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Creating PivotTables & PivotChart Reports in Excel



Pivot Tables

Compared with the large databases your company may have available, or you may have found on the Internet, an 800-row list is fairly short and simple. Excel can retrieve much larger amounts of data than this, there are just too many records to analyze at a glance and PivotTable reports are one of the best Excel tools for extracting the significance from a large, detailed data set.

The data is organized in list format, similar to how a query returns database records: each column contains similar data, the columns have headings in the first row, and the list isn't interrupted by any blank rows or columns (although blank cells within the data are OK).

Pivot Tables allow us to pivot our data via drag-and-drop to produce meaningful information. This makes Pivot Tables interactive in that once the table is complete we can very easily see what effect moving (or pivoting) our data has on our information. This will become patently clear once you give Pivot Tables a go. Believe me, no matter how experienced you get at Pivot Tables there will always be an element of trial-and-error involved in producing the desired results! What this means is you will find yourself pivoting your table a lot!

We would use a Pivot Table to produce meaningful information from a table of information. Imagine you have a table of data that contains names, addresses, ages, occupations, phone numbers, postcodes etc. With a Pivot Table we could very easily and quickly find out:

- How many people have the same names.
- How many postcodes are the same.
- A count of a particular occupation.
- See only people that match a particular occupation.
- Find out the addresses of people that match a postcode

In fact the list can go on and on!

Perhaps the biggest advantage to using Pivot Tables is the fact that we can generate and extract meaningful information from a large table of information within a matter of minutes. Or perhaps it is because they will not use up a lot of memory from your PC. In a lot of cases we could get the same results from a table of data by using Excel's built in functions, but this would take more time and use **far more memory**. On top of this, if we wanted some new information we can simply drag-and-drop (pivot). We can also opt to have our information update each time we open the Workbook and/or by clicking refresh.

Pivot Charts - In Excel 2000 Microsoft introduced Pivot Charts. These are simply charts that are read from the table created via the Pivot Table Wizard. In fact Pivot Tables are really no longer just Pivot Tables, they are now **PivotTables and PivotChart Reports**. These two features go hand-in-hand with each other. By this I mean, when you create a Pivot Table you can also create a Pivot Chart at the same time with no extra effort needed on your part. Pivot Charts allow us to create professional interactive charts that were previously not possible without either VBA or using Excel's Controls.

TABLES AND LISTS GUIDELINES FOR PIVOT TABLES

The most important factors when considering using a Pivot Table is to have our data set up in what could be termed as a table and/or list. As our Pivot Table will be basing all its data on this list or table it is vital that we set our tables and lists up in a uniform way.

In the context we are discussing here, a Table is no more than a List (with a heading) with more than one Column of data and a different heading for each column. A List is often referred to in the context of a Table as well. The 'good practice' that applies to setting up a List will aid us greatly when we need to apply a Pivot Table to our Data. When we extract data via the use of Lookup functions or Database functions we can be a little less stringent in how we set up our Table or List. This is because we can always compensate with the aid of a function and probably still get our result.

However, having said this we should always set up our List or Table as well as possible. When we use Excel's built-in features they will and do assume a lot about the layout and setting up of your data. They do have a degree of flexibility but more often than not you will find it easier to follow the guidelines for setting up your Table or List.

Let's look at what I believe to be the most important aspects of setting up a Table or List.

- **Headings.** This is a must! They should always be in the row directly above your data. Never have a blank row between your data and the headings. Make them distinct in some way eg; Bold them.
- Leave at **least** three blank rows **above** your headings. These can be used for formulas, critical data etc. You can hide the Rows if you wish.
- If you do have more than one List or Table on the same Worksheet leave at least one blank column between your List and Tables. This will aid Excel in recognizing them as separate. However, if the lists and tables are related to each other make them into one large table.
- Avoid blank cells within your data. Rather than leaving blanks for the same data in a column repeat the data as many times as needed.
- Sort your List or Data, preferably by the left most column. This is not so much for Pivot Tables, but for the person reading the data.

Pivot Table Exercises

Having trouble visualizing how to use a PivotTable report to analyze your data? This tutorial shows you how to start with a basic data source and create PivotTable reports that answer common questions about your data. While you can use these techniques for just about any type of source data, the following sections show reports you could use to:

[Compare your salespeople](#)

[Compare your products](#)

[Compare your orders](#)

[Compare your customers](#)

To work directly with these PivotTable reports, **Open** “Salesperson” this can be located in Moodle ► APPD ► Excel Tutorials.

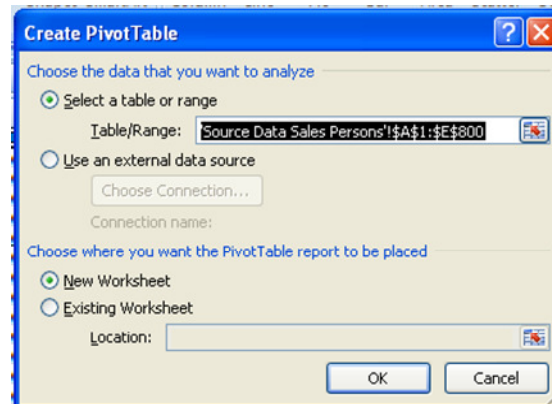
[Compare your salespeople](#)

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

	A	B	C	D	E
1	Country	Salesperson	Order Date	OrderID	Order Amount
2	UK	Buchanan	16/07/2003	10248	£440.00
3	UK	Suyama	10/07/2003	10249	£1,863.40
4	USA	Peacock	12/07/2003	10250	£1,552.60
5	USA	Leverling	15/07/2003	10251	£654.06
6	USA	Peacock	11/07/2003	10252	£3,597.90
7	USA	Leverling	16/07/2003	10253	£1,444.80
8	UK	Buchanan	23/07/2003	10254	£556.62
9	UK	Dodsworth	15/07/2003	10255	£2,490.50
10	USA	Leverling	17/07/2003	10256	£517.80
11	USA	Peacock	22/07/2003	10257	£1,119.90
12	USA	Davolio	23/07/2003	10258	£1,614.88
13	USA	Peacock	25/07/2003	10259	£100.80
14	USA	Peacock	29/07/2003	10260	£1,504.65
15	USA	Peacock	30/07/2003	10261	£448.00
16	USA	Callahan	25/07/2003	10262	£584.00
17	UK	Dodsworth	31/07/2003	10263	£1,873.80
18	UK	Suyama	23/08/2003	10264	£695.62
19	USA	Fuller	12/08/2003	10265	£1,176.00
20	USA	Leverling	31/07/2003	10266	£346.56

To set up your PivotTable: **Click** a cell in the source data. On the **Insert Tab**, **Click PivotTable**.

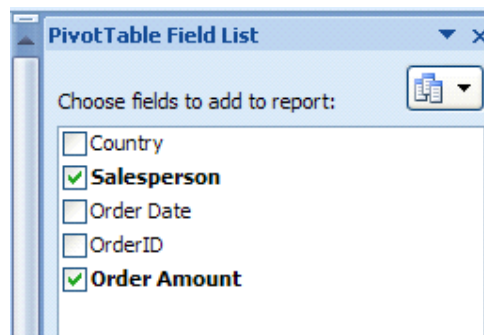
Ensure all 800 records and associated headings are selected and **Click** on **OK**.



Now you are ready to try the following reports:

- What are the order amounts for each salesperson?

From the Pivot Table Field List Select **Salesperson** and **Order Amount**.



Row Labels	Sum of Order Amount
Buchanan	68792.25
Callahan	123032.67
Davolio	182500.09
Dodsworth	75048.04
Fuller	162503.78
King	116962.99
Leverling	201196.27
Peacock	225763.68
Suyama	72527.63
Grand Total	1228327.4

The data is now summarised by **Salesperson**.

Name the worksheet "Order Amounts" return to source data and **Click** on any cell and then select **Insert Tab** and **Click** Pivot Table

What are the order amounts for salespeople in a specific country?

From the PivotTable Field List Select **Country**, **Salesperson** and **Order Amount**



The data is now summarised first by Country and then by Salesperson.

	A	B
4	UK	333330.91
5	Buchanan	68792.25
6	Dodsworth	75048.04
7	King	116962.99
8	Suyama	72527.63
9	USA	894996.49
10	Callahan	123032.67
11	Davolio	182500.09
12	Fuller	162503.78
13	Leverling	201196.27
14	Peacock	225763.68
15	Grand Total	1228327.4

Rename the worksheet “Orders by Country”, return to source data and **Click** on any cell and then select **Insert Tab** and **Click** Pivot Table

How are salespeople ranked by order amounts?

From the PivotTable Field List Select **Salesperson** and **Order Amount**.

To sort the salespeople, click the Salesperson field, click Sort on the **PivotTable** tab, and then click **Descending**, and then click **Sum of Order Amount** in the **Using field box**.

The screenshot shows a PivotTable with 'Row Labels' and 'Sum of Order Amount'. The salespeople listed are Buchanan, Callahan, Davolio, Dodsworth, Fuller, King, Leverling, Peacock, and Suyama. The 'Sort (Salesperson)' dialog box is open, showing 'Sort options' with 'Descending (Z to A) by: Sum of Order Amount' selected. The 'Summary' section shows 'Sort Salesperson by Sum of Order Amount in descending order'.

Row Labels	Sum of Order Amount
Buchanan	68792.25
Callahan	123032.67
Davolio	182500.09
Dodsworth	75048.04
Fuller	162503.78
King	116962.99
Leverling	201196.27
Peacock	225763.68
Suyama	72527.63
Grand Total	1228327.4

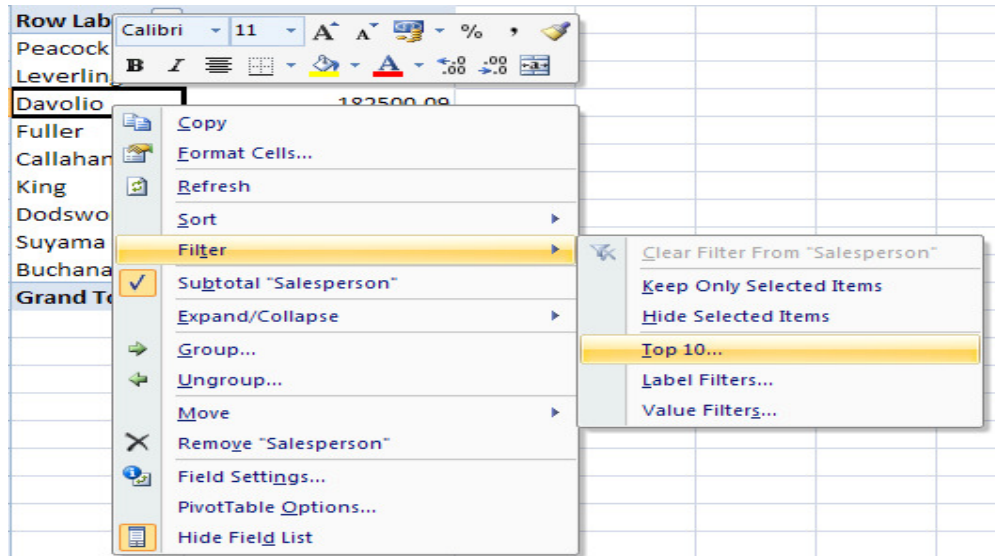
Row Labels	Sum of Order Amount
Peacock	225763.68
Leverling	201196.27
Davolio	182500.09
Fuller	162503.78
Callahan	123032.67
King	116962.99
Dodsworth	75048.04
Suyama	72527.63
Buchanan	68792.25
Grand Total	1228327.4

Rename the worksheet "Orders Sorted", return to the source data worksheet.

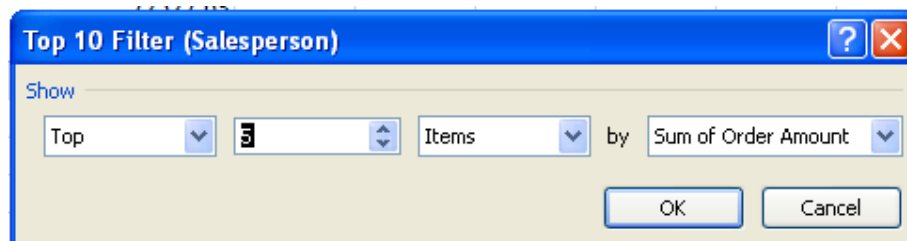
Who are the top five salespeople?

From the PivotTable Field List Select **Salesperson** and **Order Amount**.

To view the top items in a field, **right click** the Salesperson field, click **Filter** from the popup menu and then **Top 10...**



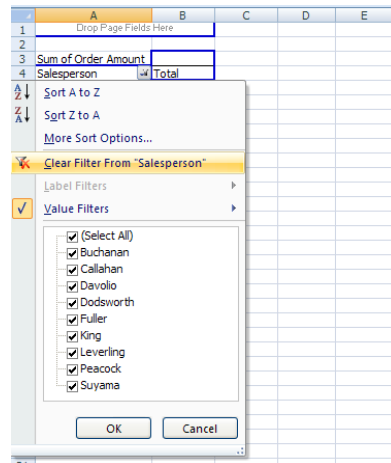
Then select Top 5 Items from the popup form.



These are the top 5 salespersons

3	Row Labels	Sum of Order Amount
4	Peacock	225763.68
5	Leverling	201196.27
6	Davolio	182500.09
7	Fuller	162503.78
8	Callahan	123032.67
9	Grand Total	894996.49

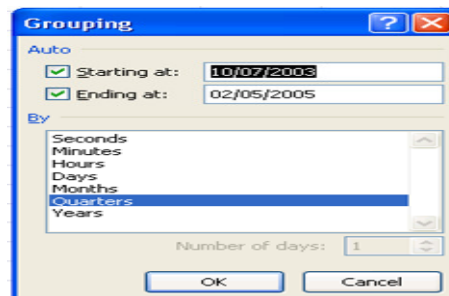
NB. To clear the Filter from the last question **Right Click** on the Filter symbol and clear filters from the salesman field.



Rename the worksheet Top 5 Salespersons, return to source data worksheet.

How did salespeople perform in a specific quarter?

Create a PivotTable from the source data. Now add the fields in the following order: **Order Date**, **Salesperson** and then **Order Amount** to the Pivot Table Field list. Change the grouping for the Order Date to Quarterly.



The result of the operation is shown below.

3	Row Labels	Sum of Order Amount
4	Qtr1	420033.17
5	Buchanan	22719.01
6	Callahan	47023.08
7	Davolio	44236.82
8	Dodsworth	32480.01
9	Fuller	48316.94
10	King	34865.82
11	Leverling	90204.43
12	Peacock	81283.77
13	Suyama	18903.29
14	Qtr2	295488.93
15	Buchanan	6857.67
16	Callahan	28573.82
17	Davolio	45362.53
18	Dodsworth	14919.71
19	Fuller	58778.29
20	King	38584.08

Rename worksheet as "Quarter by Salesperson"

How does each salesperson's performance vary by quarter?

Create a PivotTable from data source. Now add the fields in the following order:

Salesperson, **Order Date**, and then **Order Amount** to the Pivot Table Field list.

	A	B	C
1	Country	UK	
2			
3			Data
4	Salesperson	Order Date	Sum of Order Amount
5	Buchanan		68792.25
6		Qtr1	22719.01
7		Qtr2	6857.67
8		Qtr3	16034.62
9		Qtr4	23180.95
10	Dodsworth		75048.04
11		Qtr1	32480.01
12		Qtr2	14919.71
13		Qtr3	9649.35
14		Qtr4	17998.97
15	King		116962.99
16		Qtr1	34865.82
17		Qtr2	38584.08
18		Qtr3	21949.93
19		Qtr4	21563.16
20	Suyama		72527.63
21		Qtr1	18903.29
22		Qtr2	18106.66
23		Qtr3	14276.39
24		Qtr4	21241.29
25	Grand Total		333330.91

Rename worksheet as "Salesperson by Quarter"

What are the details for a specific order amount?

Create a PivotTable from the data source. Now add the fields in the following order:

Country, **Salesperson**, **Order Date**, **OrderID** and then **Order Amount** to the Pivot

Table Field list. Rename worksheet as "Order Totals". Double Click on B6 to reveal the original data.

3	Row Labels	Sum of Order Amount
4	Buchanan	68792.25
5	Qtr1	22719.01
6	Qtr2	6857.67
7	Qtr3	16034.62
8	Qtr4	23180.95
9	Callahan	123032.67
10	Qtr1	47023.08
11	Qtr2	28573.82
12	Qtr3	20689.99
13	Qtr4	26745.78
14	Davolio	182500.09
15	Qtr1	44236.82
16	Qtr2	45362.53
17	Qtr3	41287.39
18	Qtr4	51613.35
19	Dodsworth	75048.04
20	Qtr1	32480.01

This will open up a new worksheet. Displaying the details shown on the next page.

	A	B	C	D	E
1	Country	Salesperson	Order Date	OrderID	Order Amount
2	UK	Buchanan	20/03/2005	10954	1659.53
3	UK	Buchanan	05/03/2005	10922	742.5
4	UK	Buchanan	26/02/2005	10899	122.4
5	UK	Buchanan	11/02/2005	10874	310
6	UK	Buchanan	09/02/2005	10872	2058.46
7	UK	Buchanan	13/02/2005	10870	160
8	UK	Buchanan	09/02/2005	10869	1630
9	UK	Buchanan	12/02/2005	10866	1096.2
10	UK	Buchanan	02/02/2005	10851	2603
11	UK	Buchanan	29/01/2005	10841	4581

Rename the worksheet "Order Details"

What bonus amount should each salesperson receive?

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. Create a PivotTable from the data source and select the following fields from the Field List, **Salesperson**, **Order Date** and **Order Amount**, Click the report, click **PivotTable Tools** and then **Options**, point to **Formulas**, 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**.

Name: Bonus Amount

Formula: = IF('Order Amount' >20000,15%,10%)

Fields:

- Country
- Salesperson
- FirstName
- Order Date
- OrderID
- Order Amount
- Bonus Amount

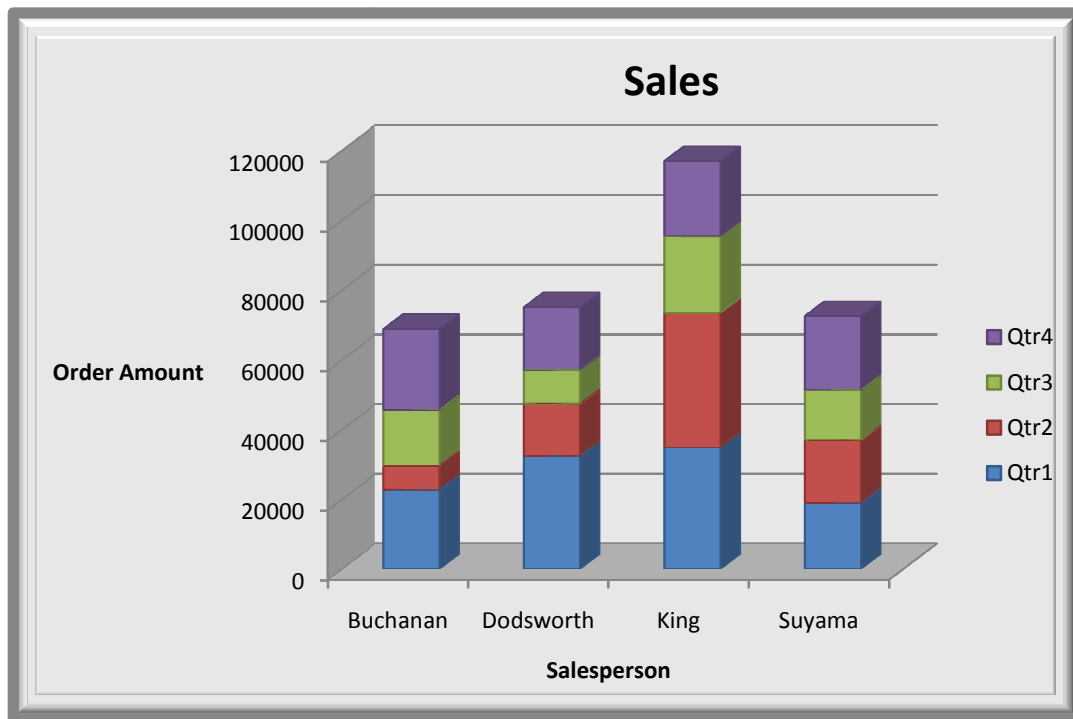
Insert Field

4	Row Labels	Sum of Order Amount	Sum of Bonus Amount
5	Buchanan	68792.25	15%
6	Qtr 1	22719.01	15%
7	Qtr 2	6857.67	10%
8	Qtr 3	16034.62	10%
9	Qtr 4	23180.95	15%
10	Callahan	123032.67	15%
11	Qtr 1	47023.08	15%
12	Qtr 2	28573.82	15%
13	Qtr 3	20689.99	15%
14	Qtr 4	26745.78	15%
15	Davolio	182500.09	15%
16	Qtr 1	44236.82	15%
17	Qtr 2	45362.53	15%
18	Qtr 3	41287.39	15%
19	Qtr 4	51613.35	15%
20	Dodsworth	75048.04	15%
21	Qtr 1	32480.01	15%

Rename the worksheet "Bonus Amount"

PivotChart Report

A PivotChart report provides a graphical representation of the summarised data from the PivotTable report. To create a PivotChart report **Select** the worksheet “Quarter By Salesperson” **Click** on a cell in the PivotTable select **Insert tab** and choose the type of chart you wish to insert. The chart below was created using a bar chart and changing the order date (Quarters) to columns in the field list.



A PivotChart report always has a dependency on a PivotTable report that provides the data to be charted, called the associated PivotTable report. When you make changes to a PivotChart report, its associated PivotTable report reflects the changes.

You can create charts for any of the reports you have created experiment with different chart types.

Compare your products

(Open the file - Moodle ► APPD ► Excel Tutorials ► “Products”)

- ▣ What are the sales totals for each category of product?
- ▣ What are the sales totals for each product?
- ▣ What are the three best-selling products in each category?
- ▣ What are the quarterly sales by product?
- ▣ How do the sales in the first quarter compare with those in the second?
- ▣ What are the average, largest, and smallest Beverage sales subtotals?
- ▣ What is the average sale and minimum sale?

Compare your orders

(Open the file - Moodle ► APPD ► Excel Tutorials ► “Orders”)

- ▣ How do you view an individual order?
- ▣ How many units of each product were sold?
- ▣ What's the average unit price of each product?
- ▣ What are the ten most expensive products?

Compare your customers

(Open the file - Moodle ► APPD ► Excel Tutorials ► “Customers”)

- ▣ What products do your customers purchase, and in which quarter?
- ▣ What were the top two products purchased by each customer in the third quarter?
- ▣ Who was your top customer in the first quarter?
- ▣ Who were the top two customers for each product?