1. PivotTable – Overview

A PivotTable is an extremely powerful tool that you can use to slice and dice data. You can track and analyze hundreds of thousands of data points with a compact table that can be changed dynamically to enable you to find the different perspectives of the data. It is a simple tool to use, yet powerful.

The major features of a PivotTable are as follows-

- Creating a PivotTable is extremely simple and fast
- Enabling churning of data instantly by simple dragging of fields, sorting and filtering and different calculations on the data.
- Arriving at the suitable representation for your data as you gain insights into it.
- Ability to create reports on the fly.
- Producing multiple reports from the same PivotTable in a matter of seconds.
- Providing interactive reports to synchronize with the audience.

In this tutorial, you will understand these PivotTable features in detail along with examples. By the time you complete this tutorial, you will have sufficient knowledge on PivotTable features that can get you started with exploring, analyzing, and reporting data based on the requirements.

Creating a PivotTable

You can create a PivotTable from a range of data or an Excel table. You can start with an empty PivotTable to fill in the details, if you are aware of what you are looking for. You can also make use of Excel Recommended PivotTables that can give you heads up on the PivotTable layouts that are best suited for summarizing your data.

You will learn how to create a PivotTable from a data range or Excel table in the Chapter - Creating a PivotTable from a Table or Range.

Excel gives you a more powerful way of creating a PivotTable from multiple tables, different data sources, and external data sources. It is named as PowerPivot that works on its database known as Data Model. You will learn these Excel power tools in other tutorials in this Tutorials Library.

You need to first know about the normal PivotTable as explained in this tutorial, before you venture into the power tools.

PivotTable Layout - Fields and Areas

The PivotTable layout simply depends on what fields you have selected for the report and how you have arranged them in Areas. The selection and arrangement can be done by just dragging the fields. As you drag the fields, the PivotTable layout keeps the changing and it happens in a matter of seconds.

You will learn about PivotTable Fields and Areas in the Chapters – PivotTable Fields and PivotTable Areas.

Exploring Data with PivotTable

The primary goal of using a PivotTable normally is to explore the data to extract significant and required information. You have several options to do this that include Sorting, Filtering, Nesting, Collapsing and Expanding, Grouping and Ungrouping, etc.

You will have an overview of these options in the Chapter - Exploring Data with PivotTable.

Summarizing Values

Once you collate the data required by you by the different exploration techniques, the next step that you would like to take is to summarize the data. Excel provides you with a variety of calculation types that you can apply based on suitability and requirement. You can also switch across different calculation types and view the results in a matter of seconds.

You will learn how to apply the calculation types on a PivotTable in the Chapter - Summarizing Values by Different Calculation Types.

Updating a PivotTable

Once you have explored the data and summarized it, you need not repeat the exercise if and when the source data gets updated. You can refresh the PivotTable so that it reflects the changes in the source data.

You will learn the various ways of refreshing data in the Chapter – Updating a PivotTable.

2. PivotTable – Creation

You can create a PivotTable either from a range of data or from an Excel table. In both the cases, the first row of the data should contain the headers for the columns.

If you are sure of the fields to be included in the PivotTable and the layout you want to have, you can start with an empty PivotTable and construct the PivotTable.

In case you are not sure which PivotTable layout is best suitable for your data, you can make use of Recommended PivotTables command of Excel to view the PivotTables customized to your data and choose the one you like.

Creating a PivotTable from a Data Range

Consider the following data range that contains the sales data for each Salesperson, in each Region and in the months of January, February and March -

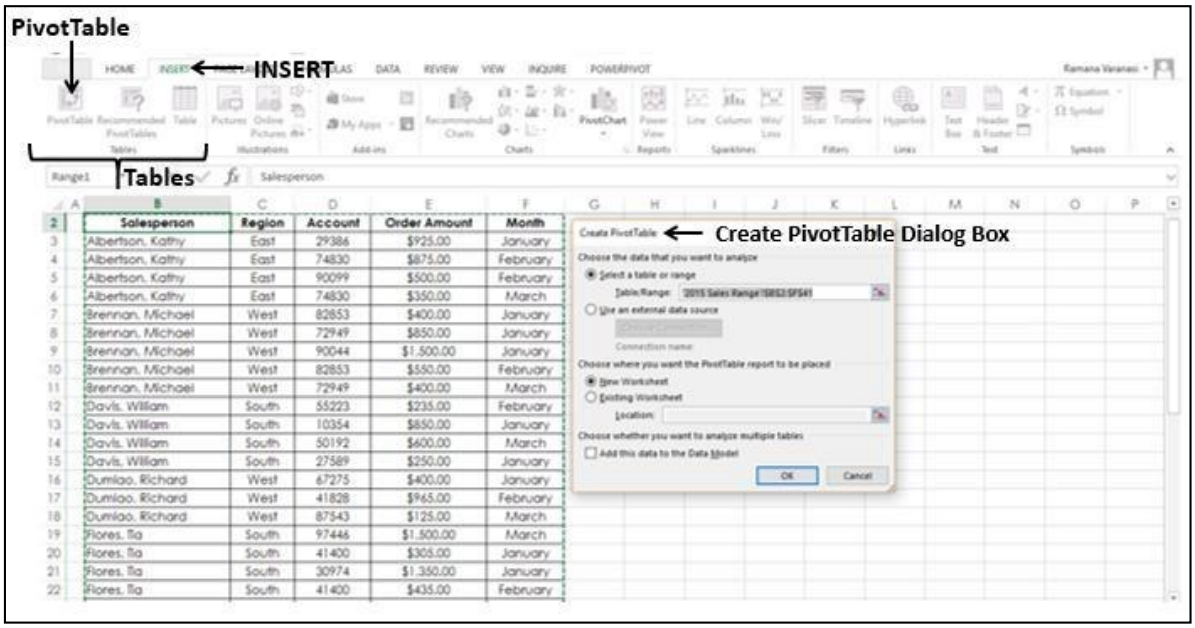
	A	B	C	D	E	F
1						
2		Salesperson	Region	Account	Order Amount	Month
3		Albertson, Kathy	East	29386	$925.00	January
4		Albertson, Kathy	East	74830	$875.00	February
5		Albertson, Kathy	East	90099	$500.00	February
6		Albertson, Kathy	East	74830	$350.00	March
7		Brennan, Michael	West	82853	$400.00	January
8		Brennan, Michael	West	72949	$850.00	January
9		Brennan, Michael	West	90044	$1,500.00	January
10		Brennan, Michael	West	82853	$550.00	February
11		Brennan, Michael	West	72949	$400.00	March
12		Davis, William	South	55223	$235.00	February
13		Davis, William	South	10354	$850.00	January
14		Davis, William	South	50192	$600.00	March
15		Davis, William	South	27589	$250.00	January
16		Dumlao, Richard	West	67275	$400.00	January
17		Dumlao, Richard	West	41828	$965.00	February
18		Dumlao, Richard	West	87543	$125.00	March
19		Flores, Tia	South	97446	$1,500.00	March
20		Flores, Tia	South	41400	$305.00	January
21		Flores, Tia	South	30974	$1,350.00	January

To create a PivotTable from this data range, do the following –

- Ensure that the first row has headers. You need headers because they will be the field names in your PivotTable.

-
- Name the data range as SalesData_Range.
-
- Click on the data range – SalesData_Range.
-
- Click the INSERT tab on the Ribbon.

Click PivotTable in the Tables group. The **Create PivotTable** dialog box appears.

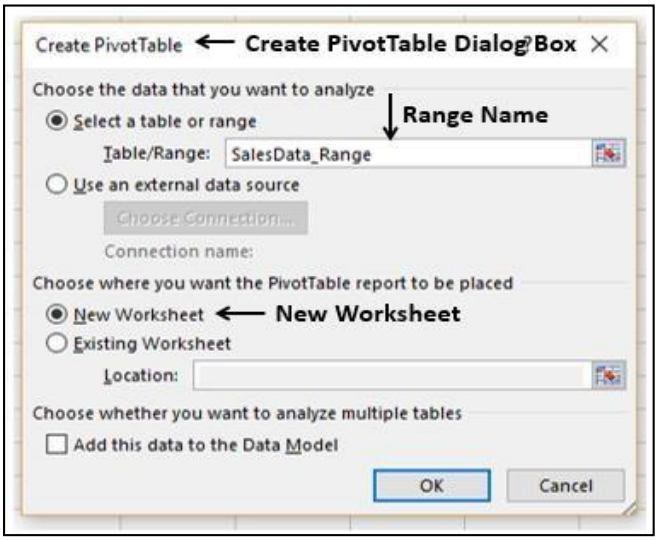


In Create PivotTable dialog box, under **Choose the data that you want to analyze**, you can either select a Table or Range from the current workbook or use an external data source.

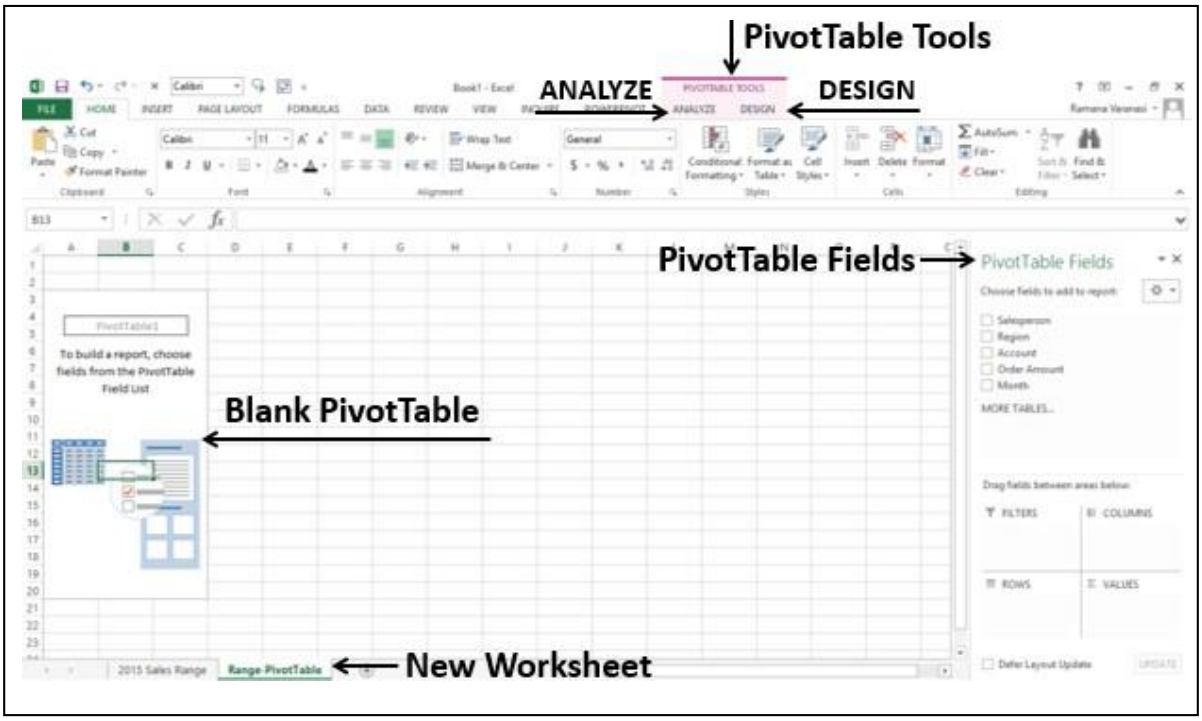
As you are creating a PivotTable from a data range, select the following from the dialog box-

- Select **Select a table or range**.
-
- In the Table/Range box, type the range name – SalesData_Range.
-
- Select New Worksheet under Choose where you want the PivotTable report to be placed and click OK.

You can choose to analyze multiple tables, by adding this data range to Data Model. You can learn how to analyze multiple tables, use of Data Model and how to use an external data source to create a PivotTable in the tutorial Excel PowerPivot.



A new worksheet is inserted into your workbook. The new worksheet contains an empty PivotTable. Name the worksheet – Range-PivotTable.



As you can observe, the **PivotTable Fields** list appears on the right side of the worksheet, containing the header names of the columns in the data range. Further, on the Ribbon, PivotTable Tools – ANALYZE and DESIGN appear.

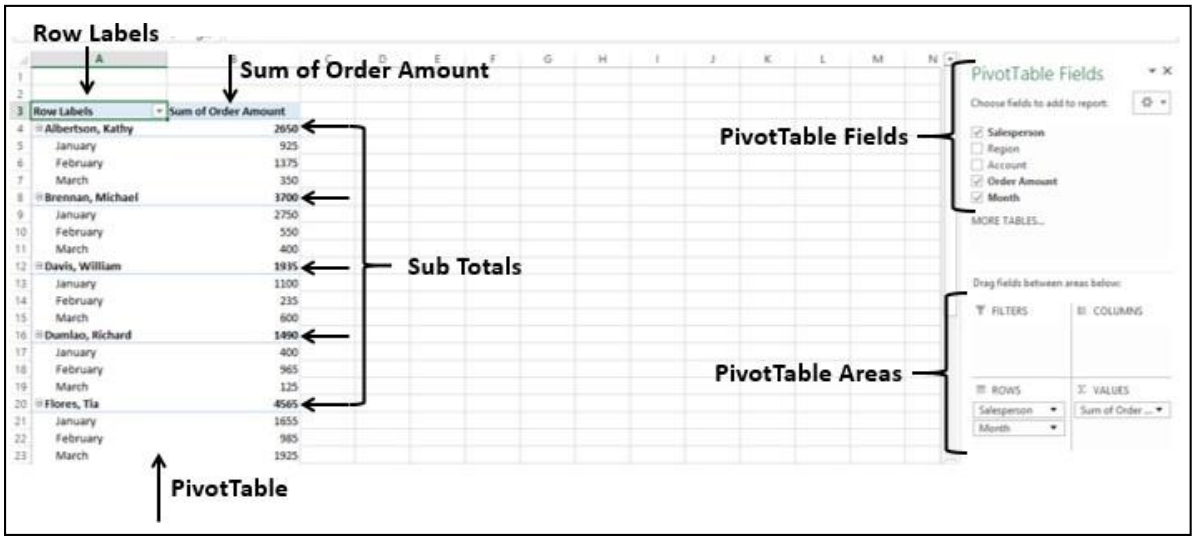
Adding Fields to the PivotTable

You will understand in detail about PivotTable Fields and Areas in the later chapters in this tutorial. For now, observe the steps to add fields to the PivotTable.

Suppose you want to summarize the order amount salesperson-wise for the months January, February, and March. You can do it in few simple steps as follows-

- Click on the field Salesperson in the PivotTable Fields list and drag it to the ROWS area.
-
- Click the field Month in the PivotTable Fields list and drag that also to ROWS area.
-
- Click on Order Amount and drag it to ∑ VALUES area.

Your first PivotTable is ready as shown below-

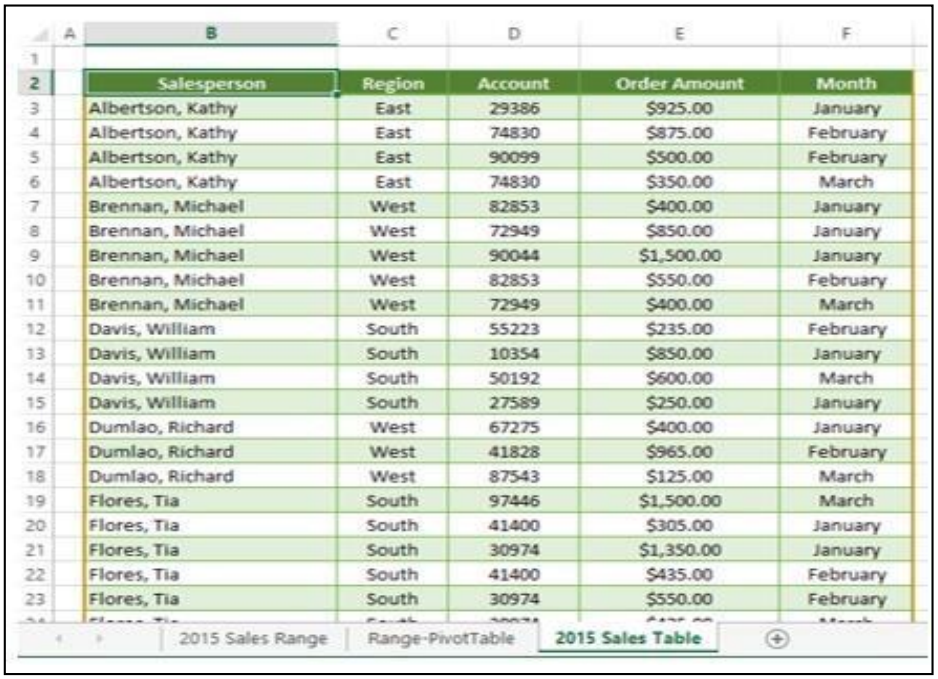


Observe that two columns appear in the PivotTable, one containing the Row Labels that you selected, i.e. Salesperson and Month and a second one containing Sum of Order Amount. In addition to Sum of Order Amount month wise for each Salesperson, you will also get subtotals representing the total sales by that person. If you scroll down the worksheet, you will find the last row as Grand Total representing total sales.

You will learn more about producing PivotTables as per the need as you progress through this tutorial.

Creating a PivotTable from a Table

Consider the following Excel table that contains the same sales data as in the previous section-



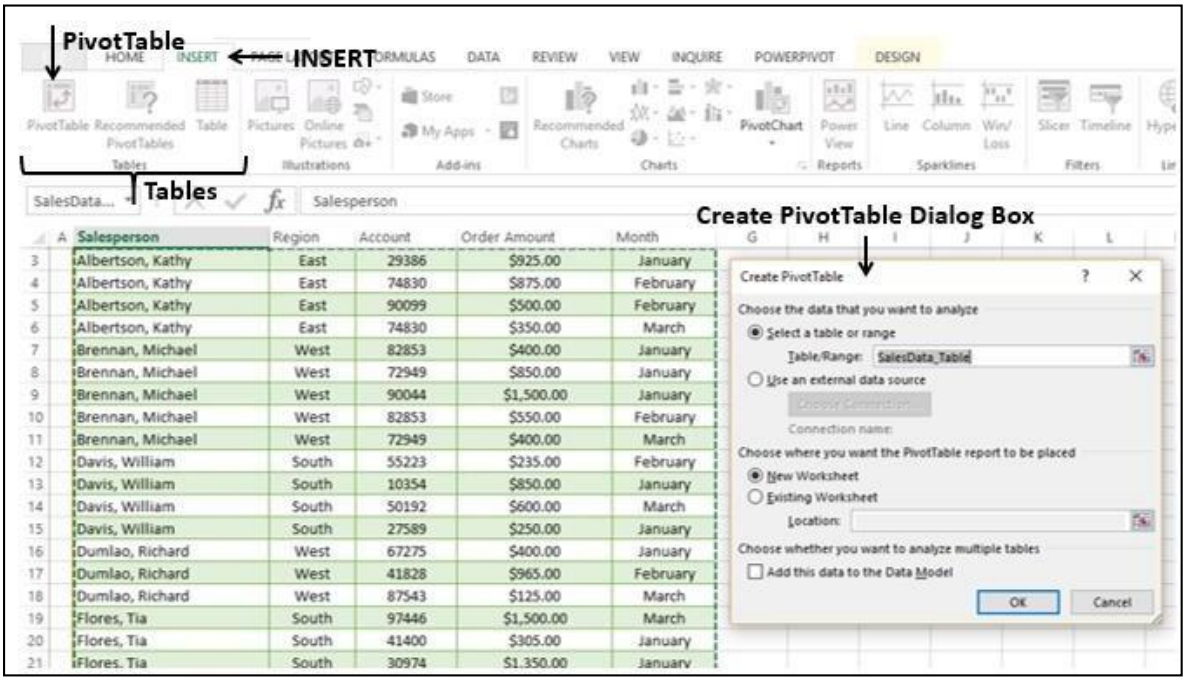
	A	B	C	D	E	F
1						
2		Salesperson	Region	Account	Order Amount	Month
3		Albertson, Kathy	East	29386	$925.00	January
4		Albertson, Kathy	East	74830	$875.00	February
5		Albertson, Kathy	East	90099	$500.00	February
6		Albertson, Kathy	East	74830	$350.00	March
7		Brennan, Michael	West	82853	$400.00	January
8		Brennan, Michael	West	72949	$850.00	January
9		Brennan, Michael	West	90044	$1,500.00	January
10		Brennan, Michael	West	82853	$550.00	February
11		Brennan, Michael	West	72949	$400.00	March
12		Davis, William	South	55223	$235.00	February
13		Davis, William	South	10354	$850.00	January
14		Davis, William	South	50192	$600.00	March
15		Davis, William	South	27589	$250.00	January
16		Dumlao, Richard	West	67275	$400.00	January
17		Dumlao, Richard	West	41828	$965.00	February
18		Dumlao, Richard	West	87543	$125.00	March
19		Flores, Tia	South	97446	$1,500.00	March
20		Flores, Tia	South	41400	$305.00	January
21		Flores, Tia	South	30974	$1,350.00	January
22		Flores, Tia	South	41400	$435.00	February
23		Flores, Tia	South	30974	$550.00	February

2015 Sales Range | Range-PivotTable | 2015 Sales Table

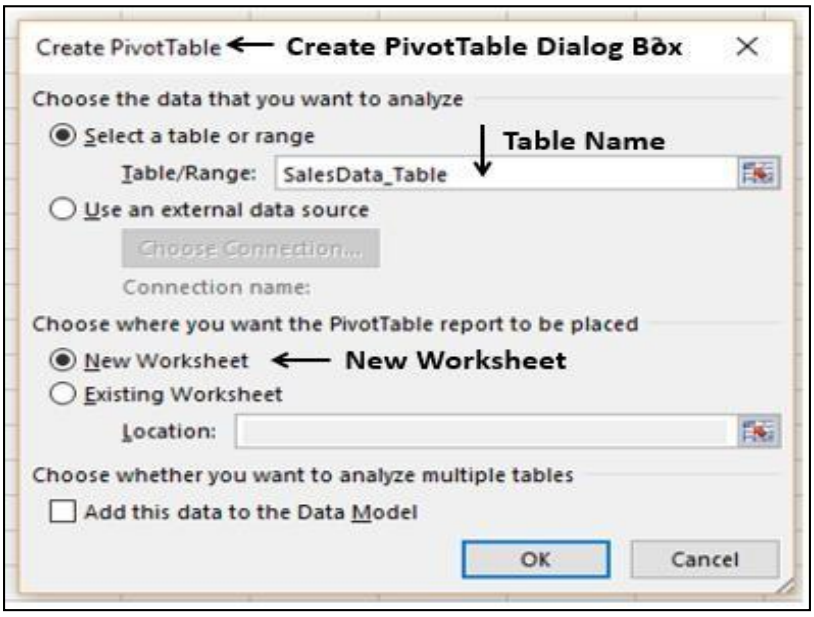
An Excel table will inherently have a name and the columns will have headers, which is a requirement to create a PivotTable. Suppose the table name is SalesData_Table.

To create a PivotTable from this Excel table, do the following −

- Click on the table − SalesData_Table.
- Click the INSERT tab on the Ribbon.
- Click PivotTable in the Tables group. The **Create PivotTable** dialog box appears.



- Click Select a table or range.
- In the Table/Range box, type the table name – SalesData_Table.
- Select New Worksheet under **Choose where you want the PivotTable report to be placed.** Click OK.



A new worksheet is inserted into your workbook. The new worksheet contains an empty PivotTable. Name the worksheet – Table-PivotTable. The worksheet – Table-PivotTable looks similar to the one you have got in the data range case in the earlier section.

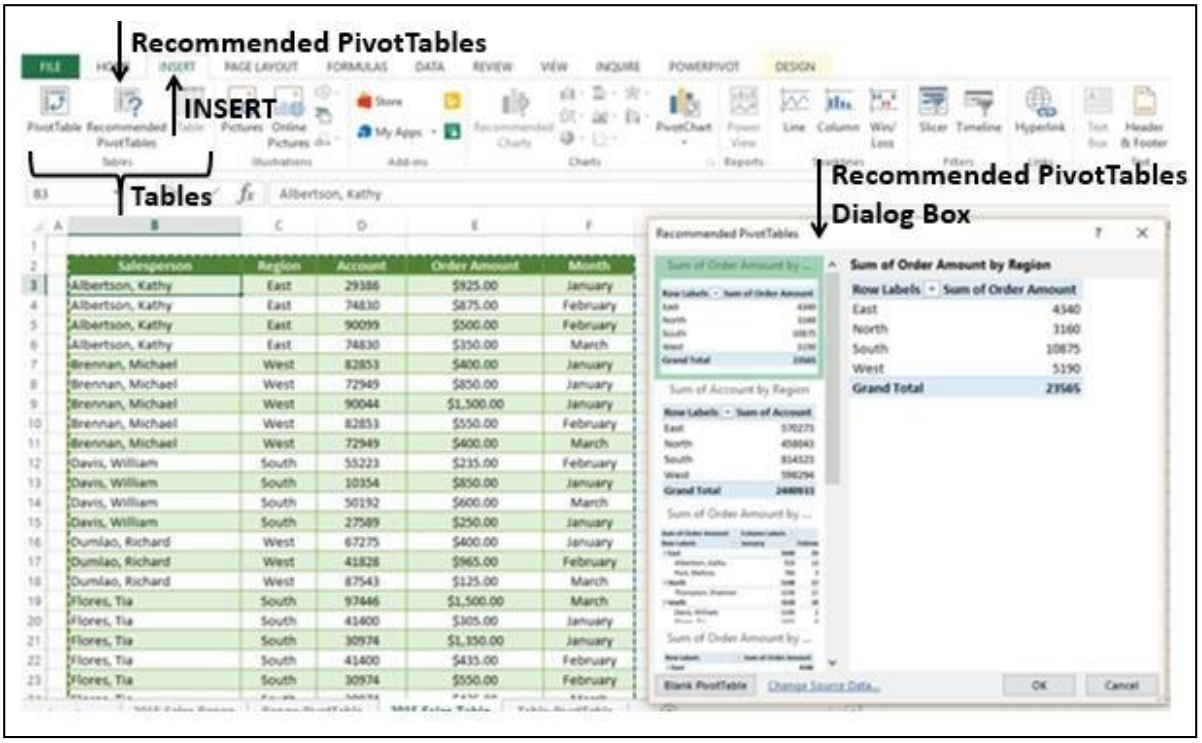
You can add fields to the PivotTable as you have seen in the section – Adding Fields to the PivotTable, earlier in this chapter.

Creating a PivotTable with Recommended PivotTables

In case you are not familiar with Excel PivotTables or if you do not know which fields would result in a meaningful report, you can use the Recommended PivotTables command in Excel. Recommended PivotTables gives you all the possible reports with your data along with the associated layout. In other words, the options displayed will be the PivotTables that are customized to your data.

To create a PivotTable from the Excel table SalesData-Table using Recommended PivotTables, proceed as follows -

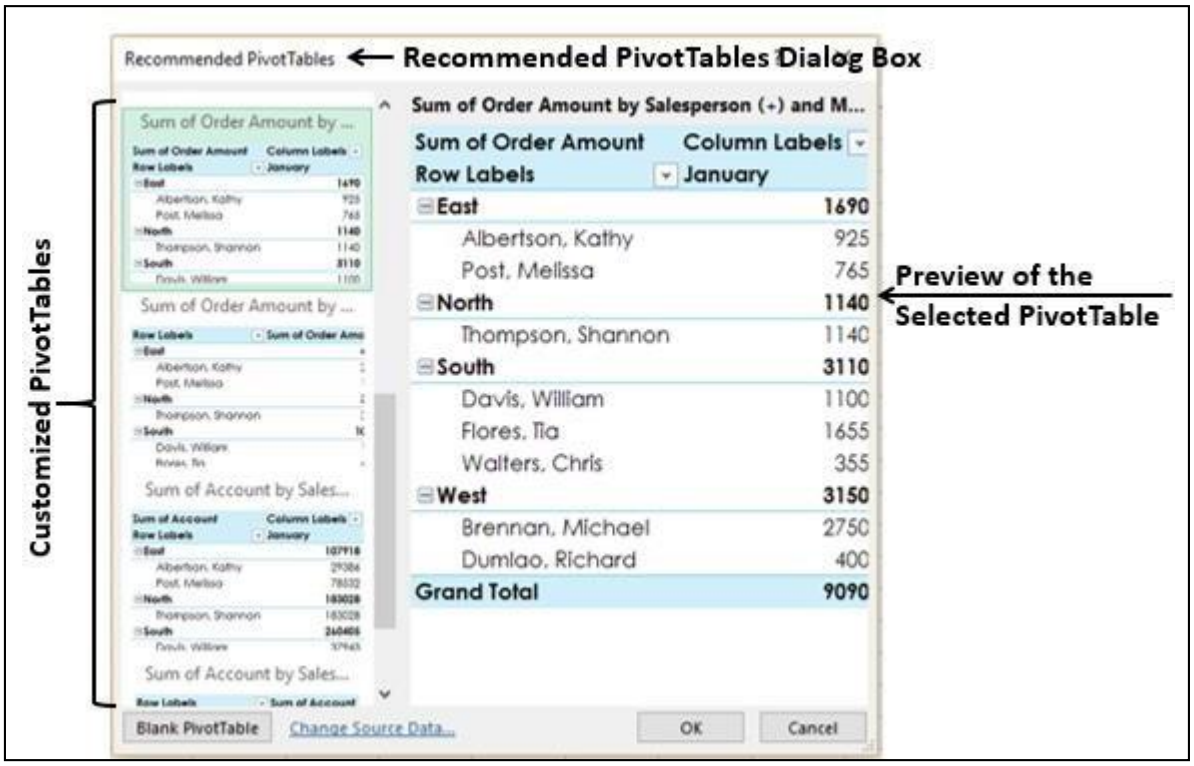
- Click on the table SalesData-Table.
- Click the INSERT tab.
- Click Recommended PivotTables in the Tables group. The Recommended PivotTables Dialog Box appears.



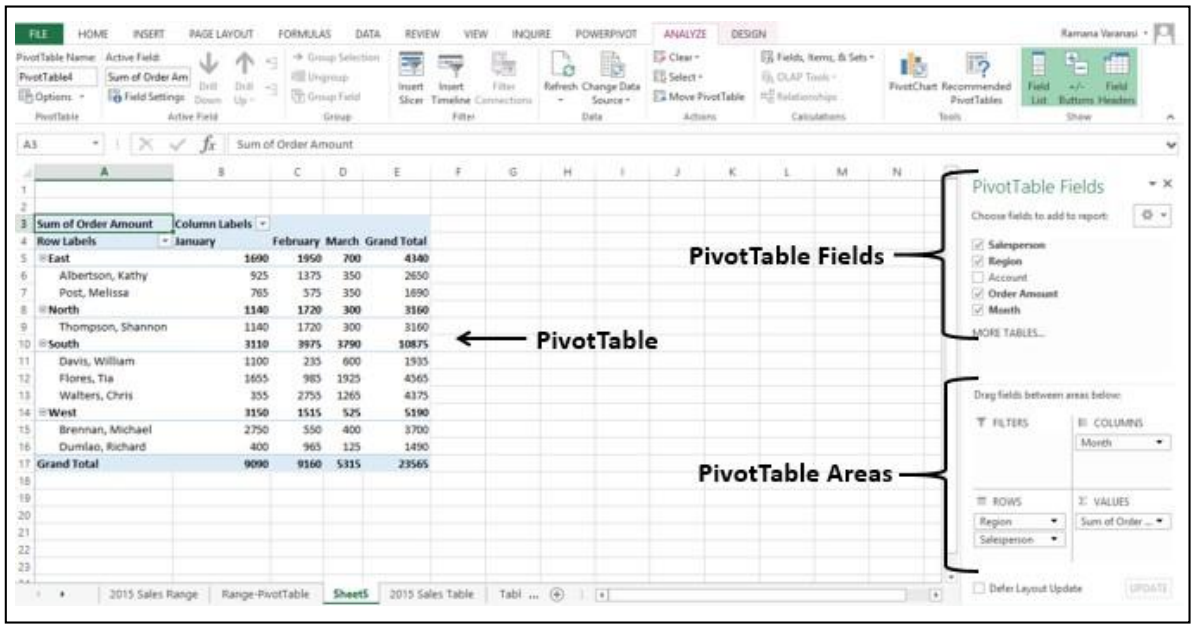
In the Recommended PivotTables dialog box, the possible customized PivotTables that suit your data will be displayed.

- Click on each of the PivotTable options to see the preview on the right side.
- Click on the PivotTable - Sum of Order Amount by Salesperson and Month and click OK.

You will be get the preview on the right side.



The selected PivotTable appears on a new worksheet in your workbook.



Sum of Order Amount	Column Labels			
Row Labels	January	February	March	Grand Total
East	1690	1950	700	4340
Albertson, Kathy	925	1375	350	2650
Post, Melissa	765	575	350	1690
North	1140	1720	300	3160
Thompson, Shannon	1140	1720	300	3160
South	3110	3975	3790	10875
Davis, William	1100	235	600	1935
Flores, Tia	1655	985	1925	4565
Walters, Chris	355	2755	1265	4375
West	3150	1515	525	5190
Brennan, Michael	2750	550	400	3700
Dumlao, Richard	400	965	125	1490
Grand Total	9090	9160	5315	23565

You can see that the PivotTable Fields - Salesperson, Region, Order Amount and Month got selected. Of these, Region and Salesperson are in ROWS area, Month is in COLUMNS area, and Sum of Order Amount is in ∑ VALUES area.

The PivotTable summarized the data Region-wise, Salesperson-wise and Month-wise. The subtotals are displayed for each Region, each Salesperson, and each Month.

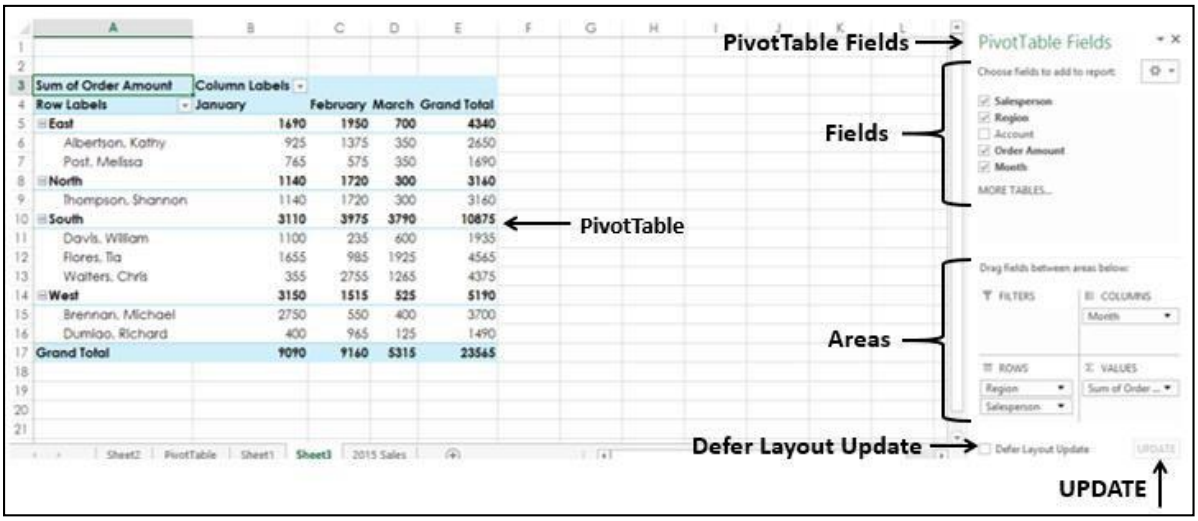
3. PivotTable – Fields

PivotTable Fields is a Task Pane associated with a PivotTable. The PivotTable Fields Task Pane comprises of Fields and Areas. By default, the Task Pane appears at the right side of the window with Fields displayed above Areas.

Fields represent the columns in your data – range or Excel table, and will have check boxes. The selected fields are displayed in the report. Areas represent the layout of the report and the calculations included in the report.

At the bottom of the Task Pane, you will find an option – Defer Layout Update with an UPDATE button next to it.

- By default, this is not selected and whatever changes you make in the selection of fields or in the layout options are reflected in the PivotTable instantly.
-
- If you select this, the changes in your selections are not updated until you click on the **UPDATE** button.



In this chapter, you will understand the details about Fields. In the next chapter, you will understand the details about Areas.

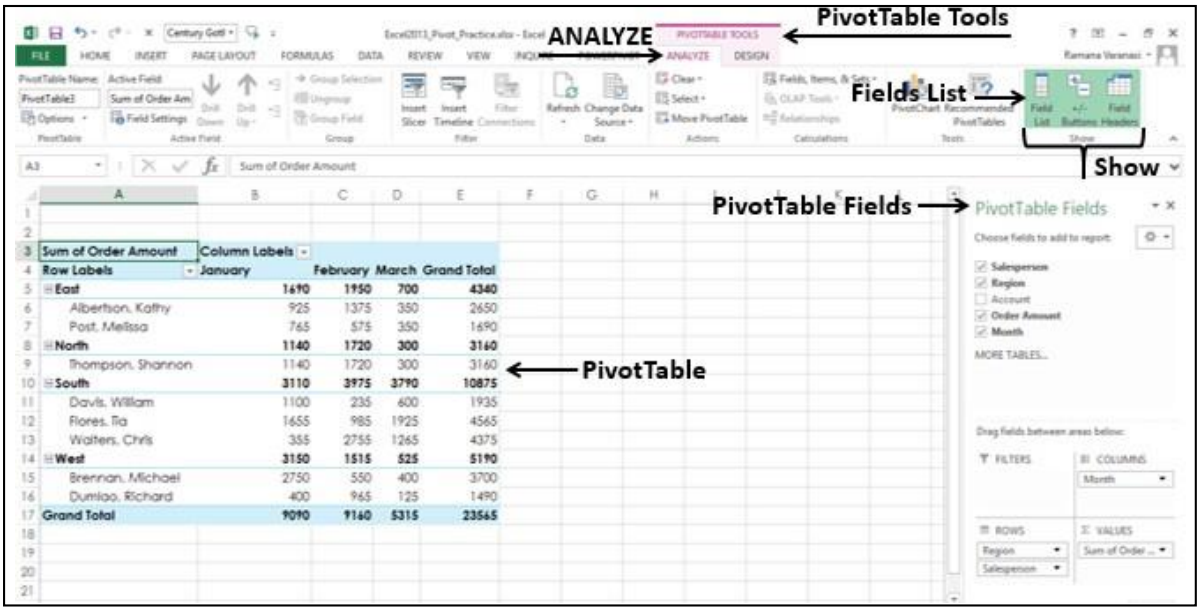
PivotTable Fields Task Pane

You can find the PivotTable Fields Task Pane on the worksheet where you have a PivotTable. To view the PivotTable Fields Task Pane, click the PivotTable. In case the PivotTable Fields Task Pane is not displayed, check the Ribbon for the following –

- Click the ANALYZE tab under PIVOTTABLE TOOLS on the Ribbon.

- Check if Fields List is selected (i.e. highlighted) in the Show group.
- If Fields List is not selected, then click it.

The PivotTable Fields Task Pane will be displayed on the right side of the window, with the title – PivotTable Fields.



Sum of Order Amount	Column Labels			
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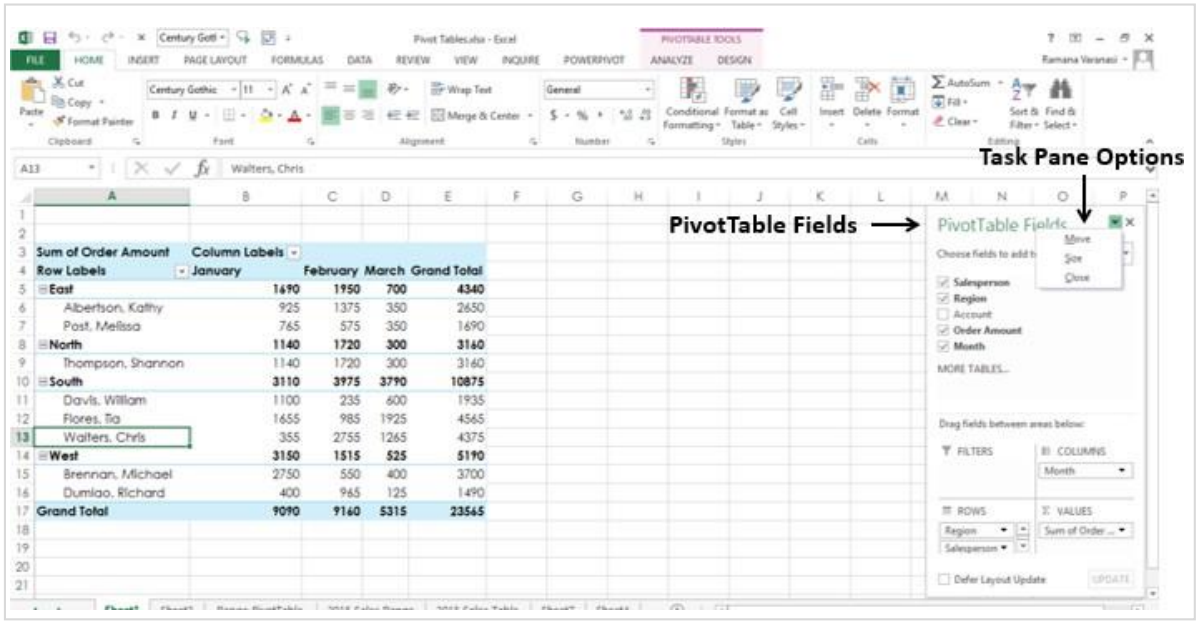
South	3110	3975	3790	10875
Davis, William	1100	235	600	1935
Flores, Tia	1655	985	1925	4565
Walters, Chris	355	2755	1265	4375
West	3150	1515	525	5190
Brennan, Michael	2750	550	400	3700
Dumlao, Richard	400	965	125	1490
Grand Total	9090	9160	5315	23565

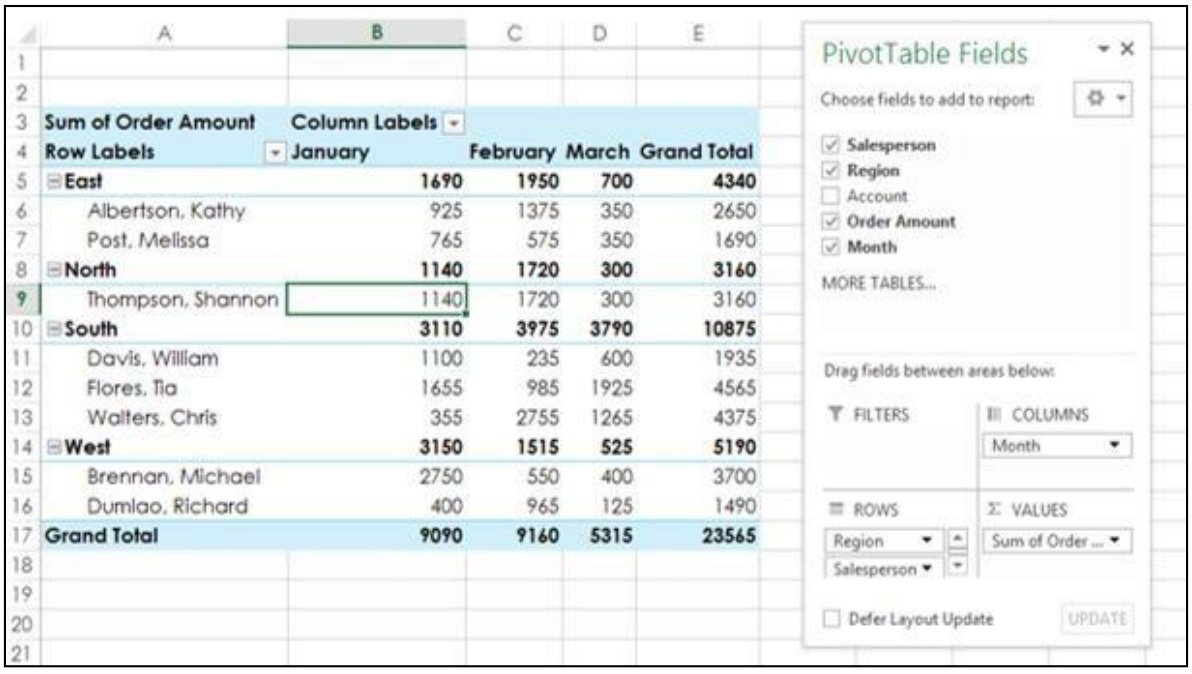
Moving PivotTable Fields Task Pane

On the right of the title PivotTable Fields of the PivotTable Task Pane, you will find the button . This represents Task Pane Options. Click the button . The Task Pane Options- Move, Size and Close appear in the dropdown list.



You can move the PivotTables Task Pane to anywhere you want in the window as follows-

- Click Move in the dropdown list. The button appears on the Task Pane.
- Click the icon and drag the pane to a position where you want to place it. You can place the Task Pane next to the PivotTable as given below.



Sum of Order Amount	Column Labels			
Row Labels	January	February	March	Grand Total
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Davis, William	1100	235	600	1935
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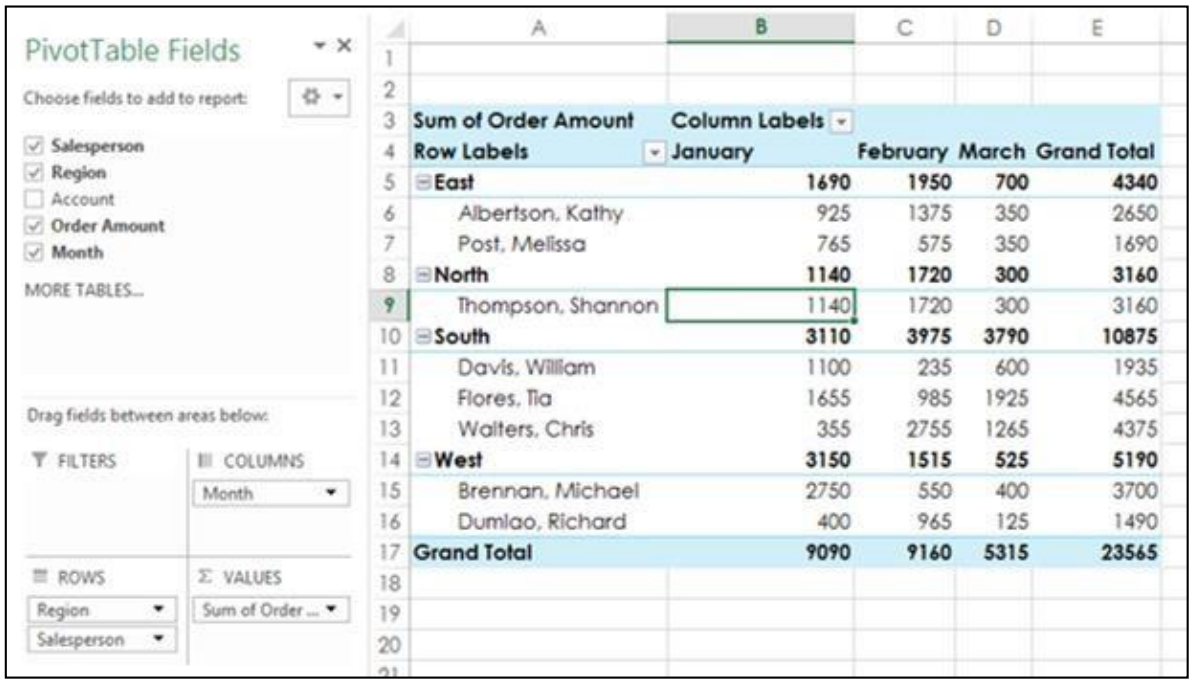
West	3150	1515	525	5190
Brennan, Michael	2750	550	400	3700
Dumlao, Richard	400	965	125	1490
Grand Total	9090	9160	5315	23565

You can place the Task Pane on the left side of the window as given below.



Sum of Order Amount	Column Labels			
Row Labels	January	February	March	Grand Total
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Albertson, Kathy	925	1375	350	2650
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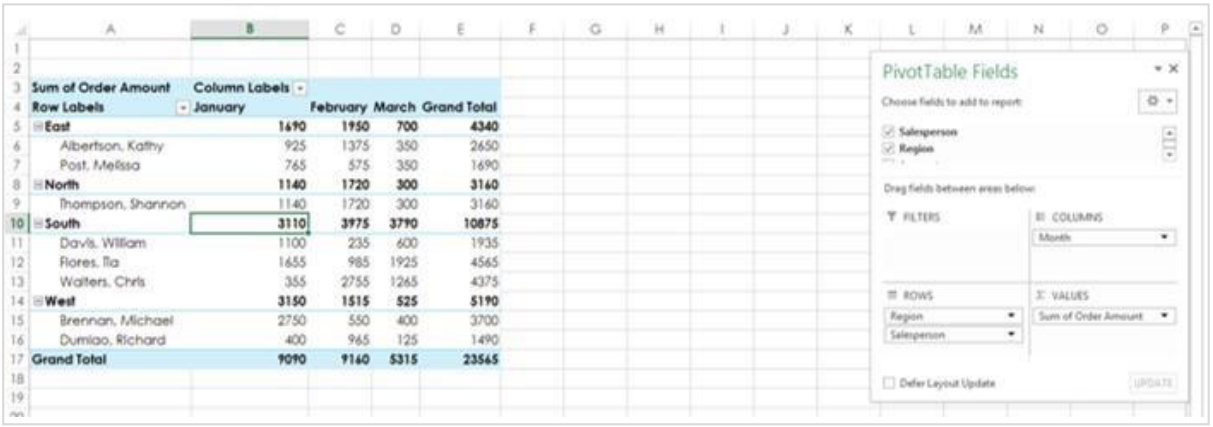
West	3150	1515	525	5190
Brennan, Michael	2750	550	400	3700
Dumlao, Richard	400	965	125	1490
Grand Total	9090	9160	5315	23565

Resizing PivotTable Fields Task Pane

You can resize the PivotTables Task Pane – i.e. increase / decrease the Task Pane length and/or width as follows-

- Click on Task Pane Options - ▾ ⋮ that is on the right side of the title - PivotTable Fields.
- Click on Size in the dropdown list.
- Use the symbol ⟺ to increase / decrease the width of the Task Pane.
- Use the symbol ⇕ to increase / decrease the width of the Task Pane.

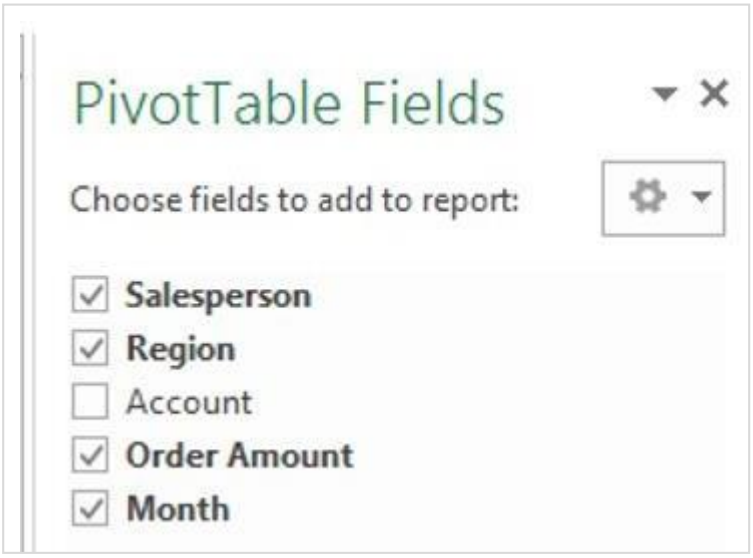
In the ∑ VALUES area, to make Sum of Order Amount visible completely, you can resize the Task Pane as given below.



PivotTable Fields

The PivotTable Fields list comprises of all the tables that are associated with your workbook and the corresponding fields. It is by selecting the fields in the PivotTable fields list, you will create the PivotTable.

The tables and the corresponding fields with check boxes, reflect your PivotTable data. As you can check / uncheck the fields randomly, you can quickly change the PivotTable, highlighting the summarized data that you want to report or present.



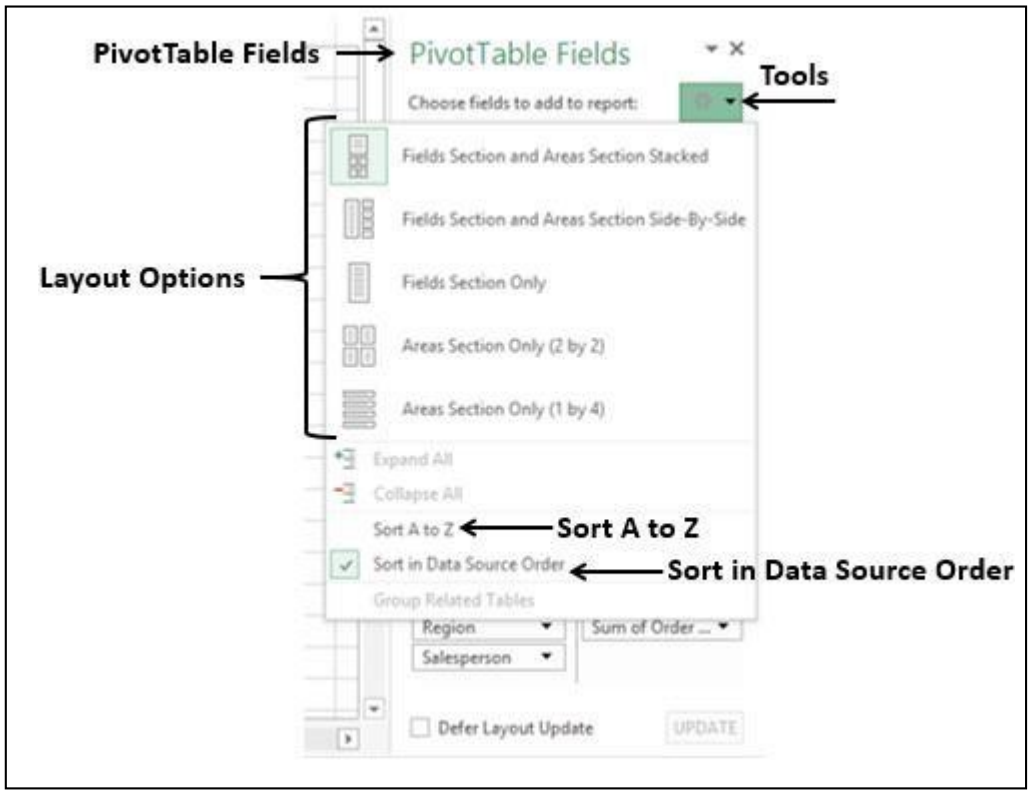
As you can observe, if there is only one table, the table name will not be displayed in the PivotTable Fields list. Only the fields will be displayed with check boxes.

Above the fields list, you will find the action **Choose fields to add to report**. To the right, you will find the button -  that represents Tools.

- Click on the Tools button.

In the dropdown list, you will find the following –

- Five different layout options for Fields and Areas.
- Two options for Sort order of the fields in the Fields list –
  - Sort A to Z.
  - Sort in Data Source Order.



As you can observe in the above Fields list, the Sort order is by default – i.e. in Data Source Order. This means, it is the order in which the columns in your data table appear.

Normally, you can retain the default order. However, at times, you might encounter many fields in a table and might not be acquainted with them. In such a case, you can sort the fields in alphabetical order by clicking on – Sort A to Z in the dropdown list of Tools. Then, the PivotTable Fields list looks as follows –