



2008 AICPA Information Technology Conference

Excel 2007- Tapping Into the Power of Pivot Tables

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Presentation Description

This step-by-step presentation will cover both basic and advanced Pivot Table features to teach you how to generate reports in seconds. If you are not using Pivot Tables to accomplish routine analysis and reporting in Excel, then you are missing out on a dynamic and time-saving tool. Excel 2007 includes additional Pivot Table features not available in Excel 2003. These feature updates will be covered in this presentation.



Objectives and Highlights

- Create Pivot Table reports of subsets of data from a list within Excel or from an external data source;
- Use subtotals of criteria based sums, counts, averages and create a calculated field;
- Format and copy Pivot Table results to another sheet;
- Use time-saving Excel commands to create multiple Pivot Tables for separate accounts or categories in seconds;
- Use important new Pivot Table features in Excel 2007 for multiple selection of categories, controlled recalculation, and the table range name.



Uses of Pivot Tables

- Business intelligence gathering
- Quick data analysis
- Transform data into meaningful analysis
- Discover patterns and exceptions
- Populate worksheet cells with formula links
- Maintain updates from external data sources



Live Demonstration

- Compare Sales Results over time by categories
- Generate separate reports by cost center
- Group transaction dates into date ranges, months, quarters or years
- Sort results within the pivot table
- Select rankings and top percentages
- Add a custom calculation
- Add a calculated field
- Connect to and update from an external data source



Follow up to Presentation

To learn more about the topics discussed in this presentation, visit the following links:

- **Excel Sample Data Files: PivotTable Reports**
<http://www.microsoft.com/downloads/thankyou.aspx?familyId=5e720455-1d3f-47bb-96bf-94819aa214c4&displayLang=en>
- **Demo: Make sense of your data using PivotTable reports**
<http://office.microsoft.com/training/training.aspx?AssetID=RC102058721033>
- **Excel 2007 Courses at MS Office Online**
<http://office.microsoft.com/en-us/training/CR100479681033.aspx>
- **Review the Handout examples**



MS Excel 2007

Tapping into the Power of Pivot Tables

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If you are not yet using Pivot Tables as part of your day-to-day data analysis work in Excel, then you are missing out on a dynamic and time-saving tool.

This step-by-step presentation will teach you how to generate reports that summarize and analyze your data in seconds and demonstrate a variety of uses for Pivot Tables. Excel 2007 includes additional Pivot Table features not available in Excel 2003. The feature updates will be covered in this presentation.

- ✓ **Create a Pivot Table report of unique values, codes or categories from data;**
- ✓ **Create a Pivot Table report of subsets of data from a large list with sorting and filtering;**
- ✓ **Create a Pivot Table report of subtotals, counts, averages and other calculations based on a list of data;**
- ✓ **Create a calculated field in a Pivot Table;**
- ✓ **Format a Pivot Table;**
- ✓ **Copy Pivot Table results to another sheet;**
- ✓ **Create a Pivot Table from an external data source vs. an Excel list;**
- ✓ **Dynamically use Excel commands to create multiple Pivot Tables for separate accounts or categories;**
- ✓ **Use Pivot Table options for automatic recalculation;**
- ✓ **Use new features in Excel 2007;**
- ✓ **Understand considerations regarding exchanging files between Excel 2007 and 2003.**



Follow Up Links

To learn more about the topics discussed in this presentation, visit the following links.

Sign-up for Office Newsletters

http://office.microsoft.com/en-us/help/HA101864261033.aspx?nd_loc=us

Demo: Make sense of your data using PivotTable reports

<http://office.microsoft.com/training/training.aspx?AssetID=RC102058721033>

Demo: Filter data using PivotTable reports

<http://office.microsoft.com/training/training.aspx?AssetID=RC102080371033>

Demo: Calculate data in PivotTable reports

<http://office.microsoft.com/training/training.aspx?AssetID=RC102102791033>

Excel 2007 Courses at MS Office Online

<http://office.microsoft.com/en-us/training/CR100479681033.aspx>

Excel Sample Data Files: PivotTable Reports

<http://www.microsoft.com/downloads/thankyou.aspx?familyId=5e720455-fd3f-47bb-96bf-94819aa214c4&displayLang=en>

Examples of Pivot Table uses

The following examples will help you learn how to apply pivot tables to your specific sets of data. These examples correspond to the sample data files found at the link on the previous page.

1) Compare your salespeople

Start with source data that contains information about your salespeople. Here are some of the source data records used for the reports in this section.

	A	B	C	D	E
1	Country	Salesperson	Order Date	Order ID	Order Amount
2	UK	Buchanan	7/16/2003	10248	\$440.00
3	UK	Suyama	7/10/2003	10249	\$1,863.40
4	USA	Peacock	7/12/2003	10250	\$1,552.60
5	USA	Leverling	7/15/2003	10251	\$654.06
6	USA	Peacock	7/11/2003	10252	\$3,597.90
7	USA	Leverling	7/16/2003	10253	\$1,444.80
8	UK	Buchanan	7/23/2003	10254	\$556.62
9	UK	Dodsworth	7/15/2003	10255	\$2,490.50
10	USA	Leverling	7/17/2003	10256	\$517.80
11	USA	Peacock	7/22/2003	10257	\$1,119.90
12	USA	Davolio	7/23/2003	10258	\$1,614.88
13	USA	Peacock	7/25/2003	10259	\$100.80
14	USA	Peacock	7/29/2003	10260	\$1,504.65
15	USA	Peacock	7/30/2003	10261	\$448.00

Create a pivot table to answer the following questions:

1. What are the order amounts for each salesperson?
Hint - Drag the Salesperson field into the Row box, and then drag the Order Amount field into the Values box (Data area).
2. What are the order amounts for salespeople in a specific country?
Hint - Drag the Country field into the Report Filter (Page area). You can then switch between "pages" to view the data for each country.
3. How are salespeople ranked by order amounts?
Hint - To sort the salespeople, click the drop-down list on the Salesperson field, click More Sort Options, and then Descending. Click the Descending drop-down list, and then click Sum of Order Amount. Click OK.

4. Who are the top five salespeople?
Hint - To view the top items in a field, click the drop-down list on the Salesperson field, click Value Filters, and then click Top 10. Click Top 5 Items by Sum of Order Amount across the boxes.
5. How did salespeople perform in a specific quarter?
Hint - Drag the Order Date field into the Row box above the Salesperson field. Note that the source data contains actual order dates, but it would be nice to group the dates by quarter. To do this, click one of the dates, and then click Group Selection on the Options tab on the Ribbon. In the By box, click Quarters to select it. Click any other selection to deselect it.
6. How does each salesperson's performance vary by quarter?
Hint - Drag the Sales person field above the Order Date field.
7. What are the details for a specific order amount?
Hint - Double-click a cell in the PivotTable report to see the data "behind" it.
8. What percent is a specific order of the total order amounts?
Hint - In this case, you'll create a new data field and use a custom calculation. That way, you can compare the original data field (Summary) and the new calculated data field (Percent of Total). First, drag the Order Amount field into the Values box (Data area) so it appears twice. Double-click the new Order Amount field in the Pivot Table, click Show values as, under Normal click % of column and change the custom name to Percent of Order Total.
9. What bonus amount should each salesperson receive?
Hint - All salespeople receive a 10% bonus, but you'd like to award a 15% bonus if they exceed \$20,000 in orders per quarter. To create a formula that uses PivotTable data, you can use a calculated field. Click the report, click Formulas on the Options tab on the Ribbon, and then click Calculated Field. In the Name box, type Bonus Amount. In the Formula box, enter the formula you want. If you want to use data from an existing field in your formula, click the field in the Fields box, and then click Insert Field.

This example uses the following formula for the calculated field named Bonus Amount.

=IF('Order Amount'>20000,.15*'Order Amount',.1*'Order Amount')

2) Compare your products

Start with source data that contains information about your products. Here are some of the source data records used for the reports in this section.

	A	B	C	D
1	Category	Product	Sales	Quarter
2	Beverages	Chai	\$705.60	Qtr 1
3	Beverages	Chai	\$878.40	Qtr 2
4	Beverages	Chai	\$1,174.50	Qtr 3
5	Beverages	Chai	\$2,128.50	Qtr 4
6	Beverages	Chang	\$2,720.80	Qtr 1
7	Beverages	Chang	\$228.00	Qtr 2
8	Beverages	Chang	\$2,061.50	Qtr 3
9	Beverages	Chang	\$2,028.25	Qtr 4
10	Beverages	Chartreuse verte	\$590.40	Qtr 1

Create a pivot table to answer the following questions:

1. What are the sales totals for each category of product?
Hint - Drag the Category field into the Row box, and then drag the Sales field into the Values box (Data area).
2. What are the sales totals for each product?
Hint - Drag the Product field into the Row box.
3. What are the three best-selling products in each category?
Hint - To view the top items in a field, click the drop-down list of the Product field, click Value Filters, and then click Top 10. Under Top 10 Show, select Top, 3, Items, Sum of Sales. Click OK.
4. What are the quarterly sales by product?
Hint - Drag the Quarter field into the Column box.
5. How do the sales in the first quarter compare with those in the second?
Hint - To focus on two quarters only, click the dropdown arrow in the Quarter field. Select the check boxes for just the first two quarters.
6. What are the average, largest, and smallest Beverage sales subtotals?
Hint - You can use more than one summary function for subtotals. Right-click an item in the Sales Category field, click Field Settings, and then click one or more options under Subtotals.
7. What is the average sale and minimum sale?
Hint - In this case, you'll create two new data fields, and then change the summary function for each data field. First, drag the Sales field into the Values box (Data area) a second time, and then drag it a third time. Right-click a calculation in the second data field, and then click Average under Summarize by. Right-click a calculation in the third data field, and then click Min under Summarize by.

3) Compare your orders

	A	B	C	D	E	F	G
1	Order ID	Product ID	Product	Unit Price	Quantity	Discount	Extended Price
2	10248	11	Queso Cabrales	\$14	12	0%	\$168
3	10249	14	Tofu	\$19	9	0%	\$167
4	10251	22	Gustaf's Knäckebröd	\$17	6	5%	\$96
5	10251	57	Ravioli Angelo	\$16	15	5%	\$222
6	10252	33	Geitost	\$2	25	5%	\$48
7	10252	60	Camembert Pierrot	\$27	40	0%	\$1,088
8	10253	49	Maxilaku	\$16	40	0%	\$640
9	10253	39	Chartreuse verte	\$14	42	0%	\$605
10	10253	31	Gorgonzola Telino	\$10	20	0%	\$200

Create a pivot table to answer the following questions:

1. How do you view an individual order?

Hint - Drag the Product, Unit Price, Quantity, and Discount fields into the Row box. Drag the Extended Price field into the Values box (Data area). Then drag the OrderID field into the Report Filter (Page area). You can then switch between "pages" to view the data for each order.

2. How many units of each product were sold?

Hint - Drag the Product field into the Row box, and then drag the Quantity field into the Values box (Data area).

3. What's the average unit price of each product?

Hint - Drag the Product field into the Row box, and then drag the Unit Price field into the Values box (Data area). Now you can change the summary function for the Unit Price data field from Sum to Average. Right-click a calculation in the Unit Price field, Select Value Field Settings, and then click Average under Summarize by.

4. What are the ten most expensive products?

Hint - First, you need to change the summary function for the Unit Price data field to Maximum. Right-click a calculation in the Unit Price field, and then click Max under Summarize by. Next, display the top ten items in the Product field. Right-click the Product field, click Filter, Top 10. Under Show, enter Top, 10, Items, Max of Unit Price. Click OK.

4) Compare your customers

Start with source data that contains information about your customers. Here are some of the source data records used for the reports in this section.

	A	B	C	D	E	F
1	Product Name	Customer	Qtr 1	Qtr 2	Qtr 3	Qtr 4
2	Alice Mutton	ANTON		\$702.00		
3	Alice Mutton	BERGS	\$312.00			
4	Alice Mutton	BOLID				\$1,170.00
5	Alice Mutton	BOTTM	\$1,170.00			
6	Alice Mutton	ERNSH	\$1,123.20			\$2,607.15
7	Alice Mutton	GODOS		\$280.80		
8	Alice Mutton	HUNGC	\$62.40			
9	Alice Mutton	PICCO		\$1,560.00	\$936.00	
10	Alice Mutton	RATTC		\$592.80		
11	Alice Mutton	REGGC				\$741.00
12	Alice Mutton	SAVEA			\$3,900.00	\$789.75

Create a pivot table to answer the following questions:

1. What products do your customers purchase, and in which quarter?
Hint - Drag the Customer and Product fields into the Row box. Then drag the Qtr 1, Qtr 2, Qtr 3, and Qtr 4 fields into the Values box (Data area).
2. What were the top two products purchased by each customer in the third quarter?
Hint – Right-click the Product field, click Filter, Top 10. Under Show, enter Top, 2, Items, Sum of Qtr 3. Click OK.
3. Who was your top customer in the first quarter?
Hint – Right-click the Customer field, click Filter, Top 10. Under Show, enter Top, 1, Items, Sum of Qtr 1. Click OK.
4. Who were the top two customers for each product?
Hint - Drag the Product field to the left of the Customer field. Right-click the Customer field, click Filter, Top 10. Under Show, enter Top, 2, Items, Sum of Qtr 4. Click OK.

PivotTable I: Get started with PivotTable reports in Excel 2007

Prepare the source data

Here are recommendations for setting up your Microsoft® Office Excel® 2007 worksheet for an Excel 2007 PivotTable® report:

1. Make sure each column has a heading. These column headings are used to name the fields in the PivotTable report (a **field** summarizes multiple rows of information from the source data).
2. Put similar data in each column. For example, text items in one column, numbers in another column, and dates in another column.
3. Remove any blank rows or columns.

Note If you open in Excel 2007 an Excel workbook created in a version prior to Excel 2007, and you create an Excel 2007 PivotTable report, the layout area will be in Classic PivotTable layout instead of in the Excel 2007 layout. To avoid this, follow these steps:

1. Save the data as an Excel 2007 file.
2. Close the workbook.
3. Open it again.
4. Create the PivotTable report.

If you do this before you create the PivotTable report, the layout area will be in Excel 2007 layout.

Create a PivotTable report

1. Select a cell or range of cells.
2. Click the **Insert** tab. In the **Tables** group, click the arrow on **PivotTable**, and on the menu, click **PivotTable**.

The **Create PivotTable** dialog box opens.

3. **Select a table or range** is already selected for you. The **Table/Range** box shows the range of the selected data.
4. **New Worksheet** is also selected for you as the place where the report will be placed (you can click **Existing Worksheet** if you don't want the report placed in a new worksheet). Click **OK**.

On the left is the layout area ready for the PivotTable report, and on the right is the **PivotTable Field List**. This list shows the column titles from the source data: Each title is a field in the list.

5. In the field list, select the check boxes next to the fields that you want to add to the report.

Fields are automatically added to the report. Fields that are non-numeric are added to the Row Labels area of the report. As you add more non-numeric fields, Excel places them on the inside of fields already on the PivotTable report, building a hierarchy. Numeric fields are added on the right.

- o To remove a field from the report, clear the check box next to the field name in the field list.
- o To remove all the fields from a report so that you can start over again, click the **Options** tab on the Ribbon under **PivotTable Tools**. In the **Actions** group, click the arrow on the **Clear** button, and then select **Clear All**.
- o To delete the entire report, click the **Options** tab. In the **Actions** group, click the arrow on **Select**. Click **Entire Table**. Then press DELETE.

Sort a field

Right-click a cell in the field you want to sort. Point to **Sort**, and then click an option. For example, click **Sort Largest to Smallest** or **More Sort Options**.

Group a field

You can group data that contains dates or times by following these steps.

1. Right-click a cell in the field you want to group, and then click **Group**. In the **Grouping** dialog box, select an option, and then click **OK**.
2. To ungroup, click in the grouped field, right-click, and then select **Ungroup**.

Add a report filter

Use a report filter to focus on a subset of data in the report, often a product line, a time span, or a geographic region.

In the **PivotTable Field List**, right-click a field name, and then select **Add to Report Filter**.

Pivot a report

When you pivot a PivotTable report, you transpose the vertical or horizontal view of a field, moving rows to the column area or moving columns to the row area.

Right-click the field you want to pivot. Point to **Move**, and then select **Move "field name" to Columns**, or select **Move "field name" to Rows**.

Move a PivotTable report to another location

1. Click the PivotTable report.
2. Click the **Options** tab on the Ribbon under **PivotTable Tools**. In the **Actions** group, click **Move PivotTable**.

The **Move PivotTable** dialog box opens.

3. Under **Choose where you want the PivotTable report to be placed**, either select **New Worksheet**, or in the **Location** box for **Existing Worksheet**, type the first cell in the range of cells where you want to locate the PivotTable report. Then click **OK**.

Print a PivotTable report

To set printing options, click in the PivotTable report. Click the **Options** tab on the Ribbon under **PivotTable Tools**. In the **PivotTable** group, click **Options**. In the **PivotTable Options** dialog box, on the **Printing** tab, select the options you want.

PivotTable II: Filter PivotTable report data in Excel 2007

Set a filter for text in Row Labels or Column Labels

Click the arrow next to **Row Labels** or **Column Labels**, depending on whether the field you want to filter is in the row or column area of the report. When you click that arrow, a menu appears with the **Select field** box at the top, which you use to select which field to apply a filter to.

The menu also shows a list of all the rows in whatever field you select. Looking at the items in the list is a way to verify that you've selected the correct field to filter. To filter the report:

Clear the check box next to **(Select All)** in the list to clear all the check boxes next to the items in the list. Then click the check boxes next to the items you want to display in the PivotTable report.

Or,

Point to **Label Filters** and select a comparison operator such as **Equals** or **Contains**. In the **Label Filter <Field Name>** dialog box, in the box on the right, type text. Then click **OK**.

You can also set a filter by clicking within a field instead of clicking the arrow next to **Row Labels** or **Column Labels**.

To hide selected items within a field, select the items, point to **Filter**, and then select **Hide Selected Items**.

To display selected items within a field, select the items, point to **Filter**, and then select **Keep Only Selected Items**.

Set a value filter

Click the arrow next to **Row Labels** or **Column Labels**. Point to **Value Filters**, select a comparison operator such as **Equals**, **Does Not Equal**, or **Greater Than**. In the **Value Filter <Field Name>** dialog box, type numbers in the last box, and then click **OK**.

Set a date filter

Click the arrow next to **Row Labels** or **Columns Labels**. You'll know if you are in an area in which you can filter by dates if the **Date Filters** command is available.

Clear the check box next to **(Select All)**, and then select the check boxes next to the dates you want to display. Click **OK**. Or,

Click **Date Filters**, and then select a comparison operator such as **Before**, **After**, or **Between**. In the **Date Filter <Field Name>** dialog box, type dates in the empty boxes. Then click **OK**.

Remove filters

You can remove filters one at a time, or you can quickly remove all filters at once.

Remove a filter in the PivotTable report

To remove a filter from a specific field, click the filter icon  wherever the filtered field appears in the report, either on **Row Labels** or on **Column Labels**. Then click **Clear Filter From <Field Name>**. Or select the check box next to **(Select All)** to make all data in that field visible.


To clear a filter on items within a field, right-click within a field, point to **Filter**, and then click **Clear Filter From <Field Name>**.

If you do not see the **Clear Filter From** command for the filtered field:

Be sure that you have selected the correct area of the report to clear the filter from: either rows or columns.

Is the correct field name shown in the **Select field** box? You see that box when you click the filter icon. The field name in that box must match the name of the field you want to clear the filter from. If the field name in the box is incorrect, select the correct field from the list that appears when you click the arrow next to the box.

Remove a filter in the PivotTable Field List

Move the cursor over the filter icon  next to the field name you want to remove the filter from. Click the arrow that appears, and then click **Clear Filter From <Field Name>**. Or select the check box next to **(Select All)** to make all data in the field visible.

Remove all filters at one time

At the top of the window, on the Ribbon, click the **Options** tab under **PivotTable Tools**. In the **Actions** group, click **Clear**, and then click

Clear Filters. Be sure you really want to do this before you undo all your selections.

PivotTable III: Calculate data in PivotTable reports in Excel 2007

Change summary functions

Excel automatically adds up numbers using the SUM function. You can change the summary function.

1. Right-click in the Values field. Point to **Summarize Data By**, and then click the summary function you want to use.
2. To switch back to SUM, right-click again in the Values field, point to **Summarize Data By**, and then click **Sum**.

Using custom calculations

To create a custom calculation, right-click in the Values area, point to **Summarize Data By**, and click **More Options**. Click the **Show values as** tab, and then click a function in the **Show values as** list.

You can use the following functions in a custom calculation:

Function	Result
Normal	Turns off custom calculation.
Difference From	Displays values as the difference from the value of the Base item in the Base field.
% Of	Displays values as a percentage of the value of the Base item in the Base field.
% Difference From	Displays values as the percentage difference from the value of the Base item in the Base field.
Running Total in	Displays the value for successive items in the Base field as a running total.
% of row	Displays the value in each row or category as a percentage of the total for the row or category.
% of column	Displays all the values in each column or series as a percentage of the total for the column or series.
% of total	Displays values as a percentage of the grand total of all the values or data points in the report.
Index	Calculates a value as follows: $((\text{value in cell}) \times (\text{Grand Total of Grand Totals})) / ((\text{Grand Row Total}) \times (\text{Grand Column Total}))$.

Create your own formulas by using Calculated Fields

1. At the top of the window, on the Ribbon, click the **Options** tab under **PivotTable Tools**. In the **Tools** group, click the **Formulas** button, and then click **Calculated Field**.
2. Type a name for the formula in the **Name** box, and type the formula in the **Formula** box. Then click **OK**.
3. To delete a formula, select the name in the **Name** box, and then click **Delete**.

The GETPIVOTDATA function

The GETPIVOTDATA function works for cells in the Values area. The function is automatically entered when you type an equal sign outside the PivotTable report and select a single cell inside the Values area of the report. If you pivot a report, the function will return the data in the referenced cell, even if the cell has changed location.

GETPIVOTDATA is on by default, but you can turn it off if you prefer. At the top of the window, on the Ribbon, click the **Options** tab under **PivotTable Tools**. In the **PivotTable** group, click the arrow on **Options**, and then click **Generate GetPivotData**.