Problem/Opportunity

Marilyn and Colin want to conduct an analysis of their product mix to determine the extent to which their product analysis agrees with Pareto's principle. They need to be able to adjust and refine their product mix to better reflect the marketplace and consumer needs whilst also understanding the dynamics of their business.

Solution

As part of the Applications Software module, we will look at Excel as a tool that offers most of the features required in a complex Information System.

We have created an Excel Workbook, which will calculate the total sales per sales representative and per sales region. The excel workbook will also calculate the value of the commission earned by each sales representative.

The focus for this workshop activity is to further enhance our spreadsheet model by introducing a product analysis worksheet to enable Marilyn and Colin to better understand their product mix both between the different types and categories of products whilst also comparing the individual product sales results.

Activity 1

Marilyn and Colin want to analyse the individual product's contribution to performance and to determine the extent to which the Pareto's principle applies to their business.

Have you done your research yet? What does this mean? Try this link http://management.about.com/cs/generalmanagement/a/Pareto081202.htm

- Open **hammerwine_xxx2-3.xls** developed over the previous workshops **OR** using the data files provided open **HammerWines3.xlsx**.

Insert and rename the worksheet

The starting point is to create our new worksheet – **Product Analysis**

- Click on the new worksheet symbols found next to the last worksheet (see Figure 1) **OR** right mouse click on a tab, **Insert**, and select a worksheet.

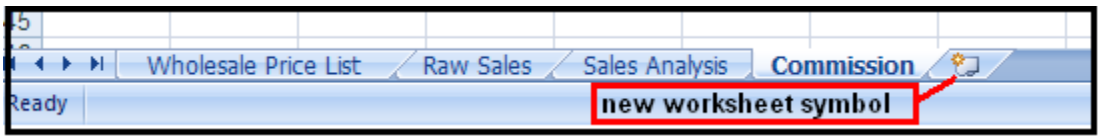


Figure 1 - Insert worksheet

- It should be the last worksheet in the group. If not, move this worksheet to the end by clicking and dragging the worksheet to after the Commission worksheet.
- **Rename** this worksheet, **Product Analysis** via right mouse clicking, Rename

- **OR** double click the sheet name and type **Product Analysis**

Paste Link

To make the necessary calculations, we first need to copy our product list into the Product Analysis worksheet. We want to make this a dynamic link, so that if our product list changes in any way then our product analysis can be updated also.

- **Copy** the product list from the Raw Sales worksheet. Include the following fields only (highlight **A4:D62**):
    - Product
    - Type
    - Supplier
    - Size
- Select the Product Analysis worksheet, click in A1. From the **Home** tab, **Clipboard** section, choose **Paste Special, Paste Link OR** right mouse click **Paste Special, Paste Link**. Note the cell references in the Product Analysis Worksheet should refer to the Raw Sales worksheet.

AutoFill

We need to number our products.

- Click in the cell heading column A. Select the **Home** ribbon, **Cells** section, **Insert, Insert Sheet Columns** (see Figure 2).
- An extra column should appear to the left of your data.

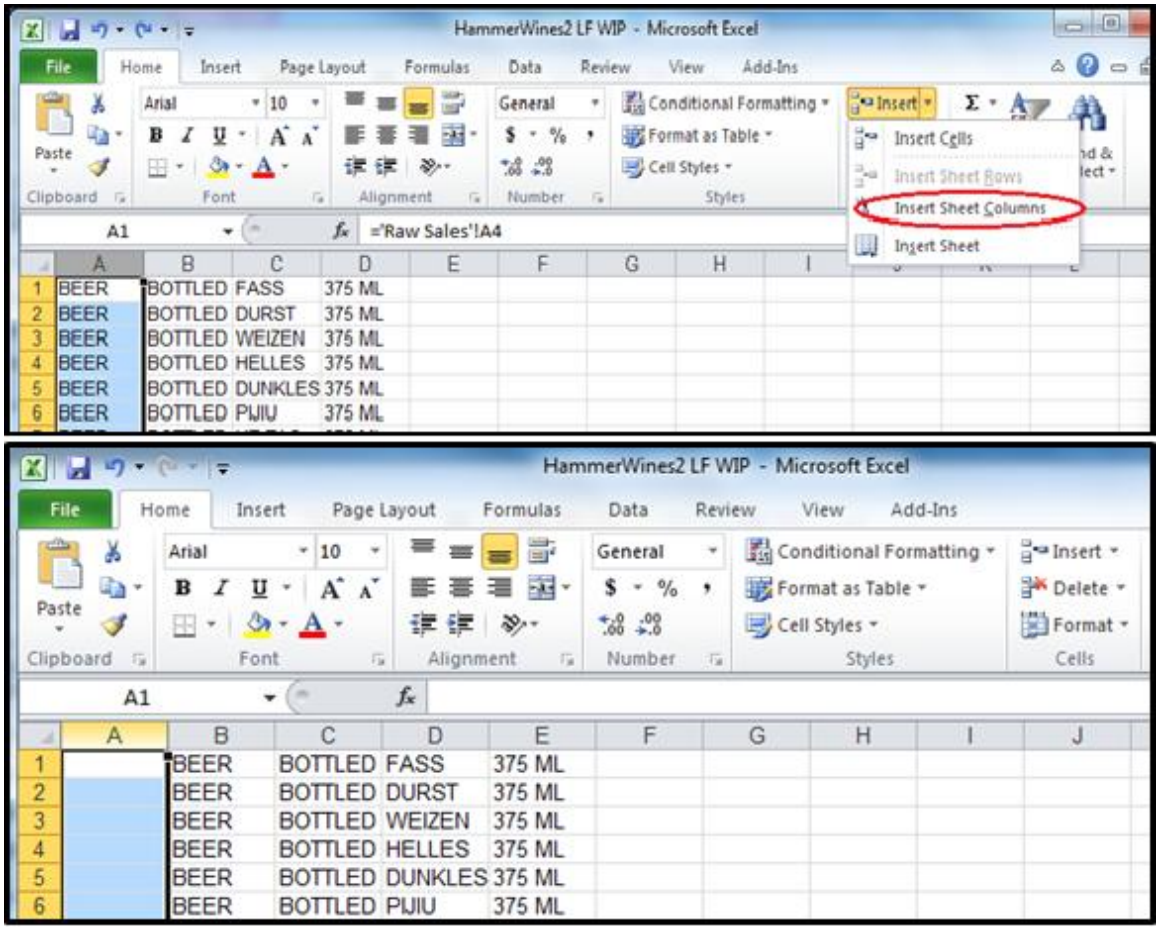


Figure 2 - Insert Sheet Columns

- Adjacent to the first product in cell **A1**, enter the number 1 and in **A2** enter the number 2
- Now use the **autofill** feature to insert number for all our products by highlighting both these cells **A1** and **A2** - use the fill handle and drag down to the end of the product list (see Figure 3 below)

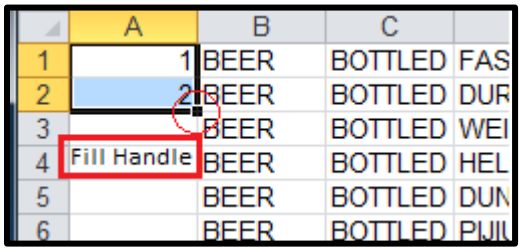


Figure 3 - Fill handle used in AutoFill

% Sales per product

Marilyn and Colin would like to know the % Sales represented by each product they sell. This is a relatively simple calculation. Can you work it out? Remember, you need to use both absolute and relative cell addressing. The formula should be the individual product total sales divided into Total Sales. Remember, we have already created a range name TSales so we can use this in our formula and that way we do not have to use $ signs to signal an absolute cell reference.

- Firstly insert a row at the top of the Product Analysis worksheet, then copy cells **A3:D3** from the Raw Sales worksheet to **B1:E1** of the Product Analysis worksheet.
- In cell **F1**, insert a heading % Sales per Product, wrap this text using the alignment section of the Home tab
- In cell **F2**, enter the formula by clicking on the appropriate cells on the Raw Sales worksheet. To use the range name, TSales, go to the **Formulas** ribbon, **Defined Name** section, **Use in Formula**
- The formula should read: **='Raw Sales'!M4/TSales**
- **Format** this cell for % and 2 decimal places
- **Copy** this formula down so that you have a % Sales per Product calculation for all products

Pareto's Principle – top 20% of Products contribute to 80% of total sales

Marilyn and Colin have 59 products in the range; we need 20% of this.

Note: The following technique requires the data to be sorted by **% percent sales per product** which we do at the end of the activity.

- In **H1**, enter the following formula **=A60*.2** (11.8) and format to show no decimal points (12)
- The result will tells how many products are in the top 20%. Highlight this number (12) in column A (see Figure 4). After sorting the top 20% will be in rows 2 to 13.

	A	B	C	D	E	F	G	H	I
1		PRODUCT	TYPE	SUPPLIER	SIZE	% Sales per Product		12	
2	1	BEER	BOTTLED	FASS	375 ML	1.01%			
3	2	BEER	BOTTLED	DURST	375 ML	1.10%			
4	3	BEER	BOTTLED	WEIZEN	375 ML	5.17%			
5	4	BEER	BOTTLED	HELLES	375 ML	1.16%			
6	5	BEER	BOTTLED	DUNKLES	375 ML	1.37%			
7	6	BEER	BOTTLED	PIJIU	375 ML	0.74%			
8	7	BEER	BOTTLED	KE TAO	375 ML	9.33%			
9	8	BEER	BOTTLED	FASS	750 ML	0.51%			
10	9	BEER	BOTTLED	DURST	750 ML	0.90%			
11	10	BEER	BOTTLED	WEIZEN	750 ML	0.63%			
12	11	BEER	BOTTLED	HELLES	750 ML	0.87%			
13	12	BEER	BOTTLED	DUNKLES	750 ML	0.59%			
14	13	BEER	BOTTLED	PIJIU	750 ML	0.60%			
15	14	BEER	BOTTLED	KE TAO	750 ML	0.40%			
16	15	BEER	KEG	FASS	50 LITRE	0.21%			
17	16	BEER	KEG	DURST	50 LITRE	0.61%			

Figure 4 – Top 20% of products

- Click in **G13**, and sum the first 12 products, the formula should read: **=SUM(F2:F13)**

We need to do the same for the bottom 12 products

- Click in **G49**, sum the bottom 12 products, the formula should read: **=SUM(F49:F60)** see Figure 5

Have you noticed the figures? They are not in a meaningful order for this technique so we need to sort.

.

=SUM(F49:F60)

	A	B	C	D	E	F	G	H
46	45	WINE	MERLOT	MYTHOS	750 ML	9.33%		
47	46	WINE	MERLOT	TOSCANO	750 ML	3.19%		
48	47	WINE	PINOT BLANC	DIEHARDEN	750 ML	0.76%		
49	48	WINE	PINOT BLANC	MOSER GELT	750 ML	0.45%	25.98%	
50	49	WINE	PINOT NOIR	MOSER GELT	750 ML	0.10%		
51	50	WINE	RIESLING	DI ZENO	750 ML	0.97%		
52	51	WINE	RIESLING	DIEHARDEN	750 ML	0.22%		
53	52	WINE	RIESLING	NABLINCA	750 ML	4.09%		
54	53	WINE	SANGIOVESE	DI ZENO	750 ML	0.96%		
55	54	WINE	SANGIOVESE	MYTHOS	750 ML	16.98%		
56	55	WINE	SANGIOVESE	TOSCANO	750 ML	0.68%		
57	56	WINE	SAUV. BLANC	MOSER GELT	750 ML	0.47%		
58	57	WINE	SHIRAZ	DIEHARDEN	750 ML	0.31%		
59	58	WINE	SHIRAZ	MYTHOS	750 ML	0.33%		
60	59	WINE	SHIRAZ	NABLINCA	750 ML	0.42%		
61								

Figure 5 - Bottom 20%

Sorting the data

We need to sort this data from most profitable to least profitable to see if the Pareto principle holds.

- Highlight from **B2:F60**
- On the **Data** tab click on **Sort** to bring up the Sort dialogue box – (see Figure 6 below), make sure the **My data has headers** box is checked, for **Sort by** select **%Sales per Product,** for **Order** select **Largest to Smallest,** and click **OK**

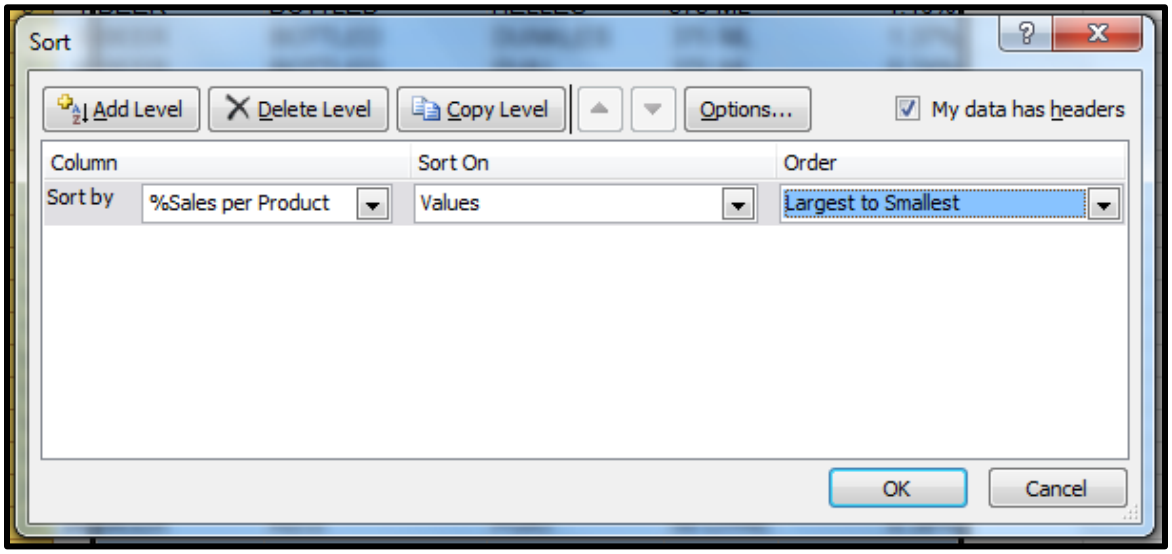


Figure 6 - Sort Dialogue Box

The data should now be sorted according to the % Sales by product line (see Figure 7).

Now that it is sorted we can see that the top 20% of the items account for 66.8% of sales and the bottom 20% account for only 3.39%.

		PRODUCT	TYPE	SUPPLIER	SIZE	%Sales per Product	
2	1	WINE	SANGIOVESE	MYTHOS	750 ML	16.98%	
3	2	WINE	MERLOT	MYTHOS	750 ML	9.33%	
4	3	BEER	BOTTLED	KE TAO	375 ML	9.33%	
5	4	BEER	BOTTLED	WEIZEN	375 ML	5.17%	
6	5	RTDs	BOURBON/COLA	HELVATIC	355 ML	4.39%	
7	6	WINE	RIESLING	NABLINCA	750 ML	4.09%	
8	7	RTDs	LEMON VODKSI	VLADOVSKA	355 ML	3.36%	
9	8	RTDs	VODKA/DRY	PETROV	355 ML	3.33%	
10	9	WINE	MERLOT	TOSCANO	750 ML	3.19%	
11	10	WINE	MERLOT	DI ZENO	750 ML	2.88%	
12	11	SPIRITS	WHISKY	PETROV	750 ML	2.46%	
13	12	SPIRITS	VODKA	PETROV	750 ML	2.29%	66.80%
14	13	RTDs	VODKA/SODA	PETROV	355 ML	1.91%	
15	14	BEER	KEG	HELLES	50 LITRE	1.37%	
46	45	WINE	PINOT BLANC	MOSER GELT	750 ML	0.45%	
47	46	WINE	SHIRAZ	NABLINCA	750 ML	0.42%	
48	47	BEER	KEG	WEIZEN	50 LITRE	0.40%	
49	48	BEER	BOTTLED	KE TAO	750 ML	0.40%	3.39%
50	49	SPIRITS	WHISKY	HELVATIC	750 ML	0.40%	
51	50	BEER	KEG	PIJIU	50 LITRE	0.38%	
52	51	RTDs	ORANGE VODSKI	VLADOVSKA	355 ML	0.35%	
53	52	WINE	SHIRAZ	MYTHOS	750 ML	0.33%	
54	53	WINE	SHIRAZ	DIEHARDEN	750 ML	0.31%	
55	54	WINE	BEAUJOLIAS	NABLINCA	750 ML	0.31%	
56	55	WINE	RIESLING	DIEHARDEN	750 ML	0.22%	
57	56	BEER	KEG	FASS	50 LITRE	0.21%	
58	57	BEER	KEG	KE TAO	50 LITRE	0.21%	
59	58	RTDs	BOURBON/DRY	HELVATIC	355 ML	0.17%	
60	59	WINE	PINOT NOIR	MOSER GELT	750 ML	0.10%	

Figure 7 - Final

Finally, let's undo  or Ctrl+Z the sort as we have been practicing the techniques that will be attached to a macro and demonstrated in the next activity.

We want the sort to only happen when we click on a button.

- Save as **hammerwines_xxx3-1.xlsx**

Activity 2

Marilyn and Colin would like to have this worksheet automatically sort the data and be able to move from one sheet to another at the click of a button

Macros

Macros are keystrokes or a series of mouse clicks that are repeated. You will be asked to give a macro a name. Like range names, these are not allowed to contain spaces. The macro name should give an indication of what the macro will do. If it is a complex series of operations, it is wise to practice before you start (you have already practised sort). We are going to create a macro to automatically sort our list. But first we need to turn on the **Developer** tab.

- Click **File** tab, select **Options** (see Figure 8)

Figure 8 - File Options

- In **Excel Options** select **Customise Ribbon**, place a tick next to **Developer** then click **OK** (see Figure 9). Check the tabs to make sure the developer ribbon has been added.

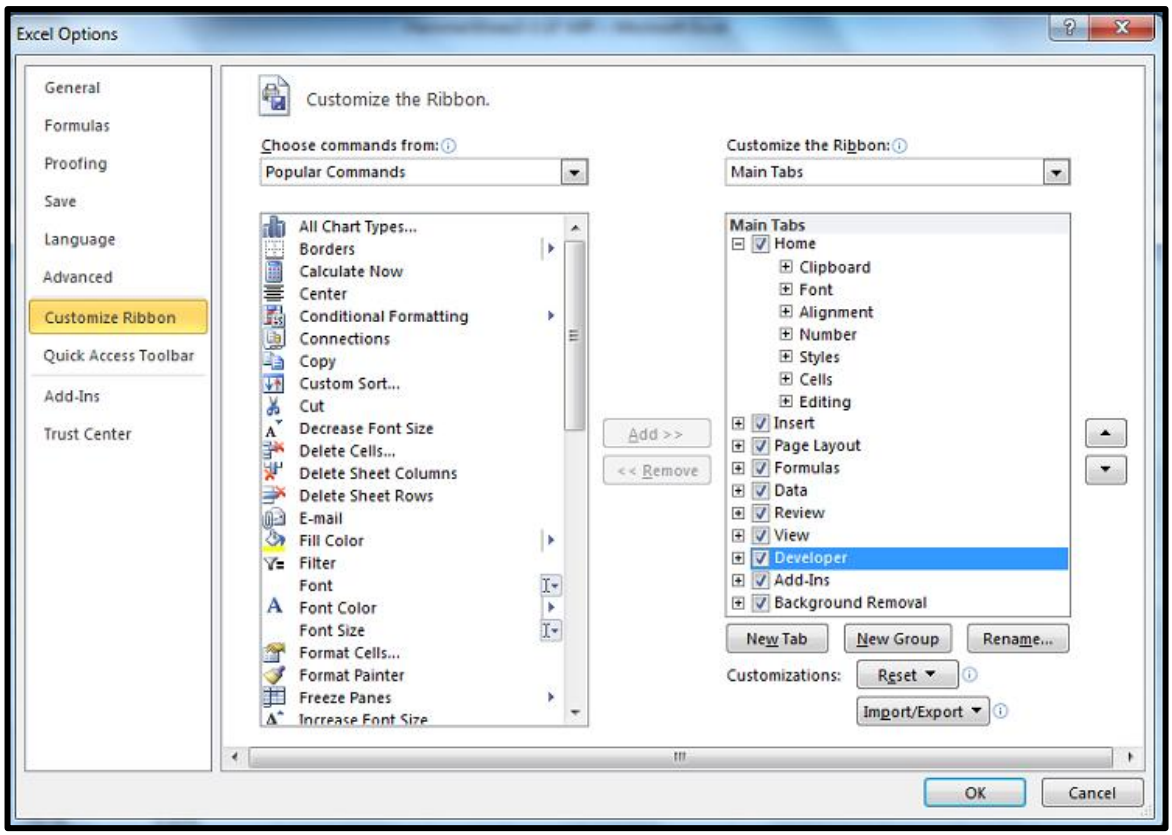


Figure 9 - Developer

We have now made it possible to create macros for use by other people accessing this excel spreadsheet. We want to create a macro to sort the data as we did in the last activity. The easiest way to create a macro is to *record* the steps as we perform them manually and then to *replay* it later whenever we want to do the same thing again.

- Select **Developer** tab, **Code** section, **Record Macro**
- **Assign** the macro a name – **SORT,** enter a description and click **OK** (see Figure 10)

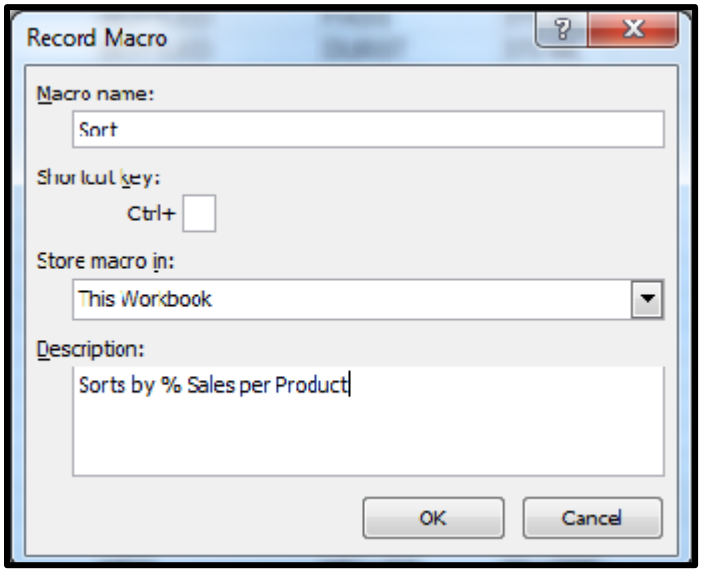
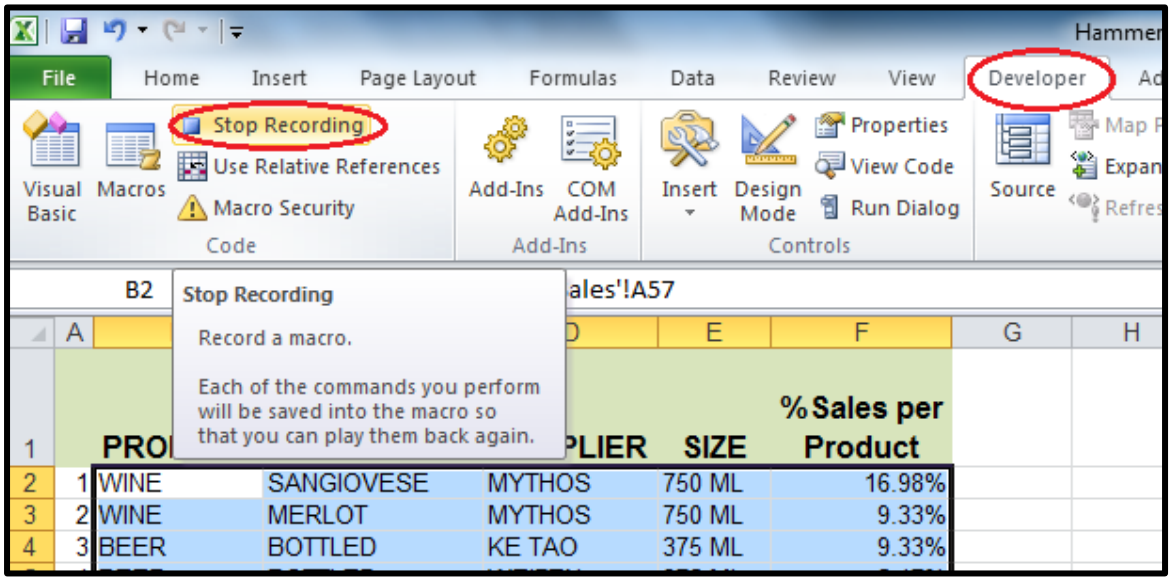


Figure 10 - Record Macro

- Repeat the steps for Sort given at the end of the last Activity starting at the paragraph **Sorting the data** finishing with the results shown in Figure 7.
- Click the **Developer** tab, **Code** section, **Stop Recording** button. See



below.

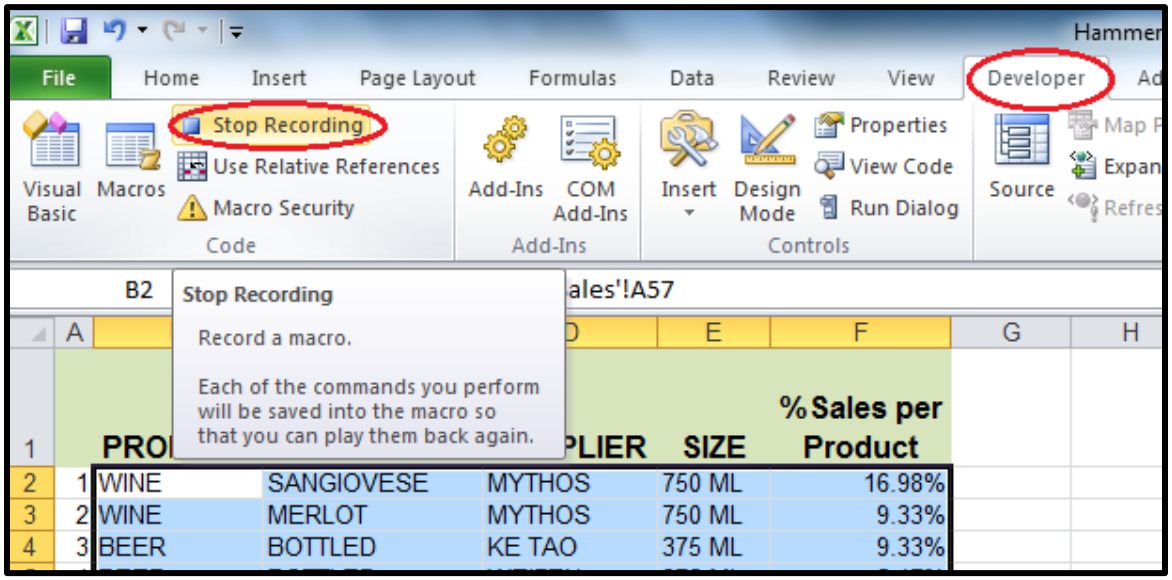


Figure 11 - Stop Recording

Macro Code

Let's look at the macro code or visual basic we have created.

- **Developer** tab, **Controls** section, **View Code**

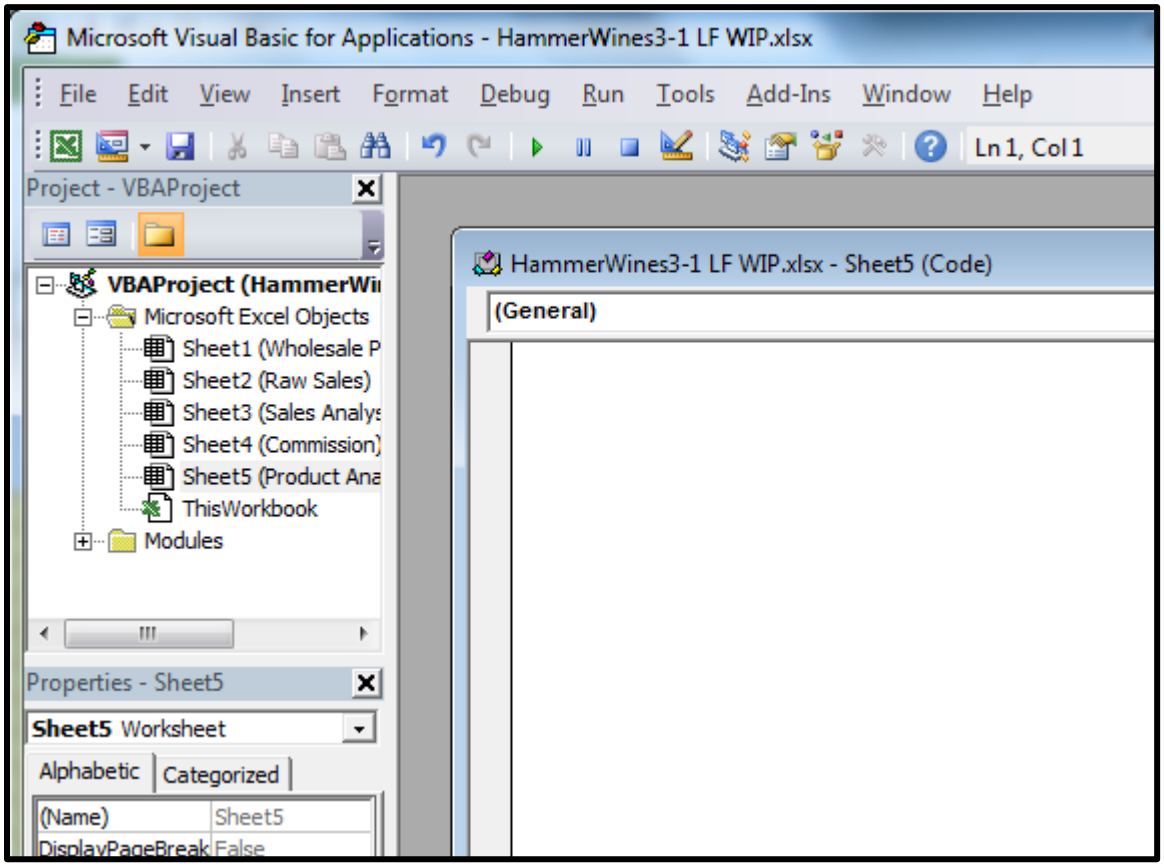


Figure 12 - View Code

- The macro codes are found in the modules. Double click on the Modules folder to open it.
- Double click ***Module 1*** (see Figure 13)

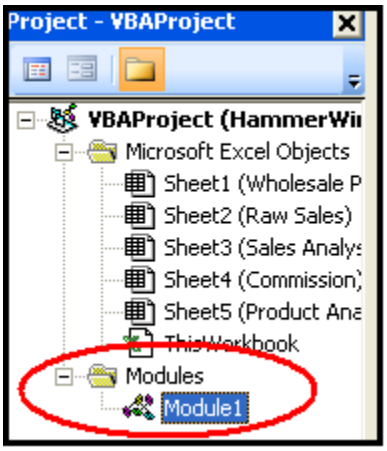


Figure 13 - Macro codes, look in Modules folder

If you make some macros today and some tomorrow, they will be found in different modules.

Below is the code for the macro we have just created. Yours should look similar to this:

```
(General)                                   Sort
Sub Sort()
'
' Sort Macro
' Sorts by % Sales per Product
'

'
    Range("B2:F60").Select
    ActiveWorkbook.Worksheets("Product Analysis").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Product Analysis").Sort.SortFields.Add Key:=Range( _
        "F2:F60"), SortOn:=xlSortOnValues, Order:=xlDescending, DataOption:= _
        xlSortNormal
    With ActiveWorkbook.Worksheets("Product Analysis").Sort
        .SetRange Range("B1:F60")
        .Header = xlYes
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
    ActiveWindow.SmallScroll Down:=-21
End Sub
```

Figure 14 - Macro code

- Close the macro code window

Command Buttons

Congratulations, you have created your first macro, now for the button to activate the macro.

- Again using the Product Analysis worksheet and the **Developer** tab, in the **Controls** section, **Insert**. See Figure 15 for the tools that should appear.

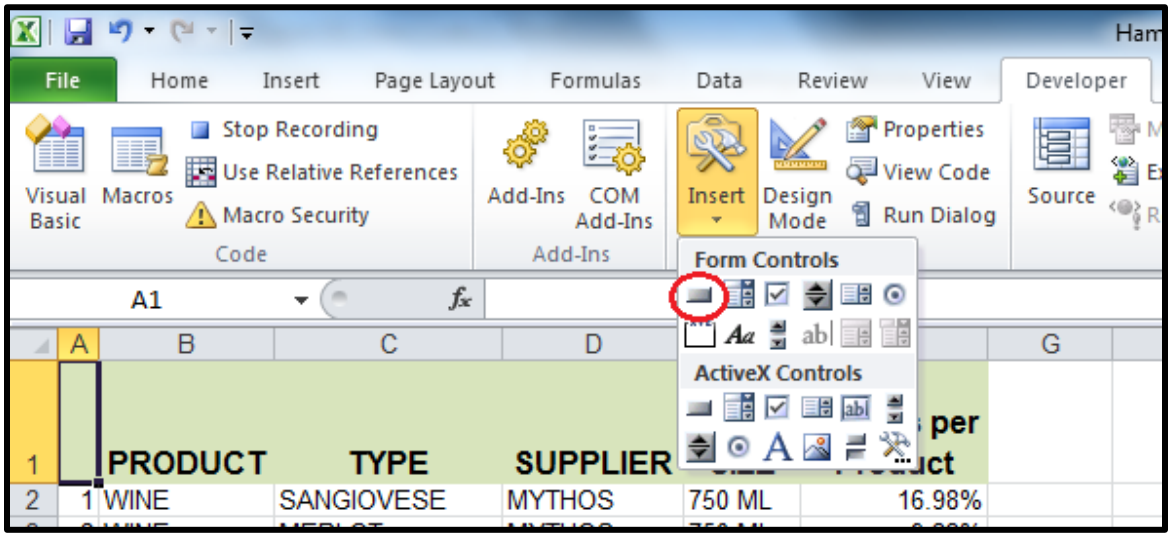


Figure 15 - Form Controls with button (Form Control) icon

- Select the **button** (**Form Control**) icon, circled above.

The mouse will change shape – it will be a small cross

- Draw an appropriate size button – use gridlines as a guide
- Assign the **Sort** macro by clicking on it, then **OK**

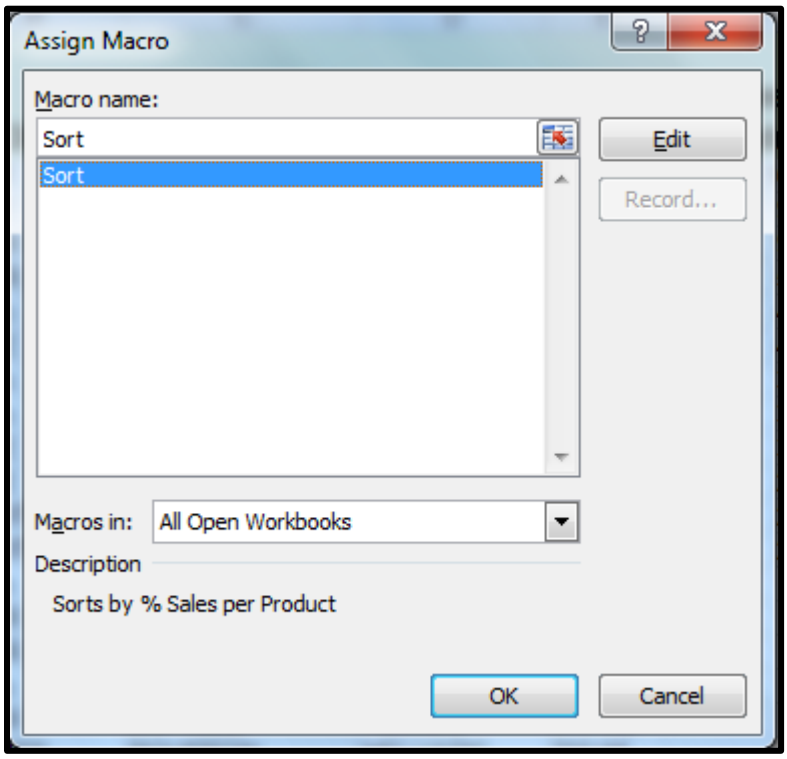


Figure 16 - Assign Sort Macro

- **Button 1** should be highlighted**,** type **Sort** – this will give the button a more meaningful name.
- Right click on the new **Sort** button, select **Format Control** and change the colour of the text to plum. If the right click does not bring up the options you are expecting, try right clicking closer to the edge of the selected shape. See Figure 17
- If you make a mistake or forget to give the button a name, you can right mouse click the command button, **Edit Text**.

The button is not visible on the printout unless you change the properties of the macro.

- Again right click on the new **Sort** button, select **Format Control**. See Figure 17

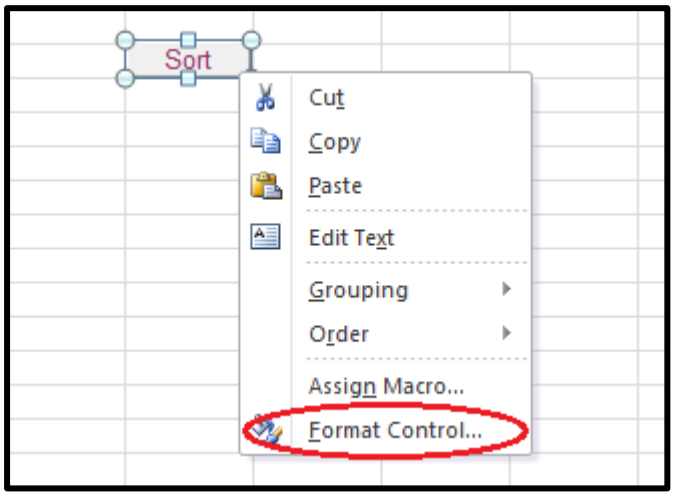


Figure 17 – Format Control, Properties

- Select the **Properties** tab and check the box **Print Object**, **OK.** See Figure 18

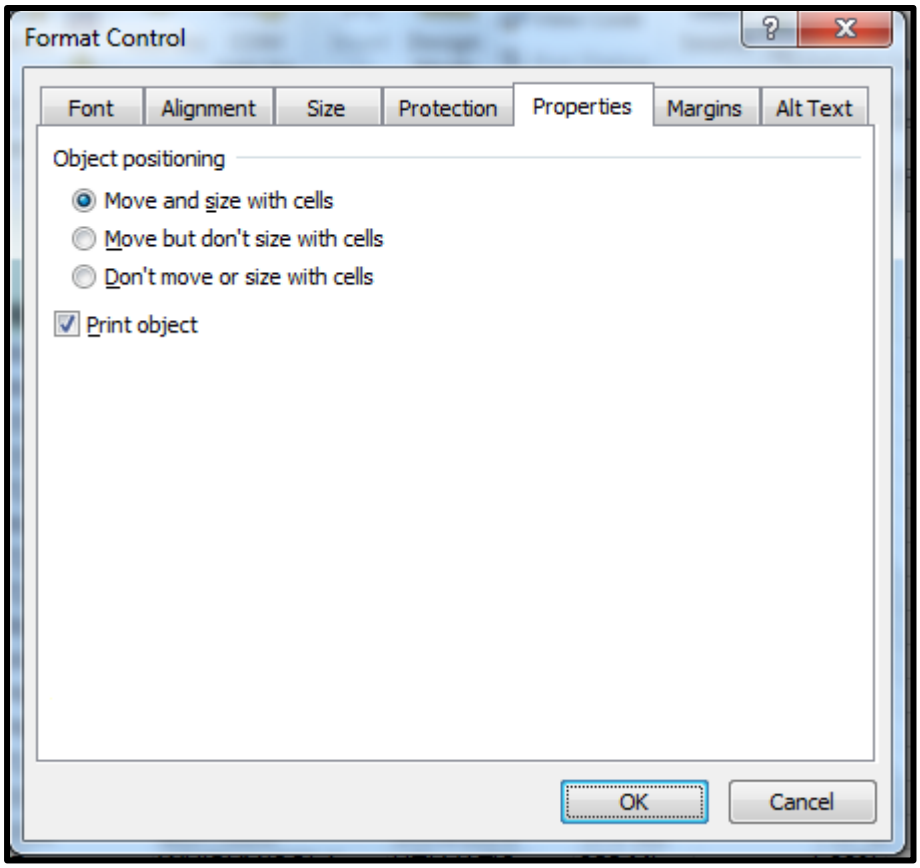


Figure 18 - Print Object

Test it out. Don't forget to do a print preview to make sure the button appears on the page.

- Save as **hammerwines_xxx3-2**

In the **Save As** dialog box, underneath the file name, in the **save as type** drop box, select an Excel **macro enable worksheet**

- The file name should now be **hammerwines_xxx3-2.xlsm**

When you open a macro enabled file the macros are disabled for security reasons. You must enable the content before you can use the macros.

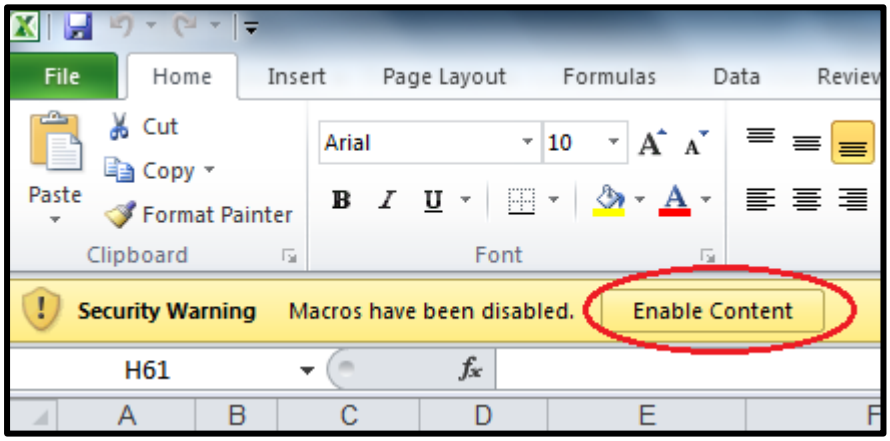


Figure 19 - Enable Macros

Activity 3

Open the file you were working on in the previous activity.

Creating a Main Menu - More Macros and Command Buttons

- Insert a Main Menu worksheet. Using Activity 2 as your guide, create the following macros and command buttons:

Macros	***Button Names***
GoToWPriceList	Wholesale Price List
GoToRawSales	Raw Sales Data
GoToComm	Commission & Profit Margin
GoToSAnalysis	Sales Analysis
GoToPAnalysis	Product Analysis
GoToSChart	Sales Analysis Chart

It does not matter in which order you do these steps. If you draw the button first, Excel will ask if you want to record a macro.

To make the Main Menu screen *attractive and user friendly*, we have grouped the buttons (using **Insert** tab**, Illustrations** section**, Shape**, **Rounded rectangle)** and then draw the command button in the rectangle and add general instructions above each group. It is a good idea to click in the **A1** cell of each worksheet before you stop recording. Figure 20 below gives an indication of the finished worksheet.

Duplicating Buttons

There is still one macro and command button to create for the main menu. Each of our worksheets requires a button to take the user back to the Main Menu. You need only create one button and then copy it. Let's start by creating the Main Menu macro.

- On the **Wholesale Price List** worksheet, **Insert** a button, record the macro naming it **MainMenu**
- Click on the **Main Menu** sheet tab, to select this worksheet
- Click on **A1**, stop recording
- **Label** the button Return to Main Menu and format appropriately. Make sure you are able to print the object before you copy it.
- Right mouse click, **copy**
- **Select** another sheet and paste.

- **Keep pasting** until each sheet, other than the Main Menu, has a Return to Main Menu button.
- **Save** as **hammerwines_xxx3-4.xlsm** macro enabled

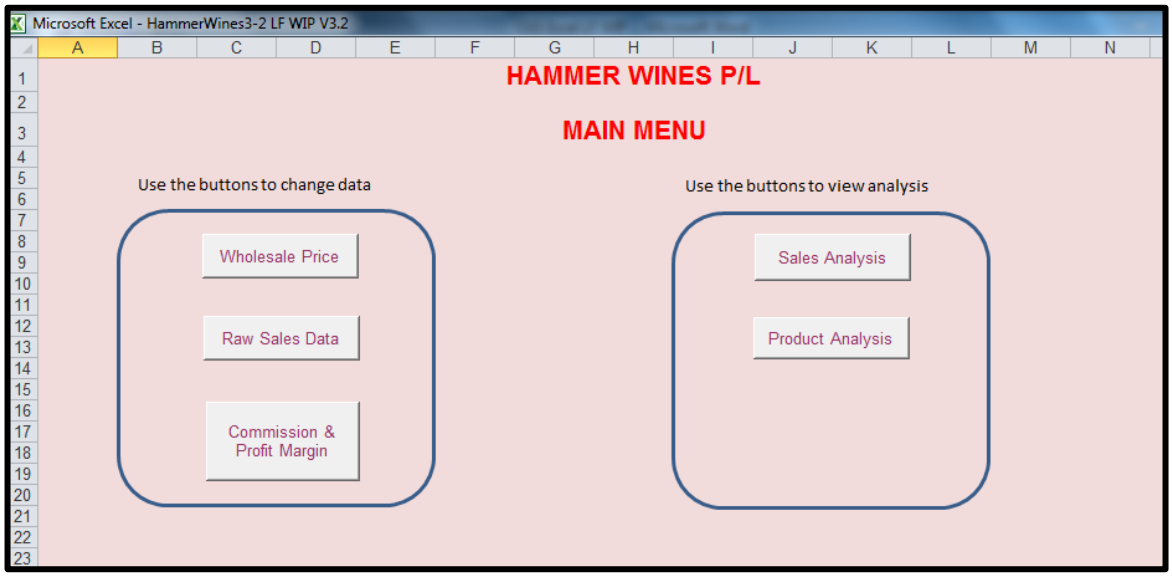


Figure 20 -Finished Main Menu worksheet

Activity 4

Pivot Tables

Pivot tables allow a user to look at information in a different manner. They are often used to get more meaningful information from the data and to provide for more analysis.

- Create a new worksheet called **Pivot Data**
- Select **A3:D62** in the Raw Sales worksheet, select **Copy**
- Click on cell **A1** in the Pivot Data worksheet and select **Paste, Paste Link** from the **Home** tab
- Select **M3:M62** in the Raw Sales worksheet, select **Copy**
- Click on cell **E1** in the Pivot Data worksheet and select **Paste, Paste Link** from the **Home** tab
- In cell **F1:H1**, add the following headings:
    - % Sales per Product
    - Profit Margin
    - Profit %

Now create the simple calculations, remembering to use absolute cell referencing or range names where necessary

- You already know the %Sales per product formula. F2 should read **=E2/TSales** (formatted as percentage)
- Copy this down to **F60**

The other two calculations are described below.

Profit Margin

Marilyn and Colin would like to know the profit made by each product category. They have established a fixed profit margin for each category. Add the following table to the Commission worksheet in cells **E1:F5** (including the heading) and create the range name **PMargin** for cells **E2:F5**

Profit Margin	
WINE	0.21
SPIRITS	0.23

RTDs	0.28
BEER	0.35

A **vlookup** will be required to use the above profit margins to calculate profit. Remember a vlookup consists of a number of arguments:

Argument	**Explanation**	**In Hammer Wines**
Lookup_value	What you want to lookup	The Product ie Beer, wine etc
Table_array	The table you want to lookup	PMargin table on the Commission worksheet
Col_index_num	The column number within that table	The data is in column number 2
Range_lookup	This is an optional argument, it is only required when the first column of the table is not in a logical alphanumeric sequence	

- Enter the arguments for the vlookup by clicking on the appropriate cells. The formula should read**: =VLOOKUP(A2,PMargin,2)**

Ooops!!! Error messages may appear. Why? Can you think why this might be the case? Look carefully at our Profit Margin table and you will notice that the first column is not in a logical order: W, S, R, B. Our list can remain in this order, but we need to use the fourth argument in the vlookup function: **range_lookup**. i.e. False

- Click in G2, then click on the **fx** next to the formula in the formula bar

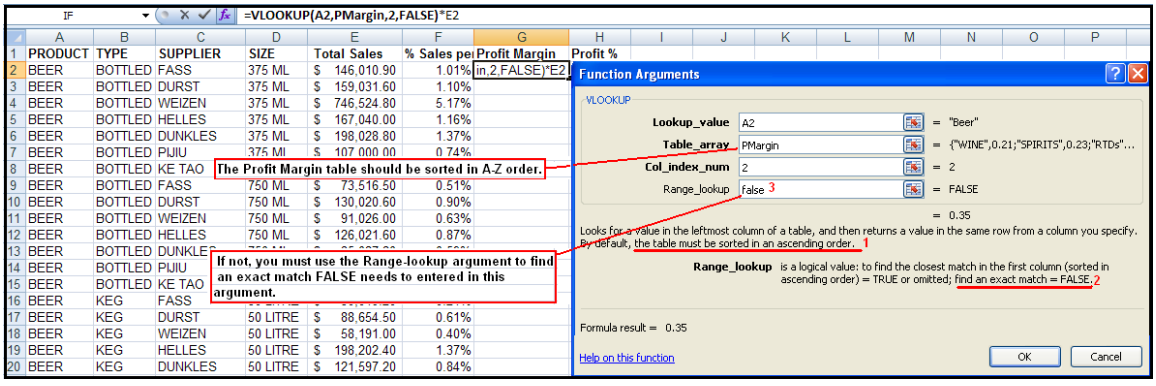


Figure 21 - Explanation of Range_lookup

- Adjust your formula accordingly (see Figure 21) and copy down

You should now have the correct % and more importantly no error messages! But, we have not finished calculating the profit $

- Edit the formula in G2 by either clicking on **G2** and editing the formula in the formula bar OR double clicking G2 and editing the formula in this cell.
- Currently **B2** should read: **=VLOOKUP(A2,PMargin,2,FALSE).** Multiply this by the total sales figure in **E2**
- The formula should now read: **=VLOOKUP(A2,PMargin,2,FALSE)*E2**, remember it is much better and more accurate to select the cells rather than work off the references given here as you may have entered the data in slightly different cells (which is fine but means you should always select the relevant cells rather than type the cell reference)
- Format the cell for currency
- **Copy** down, using the fill handle, confirm your results via Figure 22 below:

	A	B	C	D	E	F	G
1	PRODUCT	TYPE	SUPPLIER	SIZE	Total Sales	% Sales pe	Profit Margin
2	BEER	BOTTLED	FASS	375 ML	$ 146,010.90	1.01%	$ 51,103.82
3	BEER	BOTTLED	DURST	375 ML	$ 159,031.60	1.10%	$ 55,661.06
4	BEER	BOTTLED	WEIZEN	375 ML	$ 746,524.80	5.17%	$ 261,283.68
5	BEER	BOTTLED	HELLES	375 ML	$ 167,040.00	1.16%	$ 58,464.00
6	BEER	BOTTLED	DUNKLES	375 ML	$ 198,028.80	1.37%	$ 69,310.08
7	BEER	BOTTLED	PIJIU	375 ML	$ 107,000.00	0.74%	$ 37,450.00
8	BEER	BOTTLED	KE TAO	375 ML	$ 1,346,034.10	9.33%	$ 471,111.94
9	BEER	BOTTLED	FASS	750 ML	$ 73,516.50	0.51%	$ 25,730.78
10	BEER	BOTTLED	DURST	750 ML	$ 130,020.60	0.90%	$ 45,507.21
11	BEER	BOTTLED	WEIZEN	750 ML	$ 91,026.00	0.63%	$ 31,859.10
12	BEER	BOTTLED	HELLES	750 ML	$ 126,021.60	0.87%	$ 44,107.56
13	BEER	BOTTLED	DUNKLES	750 ML	$ 85,027.20	0.59%	$ 29,759.52
14	BEER	BOTTLED	PIJIU	750 ML	$ 87,032.50	0.60%	$ 30,461.38

Figure 22 - Profit Margin

% Profit

Marilyn and Colin want to know the percentage contribution to profit of each product. This is again a simple formula

- Create the range name **TProfit** for cell **G61**
- Total the Profit Margin column by using the **autosum** feature
- In cell **H2**, enter the formula **=G2/TProfit**
- **Format** this cell to 2 decimal places
- **Copy** this formula down using the fill handle

The data is now ready to be pivoted. As the name implies this feature will look at the same data, in a different way, and help Marilyn and Colin to make sound business decisions.

Creating Pivot Tables

Highlight the data in the Pivot data worksheet, including the headings **(A1:H60).** Note: Leave out the totals figure.

- Click on the **Insert** tab, **Pivot Tables** will be the first section, select **Pivot Table**. A dialog box should appear confirming the selected data to be analysed (see Figure 23). Accept the defaults. **OK**

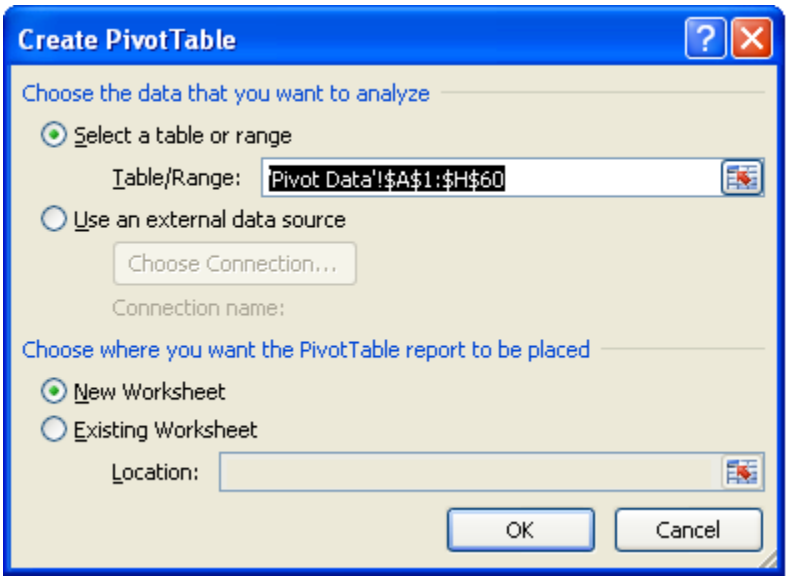


Figure 23 - Pivot tables

Designing Pivot Tables

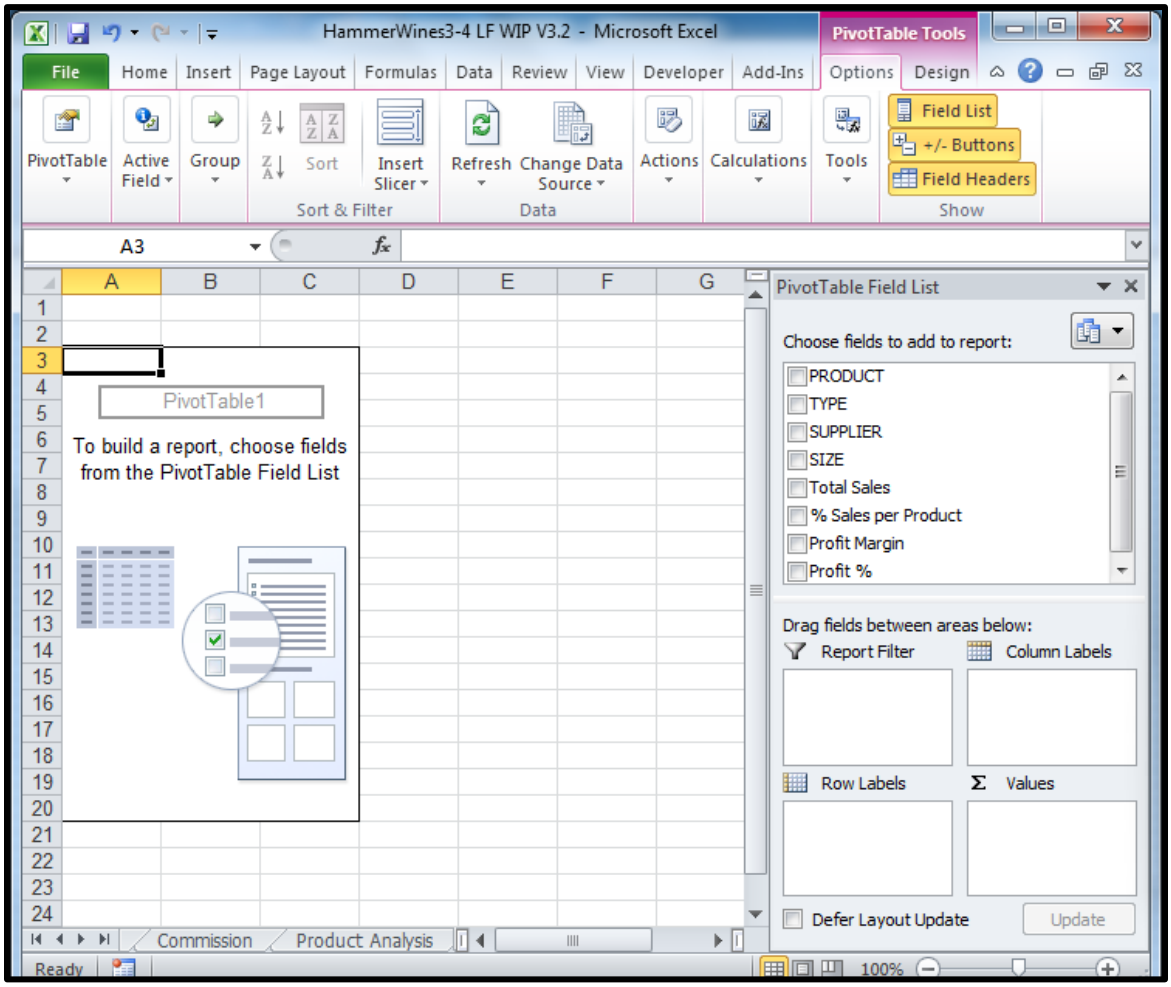


Figure 24 - Pivot Table Design

Using the **Pivot table Field List** shown on the right hand side of the screen in Figure 24

- Drag the fields into the following locations
- Product, Supplier to **Row Labels**
- Total Sales, % Sales per Product, Profit Margin, Profit % to **Values**

The table should be starting to take shape. Format it appropriately. It should resemble Figure 25 below.

- Give this worksheet a name, Pivot

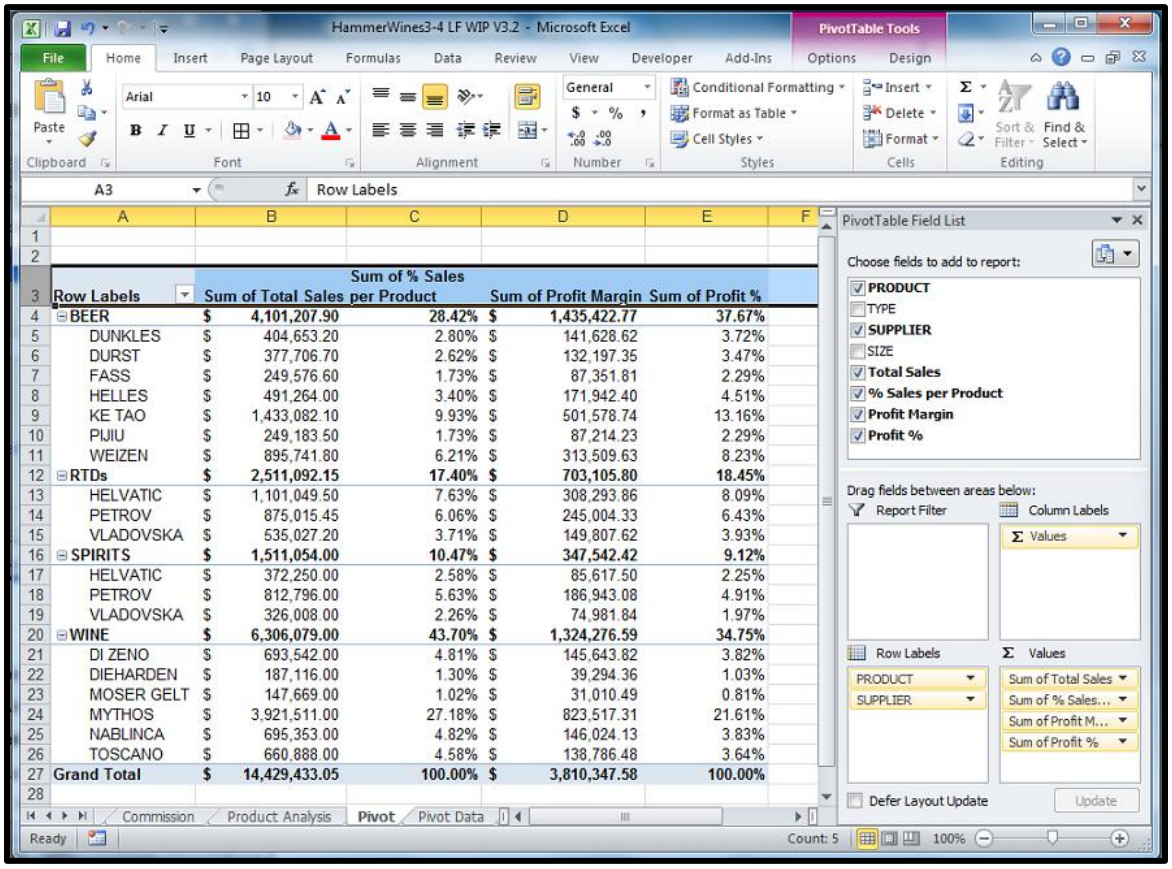


Figure 25 - Pivot Table Results

- **Save** you work as **hammerwines_3-4.xlsm**

Feel free to play around and experiment with the Pivot table changing the look and feel and more importantly the type of information produced as a result.

Activity 5

More Charts

Marilyn and Colin would like a chart showing a comparison of % Sales and % Profit. To do this, the pivot table will need to be adjusted.

- In the **Values** area, show only the % Sales per product and the % Profit. Drag the other fields back from the Values area to the Pivot Table Field List OR click on the Field box to deselect
- In the **Row Labels**, show only the products. Drag the SUPPLIER field back from the Row Labels area to the Pivot Table Field List OR click on the Field box to deselect. See Figure 26 for the result.
- Reformat cells if necessary

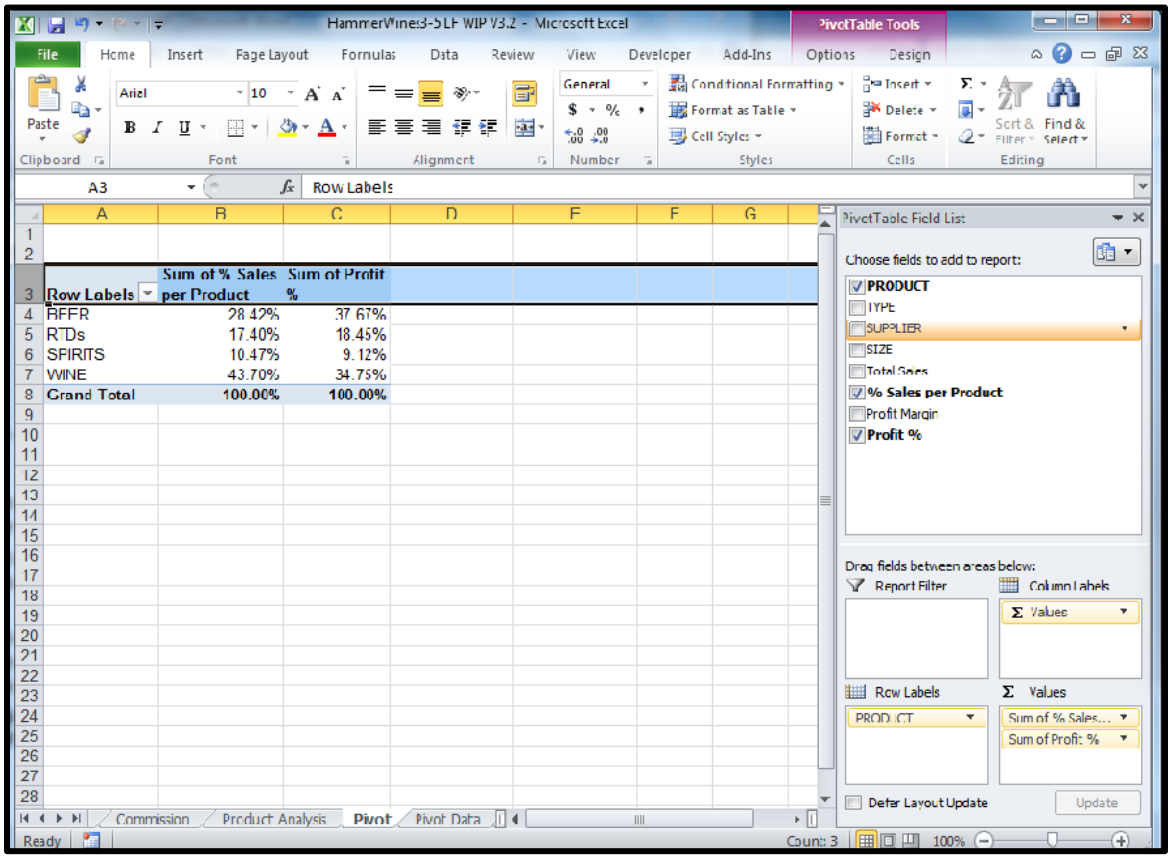


Figure 26 - New layout of Pivot table

- Highlight the table from **A4:C7**
- Select **Insert** tab, **Charts** section, **Column** – make a selection as to the type of column chart you desire

- In the **Chart Layouts** section, use the drop down arrow (see Figure 27 below) to select a layout that includes both a chart title and legend

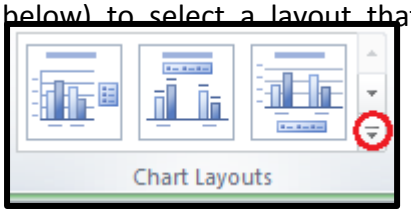


Figure 27 - To show all Chart Layouts click here

- Move the chart so it does not hide the original data
- Change the **Chart title** to: Comparative Analysis - % Sales:% Profit contribution

The chart can be altered at any stage by right clicking on any section of the chart.

- Right click on the Values button and select Hide All Field Buttons on Chart

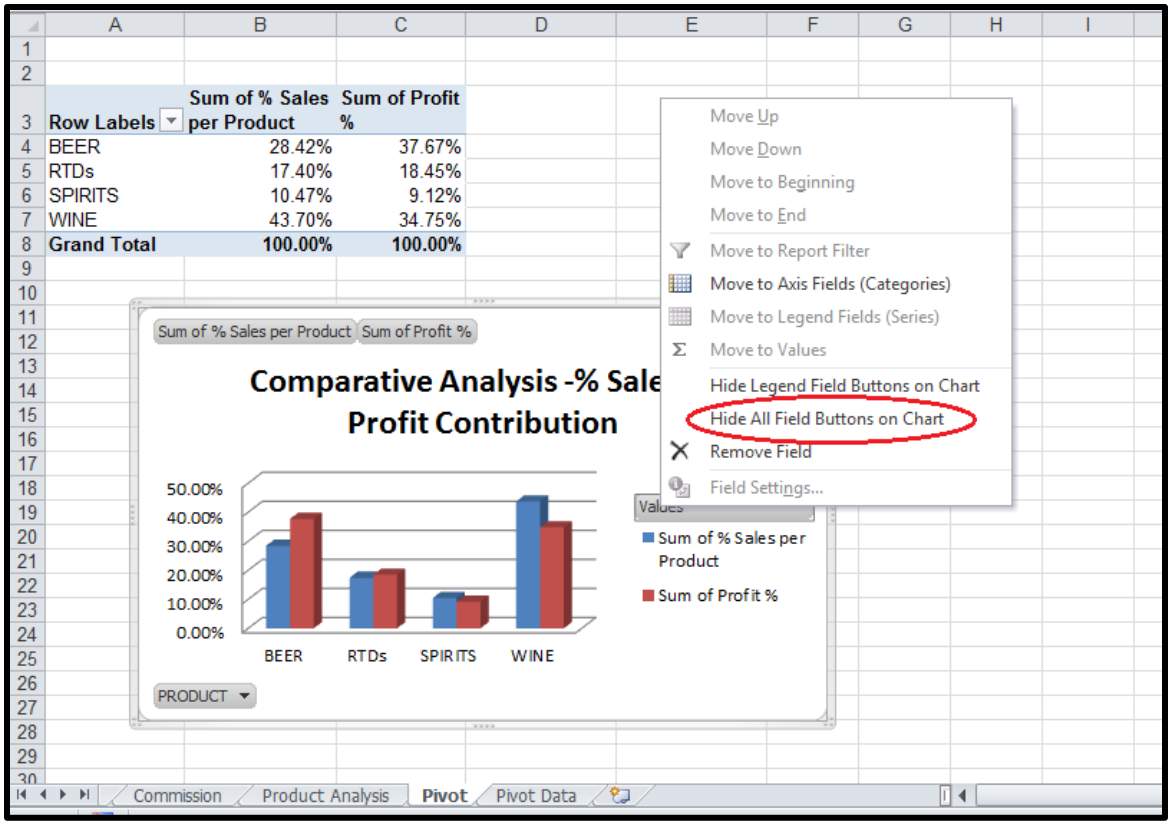


Figure 28 - Format Chart

- Finally copy the **Return to Main Menu** button to this worksheet.

You should end up with something like Figure 29.

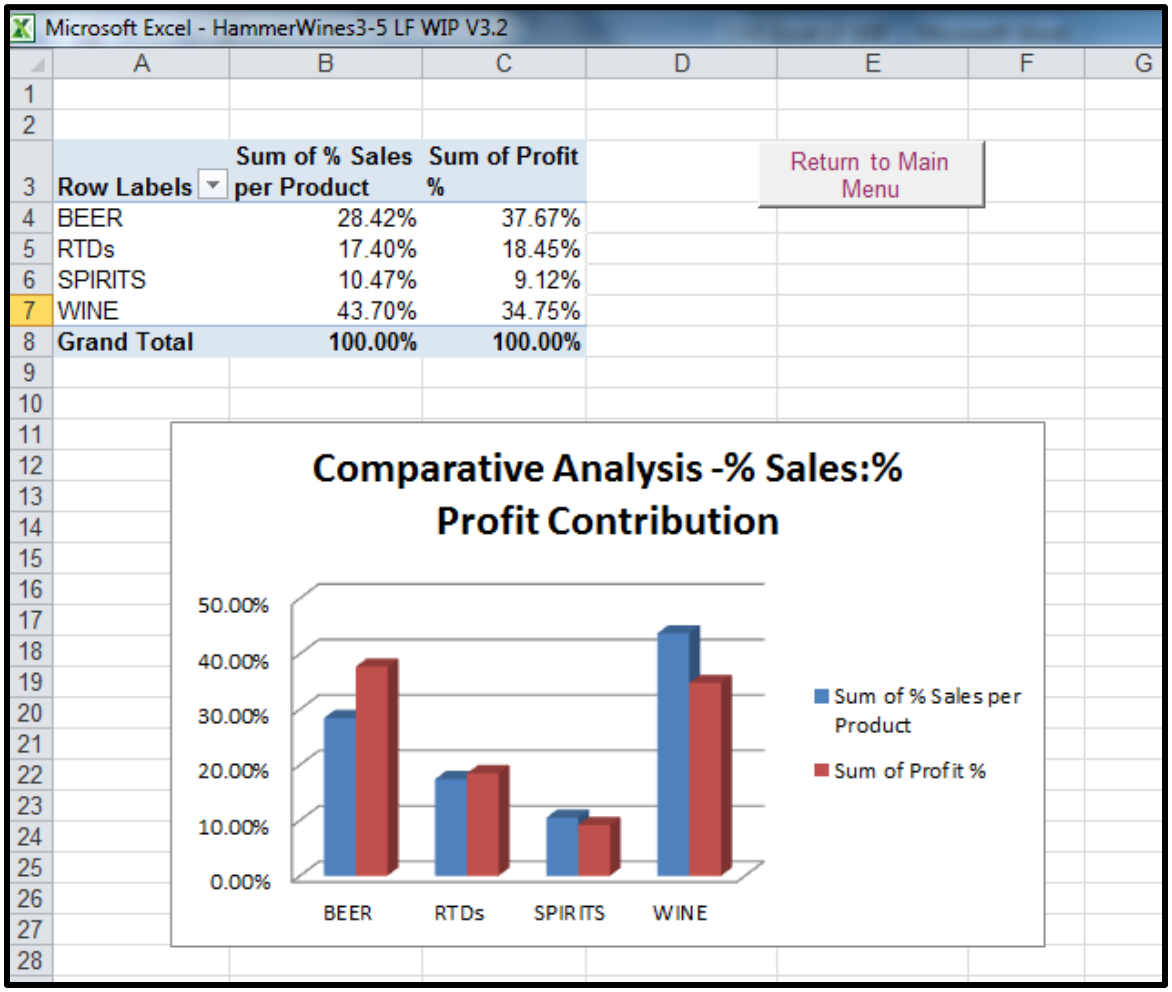


Figure 29 - Final Chart Layout

- **Save** as **hammerwines_xxx3-5.xlsm**

What information does the Pivot table provide? It tells Marilyn and Colin that whilst Beer sales are worth 28%, the profit we make from it is nearly 38% of their business. It also makes Marilyn and Colin aware that whilst wine sales represent 43% of the market. The profit attributed to those sales represents only 35% of total profit.

What other conclusions can be made from analysing this table? How might Marilyn and Colin use this information to improve the profitability of their business/

Activity 6

In the next example, we are going to use a nested IF to help Marilyn and Colin decide if the Pareto's principle applies.

Nested IF

A nested IF is an IF statement within another IF statement. IF statements can be used to decide a course of action based on a logic test. The course of action can lead to a series of calculations or it could be as simple as a message.

- Click on **Product Analysis** worksheet, cell **H12**
- Find the **IF** function by clicking on the **fx** button in the formula bar

Argument	Explanation	In Hammer Wines
Logical_test	A test than can be answered true or false	G13>0.80
Value_IF_true	What happens if the test is true	"80/20 rule applies"
Value_IF_false	What happens if the test is false	Second IF

Another logic test is now required to determine if the bottom 20% of products are less than 3% of sales, click on the IF in the name box area, adjacent to the formula bar. This should open a new IF dialog box, but look what happens to the formula bar.

Argument	Explanation	In Hammer Wines
Logical_test	A test than can be answered true or false	G49<0.03
Value_IF_true	What happens if the test is true	"product mix rationalization required"
Value_IF_false	What happens if the test is false	"Sales team needs to increase distribution and sales of other products"

The formula should read:

- **=IF(G13>0.8,"80/20 rule applies",IF(G49<0.03,"Product mix rationalization required","Sales team needs to increase distribution and sales of other products"))**

Now create a macro to run this at the click of a button. This is the same process as you performed with the Sort button (see Activity 3).

- **Save** as **hammerwines_xxxx3-6.xlsm**

Activity 7

Add two more buttons (and associated macros) to the Main Menu worksheet to display the Sales Reps Performance to Target chart and the Pivot column chart (see Figure 30). These only need to take the user back to the appropriate worksheet.

- **Developer**, **Record Macro**, give the macro a name **DisplaySChart**
- Click on the Sales Analysis worksheet, select the **chart**
- Return to the **Developer** tab and **Stop recording**
- Draw the button, assign the macro
- Repeat these step for the Pivot column chart
- **Save** as **hammerwines_xxxx3-7.xlsm**

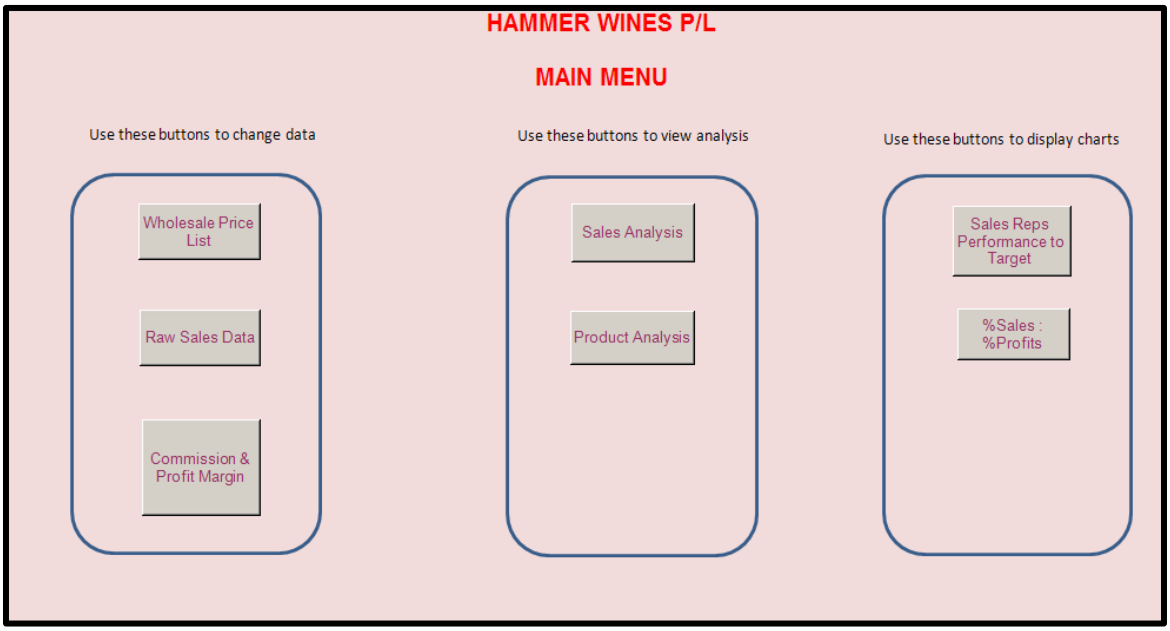


Figure 30 - Completed Main Menu

Congratulations!!

You have created a user-friendly analysis system for Hammer Wines P/L.

Extension Exercises

As Excel contains many functions, we cannot hope to discuss them all in such a short time. You should familiarize yourself with Excel and the way it explains how functions work.

Play around. Experiment. You will gain valuable insight into how Excel works if you are willing to experiment just a little. Most students have played Nintendo or Sony Playstation or indeed any number of computer games. How did you know how the game worked? Some would have read the little booklet that came with the game. It gives some details but not everything. Most of what you learnt about the game comes from just having a go and spending time having lots of goes. The same thing applies with Excel. Remember any change that occurs, as a result of this experimentation, does not have to be saved. Just close the file without saving changes and it will be as you found it!!

Some of the following functions may be useful.

PMT

PMT calculates the payment for a loan based on constant payments and a constant interest rate. Marilyn and Colin are thinking about borrowing funds to purchase a warehouse for $2.5m. Colin has rung a number of lending institutions the prevailing interest rate is about 6.3% pa (per annum). Colin would like to the loan to be over 10 years. What are his repayments? Remember, he intends to make repayments fortnightly.

Create a new worksheet **Loan** to create a simple spreadsheet that works out the repayments on a loan. You may need to use help or the office assistant to help understand the arguments in the formula.

Create the following table in cells **A1:B4**

loan	-$2,500,000.00
length in years	10
interest rate	6.30%
No of Payments p.a	26

Note: enter the loan amount as a negative as you are borrowing that amount.

Now insert the **PMT formulae** (see **Figure 31** below) in cell **B5**

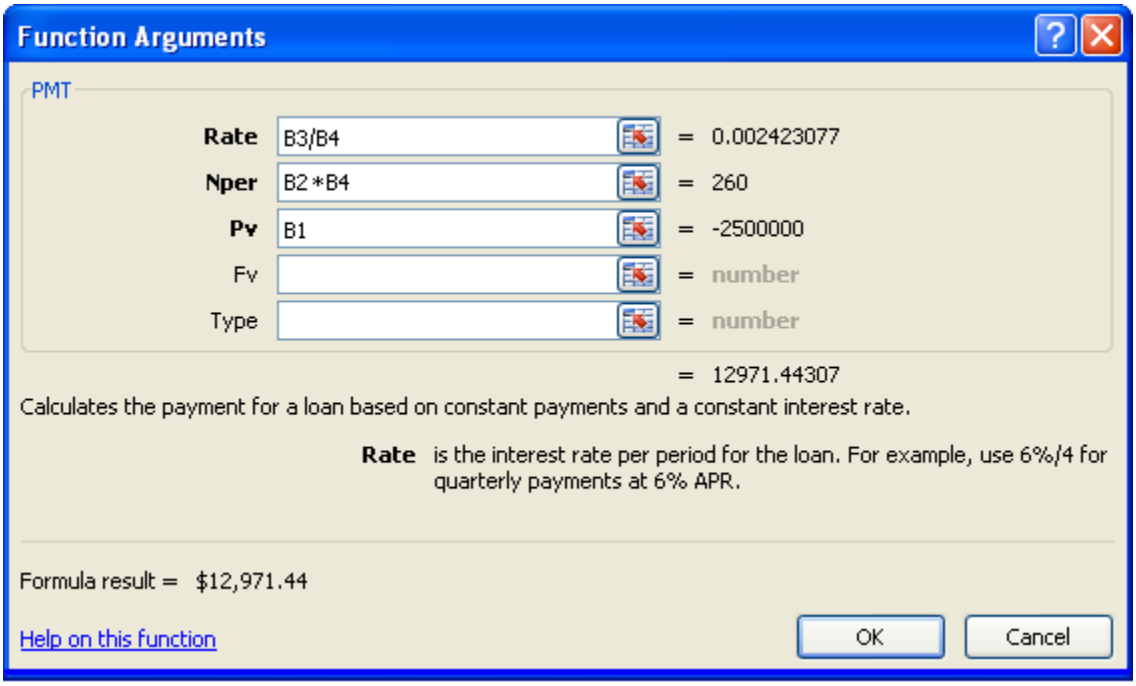


Figure 31 - PMT function

Goal Seek

Goal seek is a function that can be used to change variables given certain criteria. For example, Goal Seek can also be used to see the effect of extending the length of the loan. Marilyn and Colin can only afford to repay $10,000 per period. Goal seek links to the original PMT function, use this table when selecting the variables.

- Open the loan worksheet
- Go to **Data** tab, **Data Tools** section, **What if Analysis, Goal Seek**
- Examine Figure 32 below, there are 3 arguments:

Argument	**Explanation**	**In Hammer Wines**
Set Cell	This is the cell that contains the variable	In the case, the result of the PMT
To Value	This is the value that has been stated for point 1	Marilyn and Colin can only afford $10000
By Changing	This is the cell that is flexible	The amount they can borrow

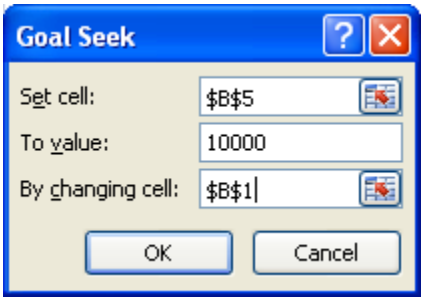


Figure 32 - Goal Seek dialog box

- Changes will appear in the original payment table
- Click on **OK** to accept the changes or cancel to return to the previous data.

The important fact is that all the data must be on the one sheet. Goal seek can only work on one worksheet, you cannot refer to cell on other sheets.

Max

Max returns the largest value in a set of values. Use the help feature to investigate how the **MAX** function can be used to work out the solution to the following:

Branch	Sales	Best Performer
Highpoint	12560	
Geelong	12890	
Corio	14589	
Broadmeadows	21560	
Dandenong	15065	
Highton	13895	

HINT: You will need 2 functions in your formula **IF** and **Max**

Skills Developed

You now know how to:

- Use the Paste link feature to create a dynamic link between cells
- Use the autofill feature to copy cells down or across the page
- Create a macro, assign a macro to a command button, view the associated macro code
- Copy macros
- Create a pivot table, modify a pivot table
- Use a pivot table as the basis of a chart
- Use the following features in Excel: nested IF, PMT, Goal seek, MAX