

Excel Lab Guide

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The essence of multi-dimensional data modeling is to prepare the tables and hence the associated data in a format suitable for analysis. Once the database is multi-dimensionally modeled, we can start analyzing the data from various perspectives.

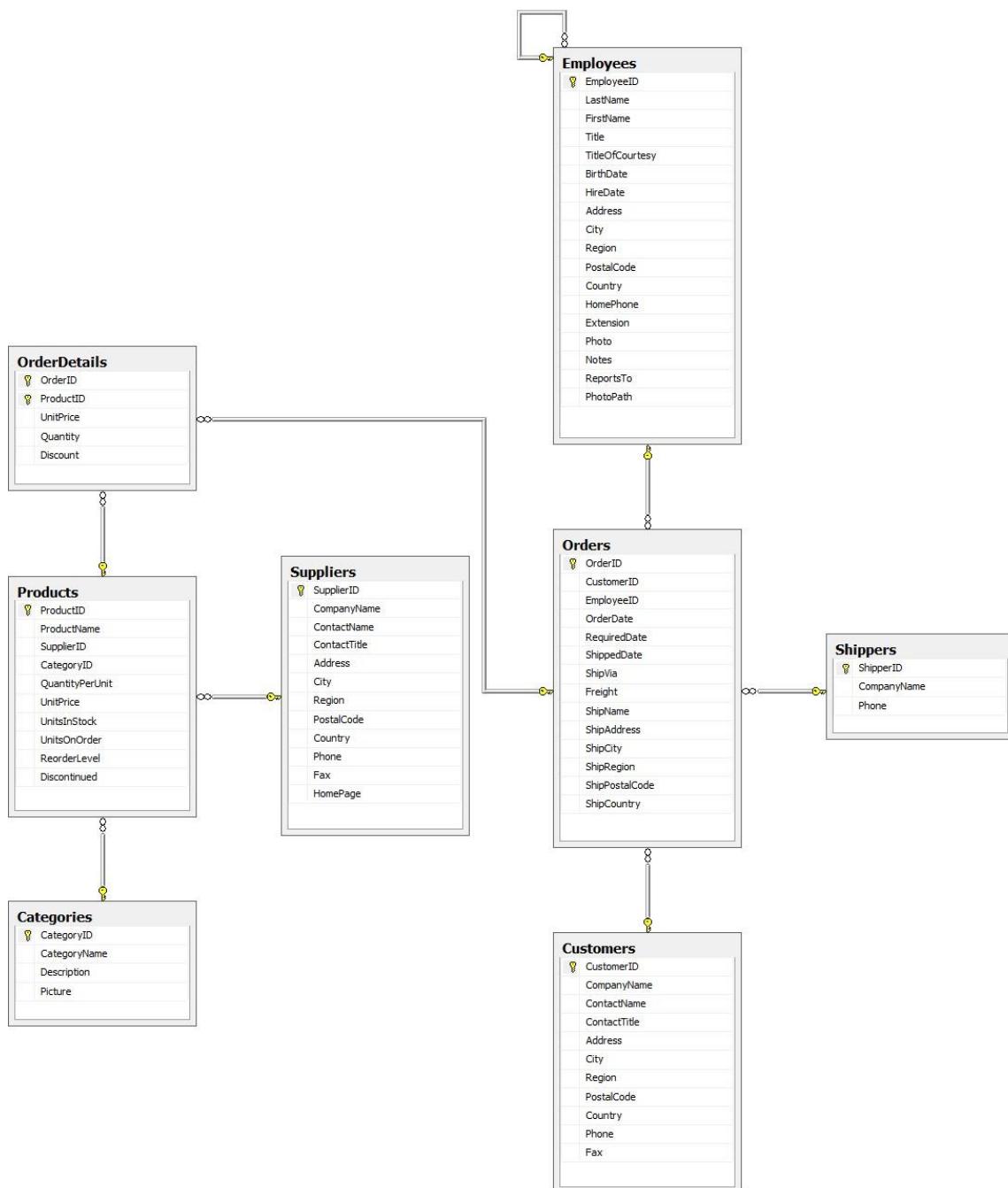
Understanding the Need for Data Analysis

Northwind is an online shopping facility, which deals with supplies and ships various products, the orders for which are placed online. It sells various categories of products such as beverages, dairy products, grains/cereals, meat/poultry, seafood, etc. to over 21 different countries including Canada, France, Germany, Italy, Portugal, Spain, UK and USA.

The customer places an order via a phone call, which is attended to by an employee. Every order consists of various products belonging to various categories and being supplied by different suppliers. Once the orders have been placed, all the products corresponding to the respective order are shipped to the respective customer via the various shippers.

The database design is explained below:

1. The **Employees** table contains details of all the employees present in the company.
2. The **Customers** table contains details of all the customers who order the various products.
3. The **Shippers** table contains details of various shippers who transport the products from the warehouse to the customer.
4. The **Suppliers** table contains details of various suppliers who supply the products to the warehouse.
5. The **Categories** table contains descriptions of the categories to which a product belongs.
6. The **Products** table contains the information of the various products being sold along with the categories they belong to and the suppliers who supply the corresponding products.
7. The **Orders** table keeps a track of a complete transaction including the customer who placed the order, the employee who took the order, the shipper who would be making the delivery, the dates of ordering and shipping, etc.
8. The **OrderDetails** table keeps a detailed list of all the products that were bought in a single order including the total quantity ordered, and the possible available discount.



The table structures are as given below:

EMPLOYEES TABLE

| Column | Data Type | |
|-----------------|--------------|-----------------------|
| EmployeeID | int | NOT NULL, PRIMARY KEY |
| LastNames | nvarchar(20) | NOT NULL |
| FirstNames | nvarchar(10) | NOT NULL |
| Title | nvarchar(30) | |
| TitleOfCourtesy | nvarchar(25) | |
| BirthDate | datetime | |

| | | |
|------------|---------------|--|
| HireDate | datetime | |
| Address | nvarchar(60) | |
| City | nvarchar(15) | |
| Region | nvarchar(15) | |
| PostalCode | nvarchar(10) | |
| Country | nvarchar(15) | |
| HomePhone | nvarchar(24) | |
| Extension | nvarchar(4) | |
| Photo | image | |
| Notes | ntext | |
| ReportsTo | int | |
| PhotoPath | nvarchar(255) | |

CUSTOMERS TABLE

| Column | Data Type | |
|--------------|--------------|-----------------------|
| CustomerID | nchar(5) | NOT NULL, PRIMARY KEY |
| CompanyName | nvarchar(40) | NOT NULL |
| ContactName | nvarchar(30) | |
| ContactTitle | nvarchar(30) | |
| Address | nvarchar(60) | |
| City | nvarchar(15) | |
| Region | nvarchar(15) | |
| PostalCode | nvarchar(10) | |
| Country | nvarchar(15) | |
| Phone | nvarchar(24) | |
| Fax | nvarchar(24) | |

SHIPPERS TABLE

| Column | Data Type | |
|-------------|--------------|-----------------------|
| ShipperID | int | NOT NULL, PRIMARY KEY |
| CompanyName | nvarchar(40) | NOT NULL |
| Phone | nvarchar(24) | |

SUPPLIERS TABLE

| Column | Data Type | |
|--------------|--------------|-----------------------|
| SupplierID | int | NOT NULL, PRIMARY KEY |
| CompanyName | nvarchar(40) | NOT NULL |
| ContactName | nvarchar(30) | |
| ContactTitle | nvarchar(30) | |
| Address | nvarchar(60) | |
| City | nvarchar(15) | |
| Region | nvarchar(15) | |
| PostalCode | nvarchar(10) | |
| Country | nvarchar(15) | |
| Phone | nvarchar(24) | |
| Fax | nvarchar(24) | |
| HomePage | ntext | |

CATEGORIES TABLE

| Column | Data Type | |
|--------------|--------------|-----------------------|
| CategoryID | int | NOT NULL, PRIMARY KEY |
| CategoryName | nvarchar(15) | NOT NULL |
| Description | ntext | |
| Picture | image | |

PRODUCTS TABLE

| Column | Data Type | |
|-----------------|--------------|-----------------------|
| ProductID | int | NOT NULL, PRIMARY KEY |
| ProductName | nvarchar(40) | NOT NULL |
| SupplierID | int | SUPPLIER(SupplierID) |
| CategoryID | int | CATEGORY(CategoryID) |
| QuantityPerUnit | nvarchar(20) | |
| UnitPrice | money | |
| UnitsInStock | smallint | |
| UnitsOnOrder | smallint | |
| ReorderLevel | smallint | |
| Discontinued | bit | NOT NULL |

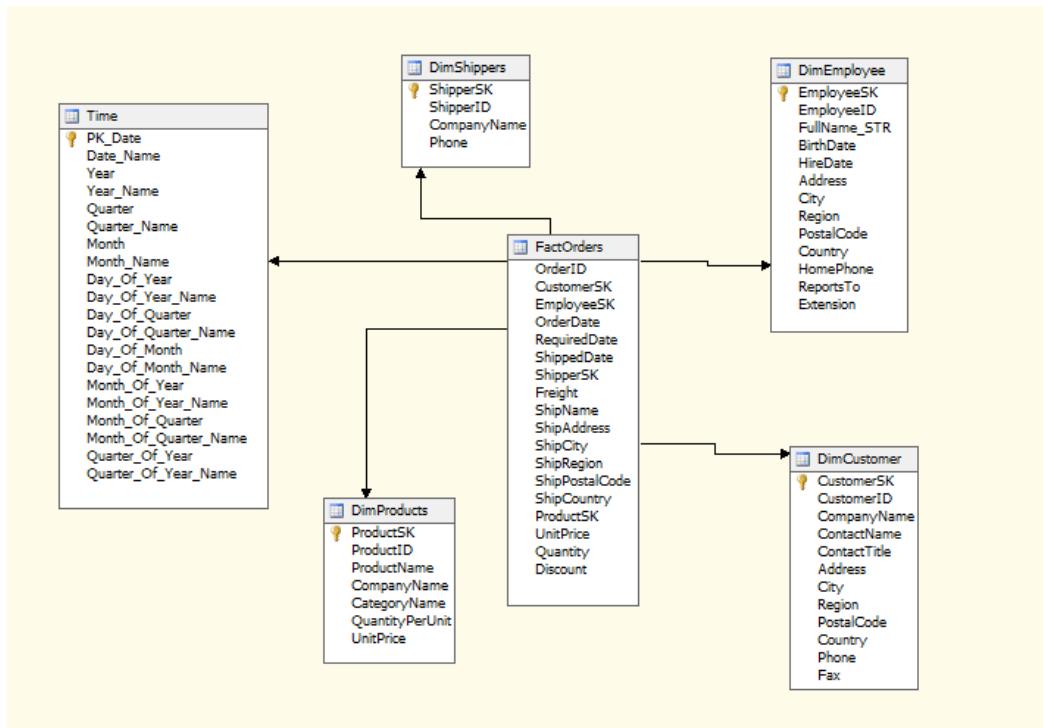
ORDERS TABLE

| Column | Data Type | |
|----------------|--------------|-----------------------|
| OrderID | int | NOT NULL, PRIMARY KEY |
| CustomerID | nchar(5) | CUSTOMER(CustomerID) |
| EmployeeID | int | EMPLOYEE(EmployeeID) |
| OrderDate | datetime | |
| RequiredDate | datetime | |
| ShippedDate | datetime | |
| ShipVia | int | SHIPPER(ShipperID) |
| Freight | money | |
| ShipName | nvarchar(40) | |
| ShipAddress | nvarchar(60) | |
| ShipCity | nvarchar(15) | |
| ShipRegion | nvarchar(15) | |
| ShipPostalCode | nvarchar(10) | |
| ShipCountry | nvarchar(15) | |

ORDERDETAILS TABLE

| Column | Data Type | |
|-----------|-----------|--|
| OrderID | int | NOT NULL, PRIMARY KEY, ORDER(OrderID) |
| ProductID | int | NOT NULL, PRIMARY KEY, PRODUCT(ProductID) |
| UnitPrice | money | NOT NULL |
| Quantity | smallint | NOT NULL |
| Discount | real | NOT NULL |

Since we need to analyze the data using multiple scenarios, this data model which is a relational model is converted to a dimensional model using the dimension modeling steps so that it is better suited for analysis. The dimensional model is as shown below:



The data associated with the above multi-dimensional model is shared in an excel sheet (Northwind_Traders data.xlsx) in the folder MS Excel Lab Guide and the same data is used for analysis in this lab guide.

Note: The OrderDate, ShippedDate and the RequiredDate which are columns in the Orders table in the relational model have been mapped to a column named PK_Date of the Time dimension. If you observe the columns in the Time table we see that the PK_Date has the corresponding month, quarter and year to which it belongs. This Time dimension plays a major role in monthly, quarterly and annual data analyses.

The Time dimension has been created from the available date columns using a tool called SQL server analysis services 2008. However, we can create a Time table in excel using the date columns in the following way:

Go to the Fact Orders sheet of the Northwind_Traders data workbook. Individually select all values in the columns OrderDate, RequiredDate and ShippedDate and paste them in one single column in a new sheet. The below 2 snapshots will assist you in doing the same.

| OrderID | CustomerSK | EmployeeSK | OrderDate | RequiredDate | ShippedDate | ShipperSK | Freight | ShipName | ShipAddress |
|---------|------------|------------|-----------------|---------------|----------------|-----------|---------|----------------------------|------------------------|
| 1940 | 10999 | 42 | 6 4/3/1998 0:00 | 5/1/1998 0:00 | 4/10/1998 0:00 | 2 | 96.35 | Ottilies Käseladen | Mehrheimerstr. 369 |
| 1941 | 10999 | 42 | 6 4/3/1998 0:00 | 5/1/1998 0:00 | 4/10/1998 0:00 | 2 | 96.35 | Ottilies Käseladen | Mehrheimerstr. 369 |
| 1942 | 11000 | 79 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 3 | 55.12 | Rattlesnake Canyon Grocery | 2817 Milton Dr. |
| 1943 | 11000 | 79 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 3 | 55.12 | Rattlesnake Canyon Grocery | 2817 Milton Dr. |
| 1944 | 11000 | 79 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 3 | 55.12 | Rattlesnake Canyon Grocery | 2817 Milton Dr. |
| 1945 | 11001 | 38 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 2 | 197.3 | Folk och få HB | Åkergratan 24 |
| 1946 | 11001 | 38 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 2 | 197.3 | Folk och få HB | Åkergratan 24 |
| 1947 | 11001 | 38 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 2 | 197.3 | Folk och få HB | Åkergratan 24 |
| 1948 | 11001 | 38 | 2 4/6/1998 0:00 | 5/4/1998 0:00 | 4/14/1998 0:00 | 2 | 197.3 | Folk och få HB | Åkergratan 24 |
| 1949 | 11002 | 83 | 4 4/6/1998 0:00 | 5/4/1998 0:00 | 4/16/1998 0:00 | 1 | 141.16 | Save-a-lot Markets | 187 Suffolk Ln. |
| 1950 | 11002 | 83 | 4 4/6/1998 0:00 | 5/4/1998 0:00 | 4/16/1998 0:00 | 1 | 141.16 | Save-a-lot Markets | 187 Suffolk Ln. |
| 1951 | 11002 | 83 | 4 4/6/1998 0:00 | 5/4/1998 0:00 | 4/16/1998 0:00 | 1 | 141.16 | Save-a-lot Markets | 187 Suffolk Ln. |
| 1952 | 11002 | 83 | 4 4/6/1998 0:00 | 5/4/1998 0:00 | 4/16/1998 0:00 | 1 | 141.16 | Save-a-lot Markets | 187 Suffolk Ln. |
| 1953 | 11003 | 29 | 3 4/6/1998 0:00 | 5/4/1998 0:00 | 4/8/1998 0:00 | 3 | 14.91 | The Cracker Box | 55 Grizzly Peak Rd. |
| 1954 | 11003 | 29 | 3 4/6/1998 0:00 | 5/4/1998 0:00 | 4/8/1998 0:00 | 3 | 14.91 | The Cracker Box | 55 Grizzly Peak Rd. |
| 1955 | 11003 | 29 | 3 4/6/1998 0:00 | 5/4/1998 0:00 | 4/8/1998 0:00 | 3 | 14.91 | The Cracker Box | 55 Grizzly Peak Rd. |
| 1956 | 11004 | 71 | 3 4/7/1998 0:00 | 5/5/1998 0:00 | 4/20/1998 0:00 | 1 | 44.84 | Maison Dewey | Rue Joseph-Bens 532 |
| 1957 | 11004 | 71 | 3 4/7/1998 0:00 | 5/5/1998 0:00 | 4/20/1998 0:00 | 1 | 44.84 | Maison Dewey | Rue Joseph-Bens 532 |
| 1958 | 11005 | 31 | 2 4/7/1998 0:00 | 5/5/1998 0:00 | 4/10/1998 0:00 | 1 | 0.75 | Wilman Kala | Keskuskatu 45 |
| 1959 | 11005 | 31 | 2 4/7/1998 0:00 | 5/5/1998 0:00 | 4/10/1998 0:00 | 1 | 0.75 | Wilman Kala | Keskuskatu 45 |
| 1960 | 11006 | 19 | 3 4/7/1998 0:00 | 5/5/1998 0:00 | 4/15/1998 0:00 | 2 | 25.19 | Great Lakes Food Market | 2732 Baker Blvd. |
| 1961 | 11006 | 19 | 3 4/7/1998 0:00 | 5/5/1998 0:00 | 4/15/1998 0:00 | 2 | 25.19 | Great Lakes Food Market | 2732 Baker Blvd. |
| 1962 | 11007 | 77 | 8 4/8/1998 0:00 | 5/6/1998 0:00 | 4/13/1998 0:00 | 2 | 202.24 | Princesa Isabel Vinhos | Estrada da saúde n. 58 |
| 1963 | 11007 | 77 | 8 4/8/1998 0:00 | 5/6/1998 0:00 | 4/13/1998 0:00 | 2 | 202.24 | Princesa Isabel Vinhos | Estrada da saúde n. 58 |
| 1964 | 11007 | 77 | 8 4/8/1998 0:00 | 5/6/1998 0:00 | 4/13/1998 0:00 | 2 | 202.24 | Princesa Isabel Vinhos | Estrada da saúde n. 58 |

| A | B | C |
|-------------------|---|---|
| 1 Date | | |
| 2 7/4/1996 0:00 | | |
| 3 7/4/1996 0:00 | | |
| 4 7/4/1996 0:00 | | |
| 5 7/15/1996 0:00 | | |
| 6 7/18/1996 0:00 | | |
| 7 7/23/1996 0:00 | | |
| 8 7/24/1996 0:00 | | |
| 9 7/26/1996 0:00 | | |
| 10 7/29/1996 0:00 | | |
| 11 8/1/1996 0:00 | | |
| 12 8/7/1996 0:00 | | |
| 13 8/12/1996 0:00 | | |
| 14 8/13/1996 0:00 | | |
| 15 8/15/1996 0:00 | | |
| 16 8/16/1996 0:00 | | |
| 17 8/19/1996 0:00 | | |
| 18 8/21/1996 0:00 | | |
| 19 8/27/1996 0:00 | | |
| 20 8/30/1996 0:00 | | |
| 21 9/2/1996 0:00 | | |
| 22 9/4/1996 0:00 | | |
| 23 9/5/1996 0:00 | | |
| 24 9/10/1996 0:00 | | |
| 25 9/13/1996 0:00 | | |

Once all the dates are copied, select the data tab, select the Remove Duplicates option and click OK twice.

The screenshot shows a Microsoft Excel spreadsheet with a 'Remove Duplicates' dialog box open over it. The dialog box is titled 'Remove Duplicates' and contains the instruction 'To delete duplicate values, select one or more columns that contain duplicates.' Below this, there are two buttons: 'Select All' and 'Unselect All'. To the right of these buttons is a checked checkbox labeled 'My data has headers'. At the bottom of the dialog box are 'OK' and 'Cancel' buttons. The background spreadsheet shows a list of dates from July 4, 1996, to July 29, 1996, with the first row containing a header 'Date'. The 'Data' tab is selected at the top of the Excel ribbon.

Use the Month and Year Excel functions to fetch the corresponding month numbers and years from the dates. Make sure all the dates have the respective month numbers and years in the adjacent columns as shown below in the 2 snapshots.

| | A | B | C | D | E |
|----|----------------|---|------------|---|---|
| 1 | Date | | =MONTH(A2) | | |
| 2 | 7/4/1996 0:00 | 7 | | | |
| 3 | 7/9/1996 0:00 | 7 | | | |
| 4 | 7/12/1996 0:00 | 7 | | | |
| 5 | 7/15/1996 0:00 | 7 | | | |
| 6 | 7/18/1996 0:00 | 7 | | | |
| 7 | 7/23/1996 0:00 | 7 | | | |
| 8 | 7/24/1996 0:00 | 7 | | | |
| 9 | 7/26/1996 0:00 | 7 | | | |
| 10 | 7/29/1996 0:00 | 7 | | | |
| 11 | 8/1/1996 0:00 | 8 | | | |
| 12 | 8/7/1996 0:00 | 8 | | | |
| 13 | 8/12/1996 0:00 | 8 | | | |
| 14 | 8/13/1996 0:00 | 8 | | | |
| 15 | 8/15/1996 0:00 | 8 | | | |
| 16 | 8/16/1996 0:00 | 8 | | | |
| 17 | 8/19/1996 0:00 | 8 | | | |
| 18 | 8/21/1996 0:00 | 8 | | | |
| 19 | 8/27/1996 0:00 | 8 | | | |
| 20 | 8/30/1996 0:00 | 8 | | | |
| 21 | 9/2/1996 0:00 | 9 | | | |
| 22 | 9/4/1996 0:00 | 9 | | | |
| 23 | 9/5/1996 0:00 | 9 | | | |
| 24 | 9/10/1996 0:00 | 9 | | | |
| 25 | 9/13/1996 0:00 | 9 | | | |

| | A | B | C | D | E |
|----|----------------|--------------|------|---|---|
| 1 | Date | Month Number | Year | | |
| 2 | 7/4/1996 0:00 | 7 | 1996 | | |
| 3 | 7/9/1996 0:00 | 7 | 1996 | | |
| 4 | 7/12/1996 0:00 | 7 | 1996 | | |
| 5 | 7/15/1996 0:00 | 7 | 1996 | | |
| 6 | 7/18/1996 0:00 | 7 | 1996 | | |
| 7 | 7/23/1996 0:00 | 7 | 1996 | | |
| 8 | 7/24/1996 0:00 | 7 | 1996 | | |
| 9 | 7/26/1996 0:00 | 7 | 1996 | | |
| 10 | 7/29/1996 0:00 | 7 | 1996 | | |
| 11 | 8/1/1996 0:00 | 8 | 1996 | | |
| 12 | 8/7/1996 0:00 | 8 | 1996 | | |
| 13 | 8/12/1996 0:00 | 8 | 1996 | | |
| 14 | 8/13/1996 0:00 | 8 | 1996 | | |
| 15 | 8/15/1996 0:00 | 8 | 1996 | | |
| 16 | 8/16/1996 0:00 | 8 | 1996 | | |
| 17 | 8/19/1996 0:00 | 8 | 1996 | | |
| 18 | 8/21/1996 0:00 | 8 | 1996 | | |
| 19 | 8/27/1996 0:00 | 8 | 1996 | | |
| 20 | 8/30/1996 0:00 | 8 | 1996 | | |
| 21 | 9/2/1996 0:00 | 9 | 1996 | | |
| 22 | 9/4/1996 0:00 | 9 | 1996 | | |
| 23 | 9/5/1996 0:00 | 9 | 1996 | | |
| 24 | 9/10/1996 0:00 | 9 | 1996 | | |
| 25 | 9/13/1996 0:00 | 9 | 1996 | | |

Create a dataset in a new excel sheet as shown below:

| 1 | Month Number of year | Month Name | Calendar Quarter |
|----|----------------------|------------|------------------|
| 2 | 1 | January | Quarter 1 |
| 3 | 2 | February | Quarter 1 |
| 4 | 3 | March | Quarter 1 |
| 5 | 4 | April | Quarter 2 |
| 6 | 5 | May | Quarter 2 |
| 7 | 6 | June | Quarter 2 |
| 8 | 7 | July | Quarter 3 |
| 9 | 8 | August | Quarter 3 |
| 10 | 9 | September | Quarter 3 |
| 11 | 10 | October | Quarter 4 |
| 12 | 11 | November | Quarter 4 |
| 13 | 12 | December | Quarter 4 |
| 14 | | | |

Select the entire dataset and name it as “Time” in the Name Box as shown below. Do not forget to hit Enter once name is typed in the name box.

| Month Number of year | Month Name | Calendar Quarter |
|----------------------|------------|------------------|
| 1 | January | Quarter 1 |
| 2 | February | Quarter 1 |
| 3 | March | Quarter 1 |
| 4 | April | Quarter 2 |
| 5 | May | Quarter 2 |
| 6 | June | Quarter 2 |
| 7 | July | Quarter 3 |
| 8 | August | Quarter 3 |
| 9 | September | Quarter 3 |
| 10 | October | Quarter 4 |
| 11 | November | Quarter 4 |
| 12 | December | Quarter 4 |
| 13 | | |
| 14 | | |

In the sheet where we have the Date, Month Number and Year, add a new column – “Month Name” and type the vlookup formula as shown below;

| Date | Month Number | Year | Month Name | Calendar Quarter |
|----------------|--------------|------|--|------------------|
| 7/4/1996 0:00 | 7 | 1996 | =VLOOKUP(| |
| 7/9/1996 0:00 | 7 | 1996 | J1,VLOOKUP[lookup_value,table_array,col_index_num,[range_lookup]]) | |
| 7/12/1996 0:00 | 7 | 1996 | July | Quarter 3 |
| 7/15/1996 0:00 | 7 | 1996 | July | Quarter 3 |
| | | | | |
| Date | Month Number | Year | Month Name | Calendar Quarter |
| 7/4/1996 0:00 | 7 | 1996 | =VLOOKUP(B2,Time,2,False) | |
| 7/9/1996 0:00 | 7 | 1996 | July | Quarter 3 |
| 7/12/1996 0:00 | 7 | 1996 | July | Quarter 3 |
| 7/15/1996 0:00 | 7 | 1996 | July | Quarter 3 |
| 7/18/1996 0:00 | 7 | 1996 | July | Quarter 3 |
| 7/23/1996 0:00 | 7 | 1996 | July | Quarter 3 |

Follow the same procedure for Calendar Quarter and use the formula =vlookup(B2,Time,3,False).

Note: Here is how the vlookup works: It takes the lookup_value which is the Month Number in this case, matches it with the values in the column whose number is equal to the col_index_num (2 in this case) in the Time table. Since the second column in the Time table has the month names they get populated in the cell where the vlookup function is executed. Double clicking on the right corner of the cell will populate the month names for all the month numbers as shown above. The same vlookup concept is used in converting the not so user friendly “Fact Orders” sheet to the user-friendly “Orders” sheet in the Northwind_Traders data workbook.

Organizing and Analyzing the Data

When we have a large amount of data, we want to organize it, analyze it, get summary information and then graph it. We need analytical tools for this, and the PivotTable and PivotChart tools in Microsoft Excel are some of the most popular tools. The data does not need to be in one workbook. We may analyze data from multiple workbooks without too much trouble.

Basics of PivotTables

PivotTables allow us to consolidate huge amounts of data with similar fields & analyze the consolidated data or just make a summary of the consolidated data. The PivotTable in Excel gives us a simple way to create a PivotTable for our data. Please note that the data should have at least 1 field in common, or else the consolidation will not work and any spelling error in the data will produce incorrect PivotTables. PivotTables in Excel are synonymous to Cubes in other analytical tools.

Basics of Charts

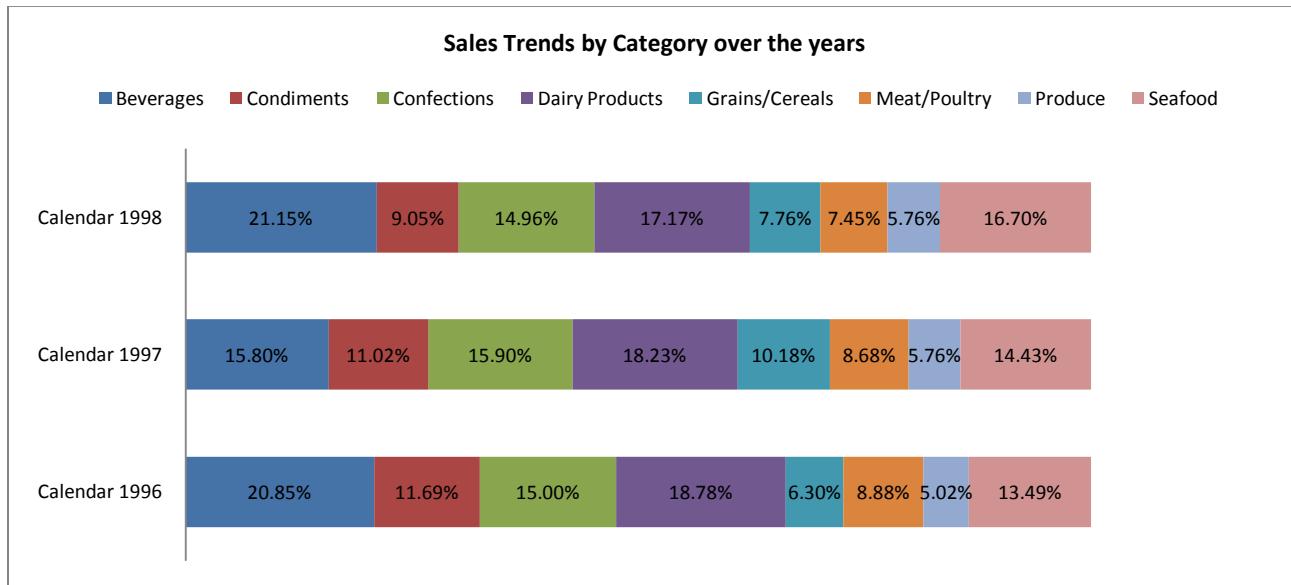
Charts are used to graphically represent data. The PivotChart tool in Excel provides a simple way to create a PivotTable and an accompanying chart. Remember, a chart is only as good as the data or the summary table (PivotTable). If we try to cram too many fields into a chart, we will end up with a non-informative chart. We must always try and keep it simple and informative.

Let us see some scenarios which explore the different ways of analyzing the Northwind data.

Scenario 1: Graph the percentage sales over time to see the trends.

Here is the answer:

| Sum of Quantity | Column Labels | | | | | | | | | |
|--------------------|---------------|---------------|---------------|----------------|----------------|--------------|--------------|---------------|----------------|--|
| Row Labels | Beverages | Condiments | Confections | Dairy Products | Grains/Cereals | Meat/Poultry | Produce | Seafood | Grand Total | |
| Calendar 1996 | 20.85% | 11.69% | 15.00% | 18.78% | 6.30% | 8.88% | 5.02% | 13.49% | 100.00% | |
| Calendar 1997 | 15.80% | 11.02% | 15.90% | 18.23% | 10.18% | 8.68% | 5.76% | 14.43% | 100.00% | |
| Calendar 1998 | 21.15% | 9.05% | 14.96% | 17.17% | 7.76% | 7.45% | 5.76% | 16.70% | 100.00% | |
| Grand Total | 18.38% | 10.45% | 15.45% | 17.95% | 8.78% | 8.29% | 5.65% | 15.07% | 100.00% | |



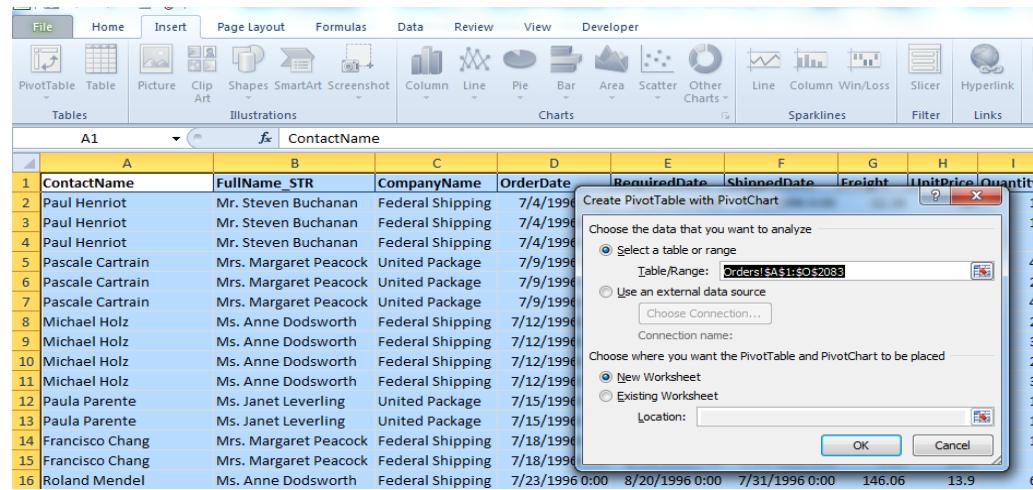
Now how do we get to this?

Here is how:

Creating a PivotTable and PivotChart

1. Open the Northwind_Traders data.xlsx workbook.
2. Go to the **Insert** tab on the ribbon.
3. Look for the **Tables** group, and select **PivotTable**. Choose **PivotChart** from the drop-down options.

4. You should now see the *Create PivotTable with PivotChart* dialog box.



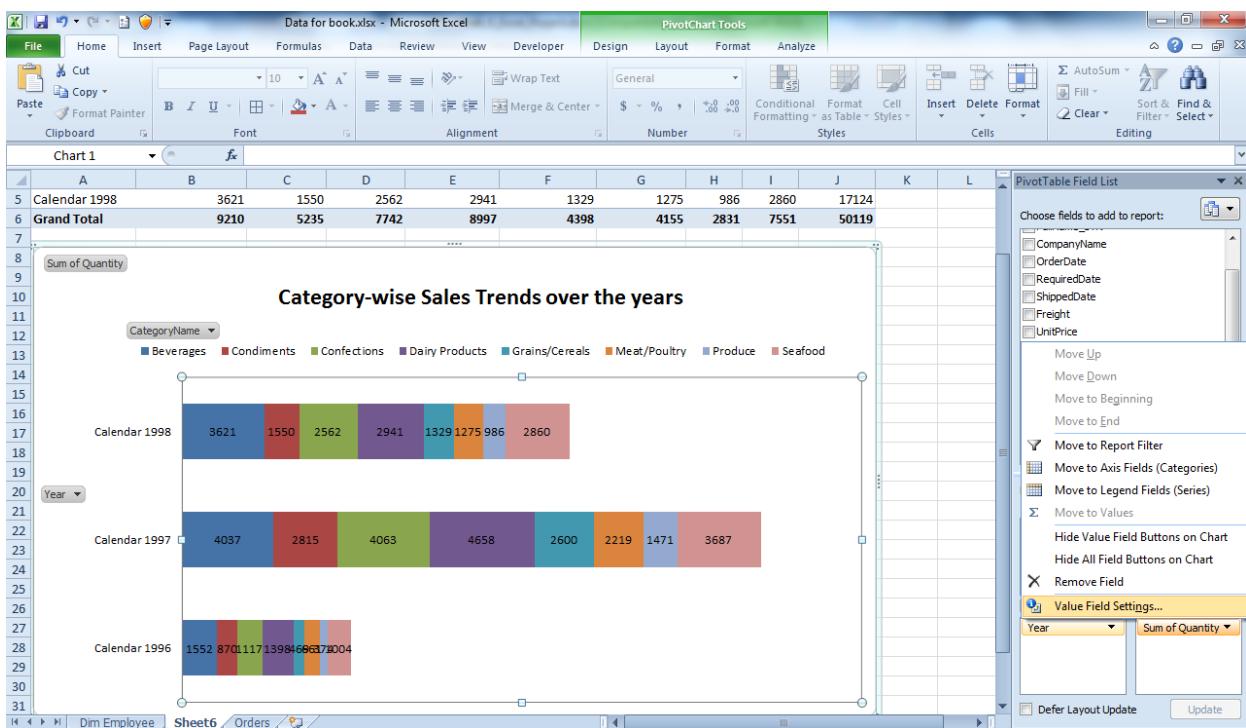
5. There are a couple of things you'll need to define in order to create your PivotTable. First, you need to tell Excel where to get the data from. In the *Choose the data you want to analyze* section of the dialog box, you will define where Excel is going to get the data for the PivotTable from. Since the data for this example is within the workbook, we will choose *Select a table or range*.
- Under *Table/Range*, Excel might be smart enough to automatically select the proper range of data from the worksheet.
 - If it *does not*, click on the little button on the right of the range box. Select the *range* of data. In the example, we have data in cells **A1 to O2083**. This means that we have selected fifteen columns (*A* through *O*) and 2083 rows.
6. In the *Choose where you want the PivotTable and PivotChart to be placed* section of the dialog box, you can choose to either create the PivotTable and the accompanying PivotChart on a new worksheet in the Excel workbook, or you can place both on the current worksheet. For this exercise, we will choose to create a new worksheet for the PivotTable and PivotChart. To do this, select *New Worksheet*, and click **OK**. You should now be taken to the new worksheet.

- While on the new worksheet, you should see four new tabs on the ribbon:

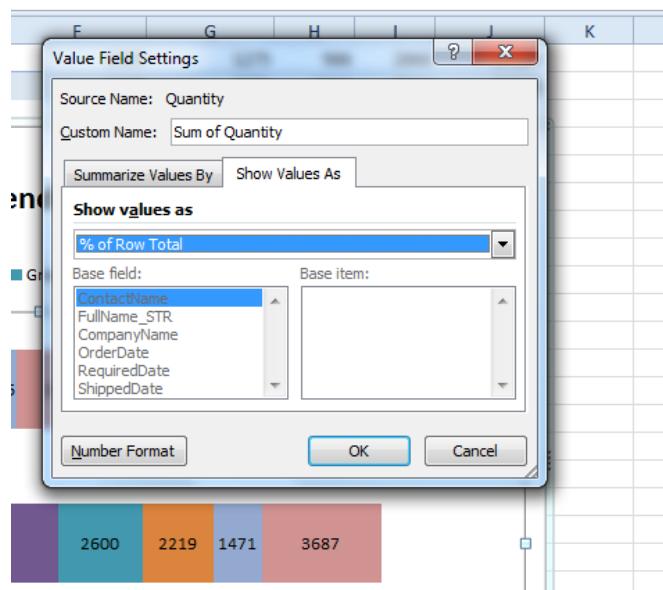
a. **Design, Layout, Format, and Analyze.**



- You should also see the **PivotTable Field List** and the **PivotChart Filter Pane** (if you don't see the panes, click on the **Analyze** tab in the ribbon, and, in the **Show/Hide** group, make sure that at least **Field List** is selected).
- You now need to set up the PivotTable so that you can get the data summary you desire. The new tabs, as well as the two panes, will be used to help format your PivotTable and PivotChart to do the necessary analysis. For this exercise, let's see the total number of products sold by category in each year. In the **PivotTable Field List**, select **Quantity**, **Year** and **CategoryName** to add to the PivotTable report. Place the CategoryName in the Legends field, Year in the Axis Field and Quantity in the Value field. You should see the PivotTable and PivotChart update appropriately. Select the chart type as "Stacked List" to get the chart as shown below



You can use different functions on the field placed under *Values*. For example, if you wanted to see average quantity for each category, you would click on **Sum of Quantity** and choose **Value Field Settings**. In the **Value Field Settings** dialog box, choose the "Show Values As" tab and select the **% of Row Total** function to apply to **Sum of Quantity** (see the screenshot below). A number of other functions are available here to use in your PivotTable.



Once this is done, you would have graphed the percentage sales over time to see the trends.

Scenario 2: Pivot the data to see total sales by quarter and category. Are there any highs? Are there any lows that need to be addressed?

Here is the solution:

(The data has been pivoted in terms of Year and Quarter in columns and Category in Rows.)

NOTE: The Year, Quarter and the Month provided in the excel sheet are mapped to the required date and NOT year and quarter of the Orderdate or ShippedDate.

The screenshot shows a Microsoft Excel spreadsheet with a PivotTable report. The PivotTable is located in the range A1:J16. The columns represent categories: Row Labels, Column Labels, Beverages, Condiments, Confections, Dairy Products, Grains/Cereals, Meat/Poultry, Produce, Seafood, and Grand Total. The rows represent time periods: Calendar 1996, Calendar 1997, and Calendar 1998. The data shows quarterly sales volumes for each category.

PivotTable Data:

| Row Labels | Column Labels | Beverages | Condiments | Confections | Dairy Products | Grains/Cereals | Meat/Poultry | Produce | Seafood | Grand Total |
|--------------------|---------------|-----------|------------|-------------|----------------|----------------|--------------|---------|---------|-------------|
| Quarter 3, 1996 | | 619 | 293 | 415 | 554 | 98 | 187 | 178 | 444 | 2788 |
| Quarter 4, 1996 | | 933 | 577 | 702 | 844 | 371 | 474 | 196 | 560 | 4657 |
| Quarter 1, 1997 | | 820 | 731 | 1227 | 1378 | 549 | 838 | 402 | 584 | 6529 |
| Quarter 2, 1997 | | 1099 | 694 | 1006 | 1042 | 612 | 381 | 429 | 816 | 6079 |
| Quarter 3, 1997 | | 946 | 618 | 699 | 1025 | 724 | 420 | 293 | 826 | 5551 |
| Quarter 4, 1997 | | 1172 | 772 | 1131 | 1213 | 715 | 580 | 347 | 1461 | 7391 |
| Quarter 1, 1998 | | 1820 | 748 | 1851 | 1562 | 919 | 709 | 390 | 1636 | 9135 |
| Quarter 2, 1998 | | 1801 | 802 | 1211 | 1379 | 410 | 566 | 596 | 1224 | 7989 |
| Grand Total | | 9210 | 5235 | 7742 | 8997 | 4398 | 4155 | 2831 | 7551 | 50119 |

Here is how we do it:

1. Select the entire table in the Orders worksheet.
2. Go to the Insert menu, select PivotTable.
3. Select the columns as highlighted in the circle below (make sure Quantity is represented as Sum of Quantity. Else use the previously used Value Field Settings option to sum it).

The screenshot shows the Microsoft Excel ribbon at the top with the 'PivotTable' tab selected. The main area displays a PivotTable with data from the 'Calendar 1996' sheet. The PivotTable Field List on the right side shows fields like ContactName, FullName_STR, CompanyName, OrderDate, RequiredDate, ShippedDate, Freight, UnitPrice, Quantity, Discount, ProductName, CategoryName, and Year. A circled area highlights the 'Report Filter' section where 'CategoryName' is selected under 'Column Labels'. Below it, 'Year' and 'Quarter' are listed under 'Row Labels' and 'Values' respectively, with 'Sum of Quantity' selected.

| | Beverages | Condiments | Confections | Dairy Products | Grains/Cereals | Meat/Poultry | Produce | Seafood | Grand Total |
|--------------------|-------------|-------------|-------------|----------------|----------------|--------------|-------------|-------------|--------------|
| Quarter 3, 1996 | 619 | 293 | 415 | 554 | 98 | 187 | 178 | 444 | 2788 |
| Quarter 4, 1996 | 933 | 577 | 702 | 844 | 371 | 474 | 196 | 560 | 4657 |
| Grand Total | 9210 | 5235 | 7742 | 8997 | 4398 | 4155 | 2831 | 7551 | 50119 |

4. Select the data as shown in the screenshot below

The screenshot shows the same setup as the previous one, but the data range A5:L16 is highlighted in blue. This indicates the specific range of data selected for the PivotTable.

| | Beverages | Condiments | Confections | Dairy Products | Grains/Cereals | Meat/Poultry | Produce | Seafood | Grand Total |
|--------------------|-------------|-------------|-------------|----------------|----------------|--------------|-------------|-------------|--------------|
| Quarter 3, 1996 | 619 | 293 | 415 | 554 | 98 | 187 | 178 | 444 | 2788 |
| Quarter 4, 1996 | 933 | 577 | 702 | 844 | 371 | 474 | 196 | 560 | 4657 |
| Grand Total | 9210 | 5235 | 7742 | 8997 | 4398 | 4155 | 2831 | 7551 | 50119 |

5. Apply the conditional formatting as shown below.
 (Make sure you are in the Home menu to view the Conditional Formatting tab)

By applying conditional formatting we are able to achieve better visualisation of data. It can be observed that the 2nd quarter of 1998 had the highest total sales and also the beverages category had the highest total sales for all years, closely followed by dairy products.

Scenario 3: How are quarterly sales totals by salesperson? Subtotal the data.

Here is the answer:

Here is how it is done:

Just drag and drop FullName_STR (Name of the salesperson) to the Row Label. Then, in the PivotTable tools, select the Design menu, in the Design menu select the Subtotals tab and then select the option-Show all Subtotals at Bottom of Group as shown below.

| | Condiments | Confections | Dairy Products | Grains/Cereals | Meat/Poultry | Produce | Seafood | Grand Total | |
|--------------------------|------------|-------------|----------------|----------------|--------------|---------|---------|-------------|-------|
| 7 Dr. Andrew Fuller | 62 | | 12 | | 4 | 50 | 20 | 148 | |
| 8 Mr. Michael Suyama | 35 | 24 | 6 | 115 | | 51 | 45 | 276 | |
| 9 Mr. Robert King | | | 30 | | 9 | | | 39 | |
| 10 Mr. Steven Buchanan | 15 | | | 97 | 10 | 21 | 21 | 164 | |
| 11 Mrs. Margaret Peacock | 116 | 51 | 129 | 176 | 52 | 25 | 35 | 667 | |
| 12 Ms. Anne Dodsworth | 48 | | 95 | 30 | | 36 | 85 | 294 | |
| 13 Ms. Janet Leverling | 75 | 52 | 58 | 105 | 21 | 15 | 84 | 410 | |
| 14 Ms. Laura Callahan | 120 | 66 | 95 | 19 | 2 | 40 | 15 | 422 | |
| 15 Ms. Nancy Davolio | 148 | 70 | 20 | 12 | | 36 | 82 | 368 | |
| 16 Quarter 4, 1996 | 933 | 577 | 702 | 844 | 371 | 474 | 196 | 560 | 4637 |
| 17 Calendar 1997 | 4037 | 2815 | 4063 | 4658 | 2600 | 2219 | 1471 | 3687 | 25550 |
| 18 Calendar 1998 | 3621 | 1550 | 2562 | 2941 | 1329 | 1275 | 986 | 2860 | 17124 |
| 19 Grand Total | 9210 | 5235 | 7742 | 8997 | 4398 | 4155 | 2831 | 7551 | 50119 |

Scenario 4: Is there any increase in sales when the products are sold at a discounted rate?

Here is the answer:

| | A | K | L | M | N | O |
|-----------------|---|-----------------------|----------------------------|------------------------|---|---|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | Total Sum of Quantity | Total Count of ContactName | Total Sum of UnitPrice | | |
| 5 | | | | | | |
| 6 Row Labels | | | | | | |
| 7 0 | | 27955 | 1279 | \$ 33,739.26 | | |
| 8 Group1 | | | | | | |
| 9 0.050000001 | | 4978 | 177 | \$ 5,498.27 | | |
| 10 0.100000001 | | 4364 | 172 | \$ 4,314.68 | | |
| 11 0.150000006 | | 4252 | 148 | \$ 3,399.17 | | |
| 12 0.200000003 | | 4295 | 157 | \$ 3,716.51 | | |
| 13 0.25 | | 4275 | 149 | \$ 4,254.23 | | |
| 14 Group1 Total | | 22164 | 803 | \$ 21,182.86 | | |
| 15 Grand Total | | 50119 | 2082 | \$ 54,922.12 | | |
| 16 | | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |

When you observe the above screenshot, you will realize that even though the total price is higher for products with no discount, the number of units sold per customer is more for products with discount.

Let us see how we get to this.

In the Pivot Table, drag the Year and the Quarter as Column Labels, Discount as the Row Labels and Quantity and Unit Price as Values. To see how many customers bought something at different discount rates drag the ContactName to Values. You will see the ContactName automatically changing to Count of ContactName. The screenshot is shown below for reference.

| | Sum of Quantity | Count of ContactName | Sum of UnitPrice | Sum of Quantity | Count of ContactName | Sum of UnitPrice | Sum of Quantity | Count of ContactName |
|--------------------|-----------------|----------------------|------------------|-----------------|----------------------|------------------|-----------------|----------------------|
| 0 | 4045 | 207 | 4537 | 14338 | 622 | 15697.13 | 9572 | |
| 0.050000001 | 877 | 31 | 1000 | 2333 | 84 | 2183.02 | 1768 | |
| 0.100000001 | 618 | 25 | 587.5 | 2487 | 106 | 2714.63 | 1259 | |
| 0.150000006 | 672 | 22 | 439 | 2192 | 75 | 1832.96 | 1388 | |
| 0.200000003 | 812 | 27 | 709.8 | 2208 | 82 | 1992.64 | 1275 | |
| 0.25 | 421 | 14 | 328 | 1992 | 74 | 1855.98 | 1862 | |
| Grand Total | 7445 | 326 | 7601.3 | 25550 | 1043 | 26276.36 | 17124 | |

Except for 0, ctrl select the row label and right click. You will see an option called Group in the menu that appears. Select that option as shown below. Once it is selected, you will be able to see the performance of products with and without discounts.

Note: In the screenshot above, you can also see Sort, Filter, etc. along with other options. You can explore the sort and filter options yourselves and see the results of using them. Some of the other options will be covered later in the chapter.

Tip: Whenever we have a huge number of columns and rows, we will realize that the column labels and row labels will disappear as we scroll vertically or horizontally or both. Here is how you can avoid it:

The screenshot shows a Microsoft Excel spreadsheet with a PivotTable. The PivotTable has 'CategoryName' as Row Labels, 'Year' and 'Quarter' as Column Labels, and 'Count of Quantity' as Values. The data includes categories like Beverages, Condiments, Confections, Dairy Products, Grains/Cereals, Meat/Poultry, Produce, and Seafood, with values for each quarter from 1996 to 1997. A grand total row is at the bottom. The cell B6 (containing 27) is selected. The 'View' tab is selected in the ribbon, and the 'Freeze Panes' button is highlighted. A context menu is open over this button, showing three options: 'Freeze Panes', 'Freeze Top Row', and 'Freeze First Column'. The 'PivotTable Field List' pane on the right shows fields like ProductID, RequiredDate, ShippedDate, Freight, UnitPrice, CategoryName, Year, Month, Quarter, and Discount. The 'Report Filter' pane shows 'Year' and 'Quarter' selected. The 'Defer Layout Update' button is at the bottom right of the pane.

In the screenshot above, if you want to make sure that both CategoryName and Year and Quarter have to stay visible at all times, select the cell that is right below the column label and to the right of the row label (Cell containing the number 27 in this case). Go to the View menu, select the Freeze Panes tab and select the option Freeze Panes.

If you have to freeze only the columns, select the entire row right below the column labels and select the Freeze Panes option. To freeze only the rows, select the entire first right column having the row label and select the Freeze Panes option.

Scenario 5: Report the sales by category and the corresponding freight charges. Filtering should be enabled in the Year and Quarter columns, and the selected Year and Quarter need to be visible.

We will take a slightly different approach to solve this scenario. Please take a look at the below screenshot.

By using CategoryName and ProductName in the Row Labels, Freight and Quantity as values and Year and Quarter as Report Filters we will be able to get the answer. But if we filter either Year or Quarter we will not be able to see which Year/Quarter have been selected and which are not.

To see the individual Years and Quarters, the concept of slicers is used. Lets see how it is done:

Click on the Options menu which gets highlighted under PivotTable Options. Click on the Insert Slicer. You will get to see the Insert Slicers window as shown. Select the Year and Quarter and click OK.

If you see the below screenshot, you will notice that I have selected all the years and I have selected Quarter 4, 1996, Quarter 1, 1997, Quarter 2, 1997. You may also notice the data has changed and that data is the data for the years and quarters we have selected.

Note: The Slicer option is available only in Excel 2010.

Scenario 6: Sort the Sales data in terms of Year, Quarter and Month.

This sounds very easy to achieve But it is not that easy. Just observe the below screenshot. We will see that the months are alphabetically sorted which is logically incorrect. Let us sort it correctly.

Go to the Orders sheet and select the Month column. Then select the Data menu and click on the Text to Columns tab as shown below.

The screenshot shows a Microsoft Excel spreadsheet titled 'O1' with data from rows 1 to 30. The columns are labeled E through K. A context menu is open over the data, with the 'Text to Columns' option selected under the 'Data Tools' tab. A tooltip explains that this feature converts the contents of one Excel cell into separate columns. It also provides examples for separating full names and lists, and notes its use in Word for splitting text into columns at commas, periods, or other characters.

Follow the next 3 steps as shown in the below 3 screenshots:

The screenshot shows the 'Convert Text to Columns Wizard - Step 1 of 3' dialog box. The 'Delimited' option is selected. The preview window shows the first five rows of data: Month, April 1997, April 1997, April 1997, April 1997, and April 1997. The main area displays the text 'The Text Wizard has determined that your data is Delimited. If this is correct, choose Next, or choose the data type that best describes your data.' Below it, it says 'Original data type' and 'Choose the file type that best describes your data:'. The 'Delimited' radio button is selected. The preview window shows the first five rows of data: Month, April 1997, April 1997, April 1997, April 1997, and April 1997.

Screenshot of Microsoft Excel showing the 'Convert Text to Columns Wizard - Step 2 of 3' dialog box. The dialog box is titled 'Convert Text to Columns Wizard - Step 2 of 3' and contains the following text: 'This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.' It includes a 'Delimiters' section with options for Tab, Semicolon, Comma, Space, and Other, with 'Space' selected. A checked checkbox 'Treat consecutive delimiters as one' is present. A dropdown 'Text qualifier:' is set to '''. Below the dialog is a 'Data preview' window showing the first few rows of data from column E. The data shows dates in various formats separated by commas or spaces. The main Excel window shows a table with columns: OrderDate, RequiredDate, ShippedDate, CategoryName, Year, Month, and Quarter.

Screenshot of Microsoft Excel showing the 'Convert Text to Columns Wizard - Step 3 of 3' dialog box. The dialog box is titled 'Convert Text to Columns Wizard - Step 3 of 3' and contains the following text: 'This screen lets you select each column and set the Data Format.' It includes a 'Column data format' section with radio buttons for General, Text, and Date. The 'Date' button is selected and has a dropdown menu showing 'MDY'. An 'Advanced...' button is available. A 'Destination' field shows '\$O\$1'. Below the dialog is a 'Data preview' window showing the first few rows of data from column E. The data shows dates in various formats separated by commas or spaces. The main Excel window shows a table with columns: OrderDate, RequiredDate, ShippedDate, CategoryName, Year, Month, and Quarter.

The message asked if the destination column already has the data is shown in the screenshot below.

Screenshot of Microsoft Excel showing a data analysis task. A context menu is open over a cell in column P, with the "Split Cell" option selected. A confirmation dialog box asks, "Do you want to replace the contents of the destination cells?" with "OK" and "Cancel" buttons.

| | E | F | G | H | I | J | K | L | M | N | O | P | |
|----|----------------|----------------|----------------|---------|-----------|----------|----------|---------------------------------|----------------|---------------|------------|-----------------|---|
| 1 | OrderDate | RequiredDate | ShippedDate | Freight | UnitPrice | Quantity | Discount | ProductName | CategoryName | Year | Month | Quarter | S |
| 2 | 3/4/1997 0:00 | 4/1/1997 0:00 | 3/6/1997 0:00 | 14.78 | 7.30 | 21 | 0.00 | Teatime Chocolate Biscuits | Confectionery | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 3 | 3/4/1997 0:00 | 4/1/1997 0:00 | 3/6/1997 0:00 | 14.78 | 11.20 | 50 | 0.00 | Singaporean Hokkien Fried Mee | Grains/Cereals | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 4 | 3/4/1997 0:00 | 4/1/1997 0:00 | 3/14/1997 0:00 | 89 | 17.60 | 16 | 0.20 | Chef Anton's Cajun Seasoning | Condiments | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 5 | 3/4/1997 0:00 | 4/1/1997 0:00 | 3/14/1997 0:00 | 89 | 36.80 | 3 | 0.00 | Ipoh Coffee | Beverages | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 6 | 3/4/1997 0:00 | 4/1/1997 0:00 | 3/14/1997 0:00 | 89 | 30.40 | 30 | 0.20 | Gnocchi di nonna Alice | Grains/Cereals | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 7 | 3/4/1997 0:00 | 4/1/1997 0:00 | 3/14/1997 0:00 | 89 | 27.20 | 20 | 0.00 | Camembert Pierrot | Dairy Products | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 8 | 3/6/1997 0:00 | 4/3/1997 0:00 | 3/13/1997 0:00 | 11.93 | 16.80 | 10 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 9 | 3/6/1997 0:00 | 4/3/1997 0:00 | 3/13/1997 0:00 | 11.93 | 9.60 | 5 | 0.00 | Spesgesild | Seafood | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 10 | 3/6/1997 0:00 | 4/3/1997 0:00 | 3/11/1997 0:00 | 4.93 | 3.60 | | | | | | | Quarter 2, 1997 | |
| 11 | 3/6/1997 0:00 | 4/3/1997 0:00 | 3/11/1997 0:00 | 4.93 | 11.20 | | | | | | | Quarter 2, 1997 | |
| 12 | 3/7/1997 0:00 | 4/4/1997 0:00 | 3/12/1997 0:00 | 44.12 | 20.70 | | | | | | | Quarter 2, 1997 | |
| 13 | 3/7/1997 0:00 | 4/4/1997 0:00 | 3/12/1997 0:00 | 44.12 | 36.80 | | | | | | | Quarter 2, 1997 | |
| 14 | 3/10/1997 0:00 | 4/7/1997 0:00 | 3/14/1997 0:00 | 60.18 | 15.20 | | | | | | | Quarter 2, 1997 | |
| 15 | 3/10/1997 0:00 | 4/7/1997 0:00 | 3/14/1997 0:00 | 60.18 | 13.90 | | | | | | | Quarter 2, 1997 | |
| 16 | 3/10/1997 0:00 | 4/7/1997 0:00 | 3/14/1997 0:00 | 60.18 | 15.50 | | | | | | | Quarter 2, 1997 | |
| 17 | 3/12/1997 0:00 | 4/9/1997 0:00 | 3/19/1997 0:00 | 4.2 | 42.40 | 18 | 0.00 | Manjimup Dried Apples | Produce | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 18 | 3/12/1997 0:00 | 4/9/1997 0:00 | 3/19/1997 0:00 | 4.2 | 3.60 | 80 | 0.05 | Guaraná Fantástica | Beverages | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 19 | 3/13/1997 0:00 | 4/10/1997 0:00 | 3/21/1997 0:00 | 83.49 | 18.60 | 12 | 0.00 | Tofu | Produce | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 20 | 3/13/1997 0:00 | 4/10/1997 0:00 | 3/21/1997 0:00 | 83.49 | 36.40 | 18 | 0.00 | Rössle Sauerkraut | Produce | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 21 | 3/13/1997 0:00 | 4/10/1997 0:00 | 3/21/1997 0:00 | 83.49 | 14.70 | 21 | 0.00 | Boston Crab Meat | Seafood | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 22 | 3/13/1997 0:00 | 4/10/1997 0:00 | 3/21/1997 0:00 | 83.49 | 6.20 | 10 | 0.00 | Rhönbräu Klosterbier | Beverages | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 23 | 3/18/1997 0:00 | 4/1/1997 0:00 | 3/26/1997 0:00 | 4.81 | 24.80 | 20 | 0.05 | Ikura | Seafood | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 24 | 3/21/1997 0:00 | 4/18/1997 0:00 | 4/10/1997 0:00 | 7.48 | 14.70 | 10 | 0.00 | Boston Crab Meat | Seafood | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 25 | 3/24/1997 0:00 | 4/21/1997 0:00 | 4/1/1997 0:00 | 6.88 | 8.00 | 14 | 0.00 | Sir Rodney's Scones | Confectionery | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 26 | 3/24/1997 0:00 | 4/21/1997 0:00 | 4/1/1997 0:00 | 6.88 | 14.70 | 10 | 0.00 | Boston Crab Meat | Seafood | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 27 | 3/24/1997 0:00 | 4/21/1997 0:00 | 4/1/1997 0:00 | 6.88 | 42.40 | 3 | 0.00 | Manjimup Dried Apples | Produce | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 28 | 3/24/1997 0:00 | 4/21/1997 0:00 | 4/25/1997 0:00 | 15.28 | 11.20 | 35 | 0.05 | Sasquatch Ale | Beverages | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 29 | 3/24/1997 0:00 | 4/21/1997 0:00 | 4/25/1997 0:00 | 15.28 | 10.40 | 30 | 0.05 | Original Frankfurter grüne Soße | Condiments | Calendar 1997 | April 1997 | Quarter 2, 1997 | |
| 30 | 3/27/1997 0:00 | 4/24/1997 0:00 | 4/2/1997 0:00 | 4.93 | 44.00 | 90 | 0.00 | Raclette Courdavault | Dairy Products | Calendar 1997 | April 1997 | Quarter 2, 1997 | |

While splitting the components of a cell make sure that the Quarter column is cut and pasted in the neighboring column because the two outputs of the split will occupy the adjacent columns and if the Quarter column is not moved as described, it will be overwritten by the data as shown.

Screenshot of Microsoft Excel showing the same data after the Quarter column has been split and pasted into the adjacent column. The Quarter column now contains dates from 6/18/1995 to 6/18/1996, while the Month column contains months from August to August.

| | E | F | G | H | I | J | K | L | M | N | O | P | |
|----|----------------|----------------|----------------|---------|-----------|----------|----------|---------------------------------|----------------|---------------|-----------|----------------|--------------|
| 1 | OrderDate | RequiredDate | ShippedDate | Freight | UnitPrice | Quantity | Discount | ProductName | CategoryName | Year | Month | Column1 | Quarter |
| 2 | 7/4/1996 0:00 | 8/1/1996 0:00 | 7/16/1996 0:00 | 32.38 | 14.00 | 12 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 3 | 7/4/1996 0:00 | 8/1/1996 0:00 | 7/16/1996 0:00 | 32.38 | 9.80 | 10 | 0.00 | Singaporean Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 4 | 7/4/1996 0:00 | 8/1/1996 0:00 | 7/16/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 5 | 7/9/1996 0:00 | 8/6/1996 0:00 | 7/11/1996 0:00 | 51.3 | 64.80 | 40 | 0.05 | Sir Rodney's Marmalade | Confectionery | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 6 | 7/9/1996 0:00 | 8/6/1996 0:00 | 7/11/1996 0:00 | 51.3 | 2.00 | 25 | 0.05 | Geitost | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 7 | 7/9/1996 0:00 | 8/6/1996 0:00 | 7/11/1996 0:00 | 51.3 | 27.20 | 40 | 0.00 | Camembert Pierrot | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 8 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/15/1996 0:00 | 148.33 | 15.20 | 20 | 0.00 | Chang | Beverages | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 9 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/15/1996 0:00 | 148.33 | 13.90 | 35 | 0.00 | Pavlova | Confectionery | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 10 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/15/1996 0:00 | 148.33 | 15.20 | 25 | 0.00 | Inlagd Sill | Seafood | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 11 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/15/1996 0:00 | 148.33 | 44.00 | 30 | 0.00 | Raclette Courdavault | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 12 | 7/15/1996 0:00 | 8/12/1996 0:00 | 7/17/1996 0:00 | 13.97 | 26.20 | 15 | 0.00 | Perth Pastries | Meat/Poultry | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 13 | 7/15/1996 0:00 | 8/12/1996 0:00 | 7/17/1996 0:00 | 13.97 | 10.40 | 12 | 0.00 | Original Frankfurter grüne Soße | Condiments | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 14 | 7/18/1996 0:00 | 8/15/1996 0:00 | 7/25/1996 0:00 | 3.25 | 8.00 | 10 | 0.00 | Sir Rodney's Scones | Confectionery | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 15 | 7/18/1996 0:00 | 8/15/1996 0:00 | 7/25/1996 0:00 | 3.25 | 20.80 | 1 | 0.00 | Gravad lax | Seafood | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 16 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/31/1996 0:00 | 146.06 | 13.90 | 60 | 0.25 | Pavlova | Confectionery | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 17 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/31/1996 0:00 | 146.06 | 3.60 | 28 | 0.00 | Guaraná Fantástica | Beverages | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 18 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/31/1996 0:00 | 146.06 | 20.70 | 60 | 0.25 | Nord-Ost Matjeshering | Seafood | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 19 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/31/1996 0:00 | 146.06 | 8.00 | 36 | 0.25 | Longlife Tofu | Product | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 20 | 7/24/1996 0:00 | 8/21/1996 0:00 | 8/23/1996 0:00 | 3.67 | 7.70 | 25 | 0.15 | Jack's New England Clam Chowder | Seafood | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 21 | 7/24/1996 0:00 | 8/21/1996 0:00 | 8/23/1996 0:00 | 3.67 | 15.20 | 35 | 0.00 | Chang | Beverages | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 22 | 7/26/1996 0:00 | 9/6/1996 0:00 | 7/31/1996 0:00 | 25.73 | 30.40 | 12 | 0.05 | Queso Manchego La Pastora | Dairy Products | Calendar 1996 | September | 6/18/1995 0:00 | Quarter 3, 1 |
| 23 | 7/29/1996 0:00 | 8/26/1996 0:00 | 8/6/1996 0:00 | 208.58 | 14.70 | 50 | 0.00 | Boston Crab Meat | Seafood | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 24 | 7/29/1996 0:00 | 8/26/1996 0:00 | 8/6/1996 0:00 | 208.58 | 44.00 | 70 | 0.15 | Raclette Courdavault | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 25 | 7/29/1996 0:00 | 8/26/1996 0:00 | 8/6/1996 0:00 | 208.58 | 14.40 | 15 | 0.15 | Lakkalikööri | Beverages | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 26 | 8/1/1996 0:00 | 8/29/1996 0:00 | 8/30/1996 0:00 | 4.54 | 2.00 | 24 | 0.00 | Geitost | Dairy Products | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 27 | 8/1/1996 0:00 | 8/29/1996 0:00 | 8/2/1996 0:00 | 136.54 | 15.20 | 30 | 0.00 | Inlagd Sill | Seafood | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 28 | 8/1/1996 0:00 | 8/29/1996 0:00 | 8/2/1996 0:00 | 136.54 | 36.80 | 25 | 0.00 | Guaraná Fantástica | Beverages | Calendar 1996 | August | 6/18/1995 0:00 | Quarter 3, 1 |
| 29 | 8/7/1996 0:00 | 9/4/1996 0:00 | 8/9/1996 0:00 | 26.93 | 3.60 | 12 | 0.05 | Guaraná Fantástica | Beverages | Calendar 1996 | September | 6/18/1995 0:00 | Quarter 3, 1 |
| 30 | 8/7/1996 0:00 | 9/4/1996 0:00 | 8/9/1996 0:00 | 26.93 | 44.00 | 6 | 0.05 | Raclette Courdavault | Dairy Products | Calendar 1996 | September | 6/18/1995 0:00 | Quarter 3, 1 |

Once the above steps are achieved, sort the Month column by Month first as shown below.

File Home Insert Page Layout Formulas Data Review View Developer Design

Cut Copy Paste Format Painter Clipboard Font Alignment Number Conditional Formatting as Table Styles Insert Delete Format Cells AutoSum Fill Clear Sort & Find & Filter Select Editing

O2 fx August

| | E | F | G | H | I | J | K | L | M | N | O | P | S |
|----|----------------|----------------|----------------|---------|-----------|----------|----------|----------------------------------|----------------|---------------|--------|----------------|---|
| 1 | OrderDate | RequiredDate | ShippedDate | Freight | UnitPrice | Quantity | Discount | ProductName | CategoryName | Year | Month | Column1 | |
| 2 | 7/4/1996 0:00 | 8/1/1996 0:00 | 7/16/1996 0:00 | 32.38 | 14.00 | 12 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 3 | 7/4/1996 0:00 | 8/1/1996 0:00 | 7/16/1996 0:00 | 32.38 | 9.80 | 10 | 0.00 | Singapore Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August | 6/18/1905 0:00 | |
| 4 | 7/4/1996 0:00 | 8/1/1996 0:00 | 7/16/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 5 | 7/9/1996 0:00 | 8/6/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Flour Tortillas | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 6 | 7/9/1996 0:00 | 8/6/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 7 | 7/9/1996 0:00 | 8/6/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Singapore Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August | 6/18/1905 0:00 | |
| 8 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 9 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Flour Tortillas | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 10 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 11 | 7/12/1996 0:00 | 8/9/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Singapore Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August | 6/18/1905 0:00 | |
| 12 | 7/15/1996 0:00 | 8/12/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 13 | 7/15/1996 0:00 | 8/12/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Flour Tortillas | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 14 | 7/18/1996 0:00 | 8/15/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 15 | 7/18/1996 0:00 | 8/15/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Singapore Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August | 6/18/1905 0:00 | |
| 16 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 17 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Flour Tortillas | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 18 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 19 | 7/23/1996 0:00 | 8/20/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Singapore Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August | 6/18/1905 0:00 | |
| 20 | 7/24/1996 0:00 | 8/21/1996 0:00 | 7/1/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 21 | 7/24/1996 0:00 | 8/21/1996 0:00 | 7/1/1996 0:00 | 3.67 | 15.20 | 35 | 0.00 | Chang | Beverages | Calendar 1996 | August | 6/18/1905 0:00 | |
| 22 | 7/29/1996 0:00 | 8/26/1996 0:00 | 8/6/1996 0:00 | 208.58 | 14.70 | 50 | 0.00 | Boston Crab Meat | Seafood | Calendar 1996 | August | 6/18/1905 0:00 | |
| 23 | 7/29/1996 0:00 | 8/26/1996 0:00 | 8/6/1996 0:00 | 208.58 | 44.00 | 70 | 0.15 | Raclette Courdavault | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 24 | 7/29/1996 0:00 | 8/26/1996 0:00 | 8/6/1996 0:00 | 208.58 | 14.40 | 15 | 0.15 | Lakkalikööri | Beverages | Calendar 1996 | August | 6/18/1905 0:00 | |
| 25 | 8/1/1996 0:00 | 8/29/1996 0:00 | 8/30/1996 0:00 | 4.54 | 2.00 | 24 | 0.00 | Geitost | Dairy Products | Calendar 1996 | August | 6/18/1905 0:00 | |
| 26 | 8/1/1996 0:00 | 8/29/1996 0:00 | 8/2/1996 0:00 | 136.54 | 15.20 | 30 | 0.00 | Inlagd Sill | Seafood | Calendar 1996 | August | 6/18/1905 0:00 | |
| 27 | 8/1/1996 0:00 | 8/29/1996 0:00 | 8/2/1996 0:00 | 136.54 | 36.80 | 25 | 0.00 | Ippoh Coffee | Beverages | Calendar 1996 | August | 6/18/1905 0:00 | |
| 28 | 7/8/1996 0:00 | 8/5/1996 0:00 | 7/12/1996 0:00 | 65.83 | 7.70 | 10 | 0.00 | Jack's New England Clam Chowder | Seafood | Calendar 1996 | August | 6/18/1905 0:00 | |
| 29 | 7/8/1996 0:00 | 8/5/1996 0:00 | 7/12/1996 0:00 | 65.83 | 42.40 | 35 | 0.15 | Manjimup Dried Apples | Produce | Calendar 1996 | August | 6/18/1905 0:00 | |
| 30 | 7/8/1996 0:00 | 8/5/1996 0:00 | 7/12/1996 0:00 | 65.83 | 16.80 | 15 | 0.15 | Louisiana Fiery Hot Pepper Sauce | Condiments | Calendar 1996 | August | 6/18/1905 0:00 | |

Then sort the same Month column by Year as shown below.

File Home Insert Page Layout Formulas Data Review View Developer Design

Cut Copy Paste Format Painter Clipboard Font Alignment Number Conditional Formatting as Table Styles Insert Delete Format Cells AutoSum Fill Clear Sort & Find & Filter Select Editing

O2 fx January

| | E | F | G | H | I | J | K | L | M | N | O | P | S |
|----|----------------|---------------|----------------|---------|-----------|----------|----------|---------------------------------|----------------|---------------|---------|----------------|---|
| 1 | OrderDate | RequiredDate | ShippedDate | Freight | UnitPrice | Quantity | Discount | ProductName | CategoryName | Year | Month | Column1 | |
| 2 | #### | 1/7/1997 0:00 | 12/4/1996 0:00 | 71.97 | 28.80 | 30 | 0.00 | Gudbrandsdalsost | Dairy Products | Calendar 1997 | January | 6/19/1905 0:00 | |
| 3 | #### | 1/7/1997 0:00 | 12/4/1996 0:00 | 71.97 | 17.20 | 5 | 0.00 | Flotemyrsost | Dairy Products | Calendar 1997 | January | 6/19/1905 0:00 | |
| 4 | 12/5/1996 0:00 | 1/2/1997 0:00 | #### | 124.12 | 10.60 | 80 | 0.20 | Escargots de Bourgogne | Seafood | Calendar 1997 | January | 6/19/1905 0:00 | |
| 5 | 12/5/1996 0:00 | 1/2/1997 0:00 | #### | 124.12 | 17.20 | 50 | 0.20 | Magret de Canard | Dairy Products | Calendar 1997 | January | 6/19/1905 0:00 | |
| 6 | 12/5/1996 0:00 | 1/2/1997 0:00 | 12/2/1996 0:00 | 124.12 | 17.20 | 50 | 0.20 | Magret de Canard | Dairy Products | Calendar 1997 | January | 6/19/1905 0:00 | |
| 7 | 12/5/1996 0:00 | 1/2/1997 0:00 | 12/2/1996 0:00 | 124.12 | 17.20 | 50 | 0.20 | Magret de Canard | Dairy Products | Calendar 1997 | January | 6/19/1905 0:00 | |
| 8 | 1/8/1997 0:00 | #### | #### | 30.96 | 24.00 | 10 | 0.20 | Uncle Bob's Organic Dried Pears | Produce | Calendar 1997 | January | 6/19/1905 0:00 | |
| 9 | 1/8/1997 0:00 | #### | #### | 30.96 | 27.20 | 20 | 0.20 | Camembert Pierrot | Dairy Products | Calendar 1997 | January | 6/19/1905 0:00 | |
| 10 | 1/8/1997 0:00 | #### | #### | 30.96 | 10.00 | 8 | 0.20 | Scottish Longbreads | Confections | Calendar 1997 | January | 6/19/1905 0:00 | |
| 11 | 1/10/1997 0:00 | #### | #### | 34.86 | 7.60 | 15 | 0.20 | Rogede sild | Seafood | Calendar 1997 | January | 6/19/1905 0:00 | |
| 12 | 1/10/1997 0:00 | #### | #### | 34.86 | 5.60 | 20 | 0.20 | Filo Mix | Grains/Cereals | Calendar 1997 | January | 6/19/1905 0:00 | |
| 13 | 1/10/1997 0:00 | #### | #### | 34.86 | 26.20 | 40 | 0.00 | Perth Pasties | Meat/Poultry | Calendar 1997 | January | 6/19/1905 0:00 | |
| 14 | 1/10/1997 0:00 | #### | #### | 47.42 | 24.80 | 16 | 0.00 | Ikura | Seafood | Calendar 1997 | January | 6/19/1905 0:00 | |
| 15 | 1/10/1997 0:00 | #### | #### | 47.42 | 19.20 | 15 | 0.00 | Pâté chinois | Meat/Poultry | Calendar 1997 | January | 6/19/1905 0:00 | |
| 16 | 1/10/1997 0:00 | #### | #### | 47.42 | 39.40 | 20 | 0.00 | Tarte au sucre | Confections | Calendar 1997 | January | 6/19/1905 0:00 | |
| 17 | 1/10/1997 0:00 | #### | #### | 47.42 | 12.00 | 30 | 0.00 | Outback Lager | Beverages | Calendar 1997 | January | 6/19/1905 0:00 | |

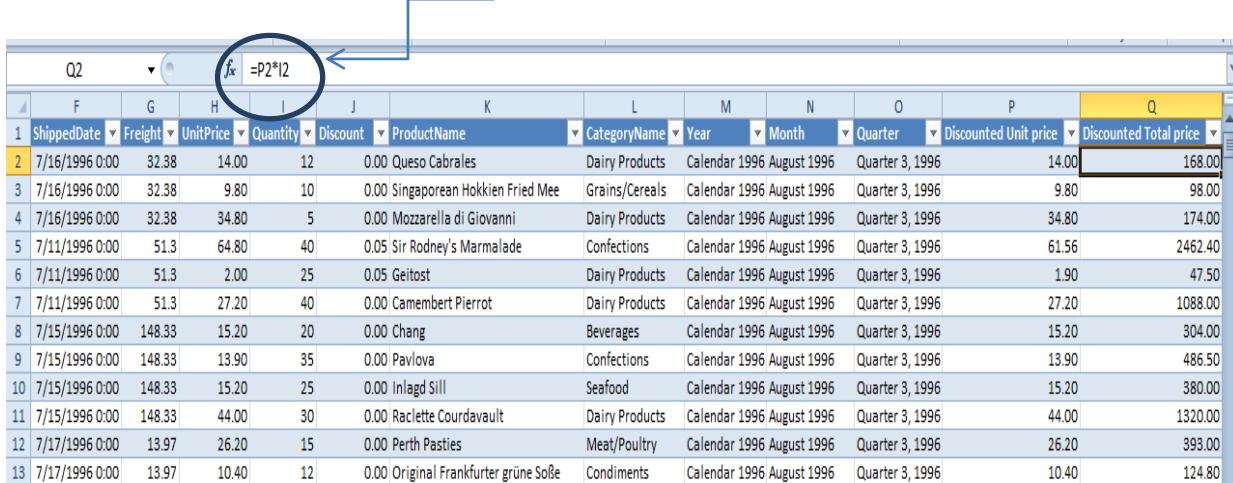
If analysis based on the discounts is required, add 2 columns as explained below and create a new Pivot Table on this sheet.

First go to the Orders sheet and create 2 new columns as shown:

Column 1: Discounted Unit Price: This column will contain the unit prices after discount.

So the formula would be $(1 - \text{Discount})(\text{Unit Price})$. In terms of excel columns the formula would be $(1 - J2) * (H2)$. (1-

Column 2: Discounted Total Price: This column would contain discounted unit price multiplied by quantity. In terms of excel columns, it would be $P2 * I2$.

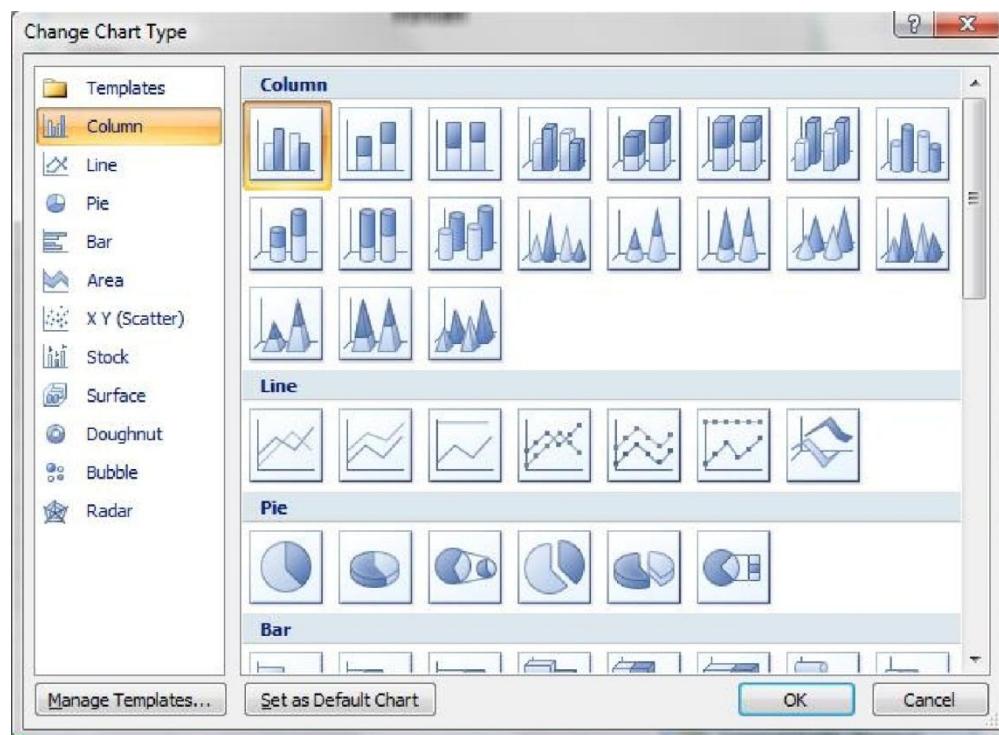


The screenshot shows an Excel spreadsheet with a formula bar at the top containing the formula $=P2*I2$. A blue circle highlights the formula bar, and a blue arrow points from the text above to the formula bar.

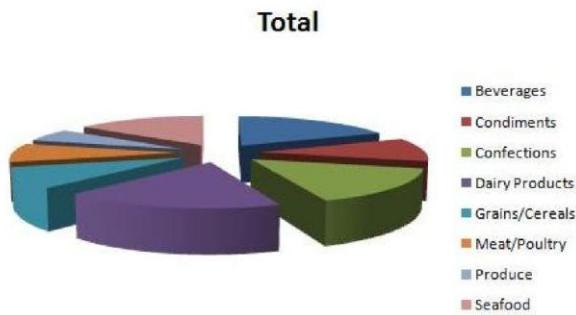
| | F | G | H | I | J | K | L | M | N | O | P | Q |
|----|----------------|---------|-----------|----------|----------|---------------------------------|----------------|---------------|-------------|-----------------|-----------------------|------------------------|
| 1 | ShippedDate | Freight | UnitPrice | Quantity | Discount | ProductName | CategoryName | Year | Month | Quarter | Discounted Unit price | Discounted Total price |
| 2 | 7/16/1996 0:00 | 32.38 | 14.00 | 12 | 0.00 | Queso Cabrales | Dairy Products | Calendar 1996 | August 1996 | Quarter 3, 1996 | 14.00 | 168.00 |
| 3 | 7/16/1996 0:00 | 32.38 | 9.80 | 10 | 0.00 | Singaporean Hokkien Fried Mee | Grains/Cereals | Calendar 1996 | August 1996 | Quarter 3, 1996 | 9.80 | 98.00 |
| 4 | 7/16/1996 0:00 | 32.38 | 34.80 | 5 | 0.00 | Mozzarella di Giovanni | Dairy Products | Calendar 1996 | August 1996 | Quarter 3, 1996 | 34.80 | 174.00 |
| 5 | 7/11/1996 0:00 | 51.3 | 64.80 | 40 | 0.05 | Sir Rodney's Marmalade | Confections | Calendar 1996 | August 1996 | Quarter 3, 1996 | 61.56 | 2462.40 |
| 6 | 7/11/1996 0:00 | 51.3 | 2.00 | 25 | 0.05 | Geitost | Dairy Products | Calendar 1996 | August 1996 | Quarter 3, 1996 | 1.90 | 47.50 |
| 7 | 7/11/1996 0:00 | 51.3 | 27.20 | 40 | 0.00 | Camembert Pierrot | Dairy Products | Calendar 1996 | August 1996 | Quarter 3, 1996 | 27.20 | 1088.00 |
| 8 | 7/15/1996 0:00 | 148.33 | 15.20 | 20 | 0.00 | Chang | Beverages | Calendar 1996 | August 1996 | Quarter 3, 1996 | 15.20 | 304.00 |
| 9 | 7/15/1996 0:00 | 148.33 | 13.90 | 35 | 0.00 | Pavlova | Confections | Calendar 1996 | August 1996 | Quarter 3, 1996 | 13.90 | 486.50 |
| 10 | 7/15/1996 0:00 | 148.33 | 15.20 | 25 | 0.00 | Inlagd Sill | Seafood | Calendar 1996 | August 1996 | Quarter 3, 1996 | 15.20 | 380.00 |
| 11 | 7/15/1996 0:00 | 148.33 | 44.00 | 30 | 0.00 | Raclette Courdavault | Dairy Products | Calendar 1996 | August 1996 | Quarter 3, 1996 | 44.00 | 1320.00 |
| 12 | 7/17/1996 0:00 | 13.97 | 26.20 | 15 | 0.00 | Perth Pasties | Meat/Poultry | Calendar 1996 | August 1996 | Quarter 3, 1996 | 26.20 | 393.00 |
| 13 | 7/17/1996 0:00 | 13.97 | 10.40 | 12 | 0.00 | Original Frankfurter grüne Soße | Condiments | Calendar 1996 | August 1996 | Quarter 3, 1996 | 10.40 | 124.80 |

Formatting of PivotCharts

The PivotChart can be changed to any chart type offered by Excel. In the ribbon, click on the **Design** tab, and then select **Change Chart Type** from the **Type** group.



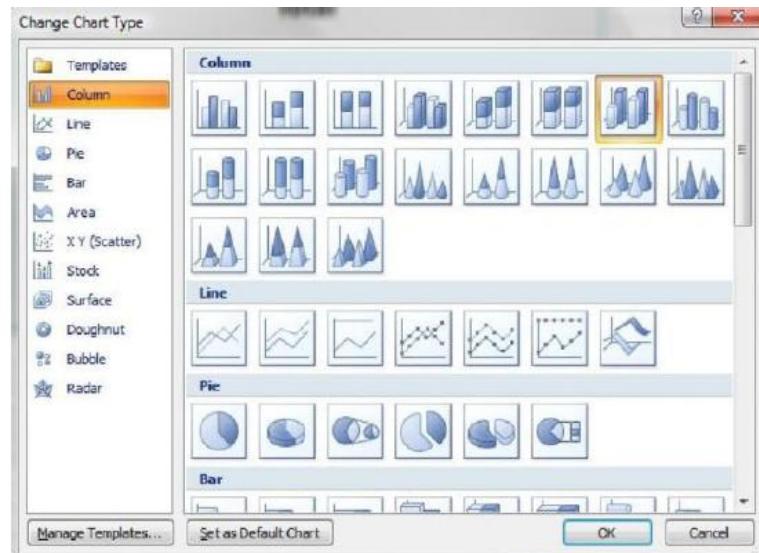
Below is an example of the PivotChart using a pie chart.



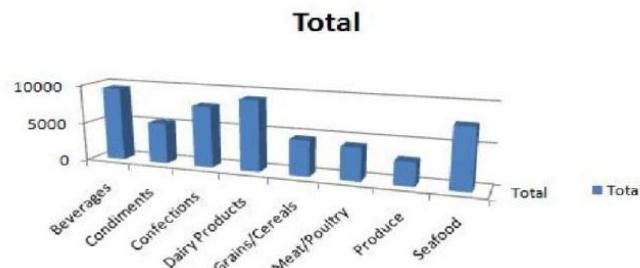
In the next section, we'll explore some other customizations that can be used for a PivotChart that may be useful.

Customizing a PivotChart

1. Go to the worksheet containing the PivotChart, and select the PivotChart. You should be able to see the **Design**, **Layout**, **Format**, and **Analyze** tabs on the ribbon.
2. Click on the **Design** tab, and select **Change Chart Type** from the *Type* group. Select the **3-D Column** chart.



3. The PivotChart should automatically update itself using the new chart type.



4. Update the title on the chart by clicking on the chart title, and then replacing the current title of

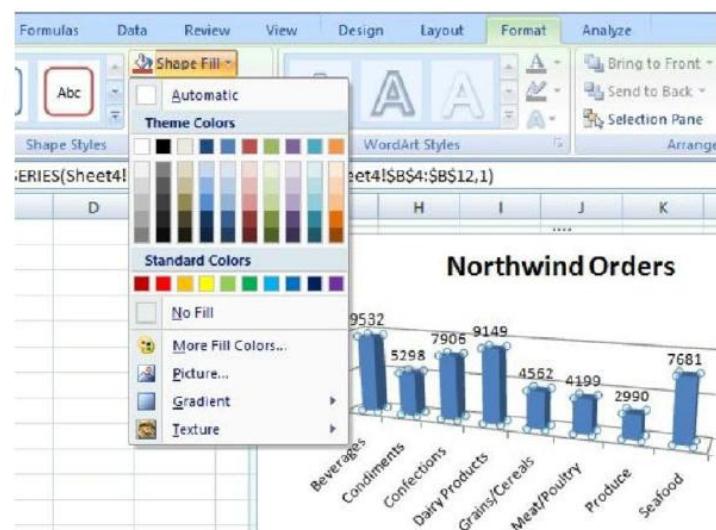
Total with Northwind Orders.



5. The numeric values that each column represents above the respective column can be shown by displaying the data labels. To do this, go to the **Layout** tab on the ribbon, select **Data Labels** from the **Labels** group, and then choose **Show**.



6. Finally, change the color of the columns of the chart. To do this, first click on one of the columns within the PivotChart. Then, go to the **Format** tab on the ribbon, select **Shape Fill** from the **Shape Styles** group, and choose the desired color. For the purpose of this exercise, let's choose red.



7. Our PivotChart should now look similar to the one below



Unsolved Exercises

1. The manager wants to see the percentage of difference of product sales from quarter to quarter in a year and also from year to year.
2. He also wants to analyze whether the discount on products increased the sales of the products as compared to their sales without discounts.
3. The CEO of Northwind wants to analyze the growth trend of sales to check whether the sales have increased or decreased over time.
4. He also wants to forecast the volume of products that are going to be sold in the next 3 years.
5. The CEO needs to analyze the shipper's efficiency to offer incentives to the best performing shippers.
6. He has to prepare a list of "Top 10 Customers" depending on the volume of sales they have provided to the company over the years.