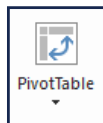
To create and manage Table Relationships:

- In the PowerPivot window, click the Design tab of the Ribbon and select from options in the Relationships group.
- In the Create Relationship window, select the tables you want to relate using the drop down menus on the left, and the field they have in common using the drop down menus on the right.
- Note that the second row, Related Lookup Table, references the "one" table, or "parent" table, in a one-to-many relationship.



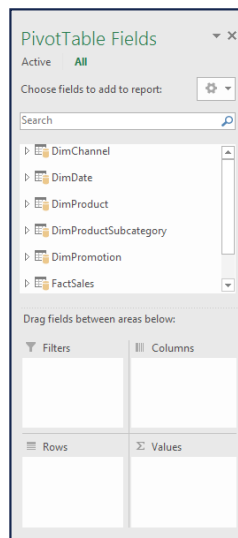
Creating a Pivot Table:

A PivotTable is an interactive worksheet table used to quickly summarize and analyze large amounts of spreadsheet data. It displays data in a matrix format and provides specialized functionality that enables you to summarize and group selected portions of data to see new data relationships.



To create a new PivotTable:

- In the PowerPivot window, from the Home tab of the Ribbon, click the PivotTable button.
- Specify the location for the new PivotTable, and click OK.
- In the PowerPivot Field List pane on the right, select the layout of your PivotTable by dragging and dropping fields into the various sections of the PivotTable located at the bottom of the pane.
 - Use the Row Labels and Column Labels areas to create row and column headers for your PivotTable.
 - Use the Values area to calculate summaries from data in the table fields.
 - Use the Report Filter and Slicer areas to filter the data displayed in the PivotTable.



Creating a Pivot Chart:

A PivotChart is an interactive chart that graphically represents data in a PivotTable report. You can create a Pivot Chart using an existing PivotTable, or create a new Pivot Chart first. However, whenever a new Pivot Chart is created first, a new PivotTable associated with the chart is automatically created.

To create a new PivotChart:

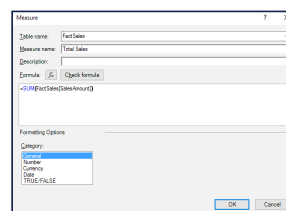
- In the PowerPivot window, from the Home tab of the Ribbon, click the PivotTable button.
- Specify the location for the new PivotTable, and click OK.
- In the PowerPivot Field List pane on the right, select the layout of your PivotTable by dragging and dropping fields into the various sections of the PivotTable located at the bottom of the pane.
 - Use the Row Labels and Column Labels areas to create row and column headers for your PivotTable.
 - Use the Values area to calculate summaries from data in the table fields.
 - Use the Report Filter and Slicer areas to filter the data displayed in the PivotTable.

Using DAX Functions:

Data Analysis Expression (DAX) is a more advanced formula language that enables you to create custom calculations in calculated columns of a PowerPivot table and measures in a PivotTable. Unlike Excel, PowerPivot includes additional DAX functions for working with relational data and performing dynamic aggregation. You will find many different categories of DAX functions available in PowerPivot.

PowerPivot Measures:

A measure is a formula specifically used in a PivotTable or PivotChart created in PowerPivot. A measure, which evaluates dynamically, provides you with different results depending on the filters applied to a PivotTable. A measure is made of arithmetic calculations and DAX functions.



Total sales:=SUM(FactSales[SalesAmount])

Example of a selected DAX function as it appears in the Formula bar.

SalesKey			
1	2201	5/7/2007	
2	26527	5/22/200	
3	26702	9/30/200	
4	33125	10/31/20	
Total sales: \$8,341,224,364.83			

DAX functions located in the calculation area of a PowerPivot worksheet.

To use a DAX function in a new measure:

- From within Excel, click the Measures button located in the Calculations group of the PowerPivot tab of the Ribbon, choose New Measure.
- In the Measure Settings window, type in the Calculated field (Measure) name.
- In the Formula box, enter a formula that includes a DAX function. You can type the DAX function manually, or use the Insert Function button to select and build the DAX function with the help of PowerPivot.
- Click OK when done, and the new measure containing your DAX function will appear in the PowerPivot Field list and can now be used in your PivotTable.