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| Year | 1st Year B.Sc |
| Paper no | 03 |
| Paper Name | Graphical Representation of Data |
| Topic no | 14 & 16 |
| Topic name | Polar/Radar/Rose/Vector Charts/ Combo Charts |
| SME | Susha Pramod |
| ID | Susha Pramod |

E-Learning Module on Polar/Radar/Rose/Vector Charts, Combo Charts

Learning Objectives

At the end of this session, you will be able to:

- Explain Polar Charts
- List the advantages and disadvantages of Polar Chart. Show different styles of Polar Chart
- Explain Radar Chart
- List the advantages, uses and show different style of Radar Chart
- Explain the steps to create Radar Chart

- Explain Rose Chart
- Explain Vector Chart
- List the advantages and disadvantages of Vector Chart
- Explain Combo / Combination Charts with the help of example
- Explain how to create Combination Charts in Microsoft excel
- Explain how to save a chart as a template

Polar Charts

The Polar chart is a circular graph on which data points are displayed using the angle, and the distance from the centre point. The X axis is located on the boundaries of the circle and the Y axis connects the centre of the circle with the X axis.

Polar plots are used to display a magnitude value in a specific direction. The polar plots have two variants:



a full 360-degree plot a half 180-degree plot



Polar Charts – Advantages

- Polar charts are most commonly used to graph polar data, where each data point is determined by an angle and a distance
- Polar charts are very useful to present data that uses a natural cycle such as daily temperatures or annual rainfall
- Polar charts are also frequently used in scientific and mathematic applications

Polar Charts – Disadvantages

 Polar charts cannot be combined with any other chart type in the same chart area.



Polar Area Chart



EM Field Strength



Radar Charts

In a polar chart, the X-axis value is used to set the angle. The Y-axis value is plotted along a radius, with 0 at the center of the chart.

A slight style variation provides the "radar" or "spider" chart, which connects its tick marks with straight, rather than curved, lines yielding a spider web-like appearance. A radar chart is a graphical method of displaying multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on axes starting from the same point.

Radar Charts - Advantages

- The Radar chart is a very effective tool for comparing multiple entities based on different characteristics on a single chart
- Radar chart shows only the value plot, which helps the end user in easily contrasting a large number of entities
- It can add anchors to emphasize data points in the value plot. The anchors can be configured in terms of shape, size, color and transparency

Radar Charts - Uses

- Sourcing and Purchasing
- Human Resource Management
- Portfolio Management

Styles of Plotting Radar Charts

Line Radar Chart



Avg Temp. Bermuda
 Apr
 Avg Temp. Sydney
 Avg Temp. Memphis

Area Radar Chart



Steps to Create Radar Charts

| | Average Temp Bermuda | Average Temp Sydney | Average Temp Memphis |
|-----|-------------------------|------------------------|-------------------------|
| Jan | 65 | 73 | 49 |
| Feb | 64 | 73 | 54 |
| Mar | 64 | 70 | 63 |
| Apr | 67 | 66 | 72 |
| May | 72 | 59 | 80 |
| Jun | 77 | 55 | 89 |
| Jul | 81 | 54 | 92 |
| Aug | 80 | 57 | 91 |
| Sep | 79 | 61 | 85 |
| Oct | 75 | 64 | 75 |
| Nov | 70 | 68 | 62 |
| Dec | 66 | 70 | 52 |

Once the data has been collected, open Excel and enter the data

2. Select the data and go to insert tab. On the charts group click other charts option.

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3. Under other charts option click Radar and select Rader with Markers then click ok

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4. Output will be the Radar chart.



Rose Chart

A Rose Chart is a circular graph, similar to the Radar chart, and used primarily as a data comparison tool.

Unlike most other chart types, the Rose chart does not plot an X value. Rose Chart X values are ignored for all Rose chart series.

However, even though X values are ignored, the X axis is still used for the labels around the chart, as well as spacing's between the label and the chart itself. Rose chart is a circular graph, built of "pie slices" where Y value defines radius of the slice.



The shape of the Rose chart area (the white area in the chart images) is determined by the custom attribute. You can set the value of this custom attribute to Circle which is the default, or Polygon. The Polygon shape is shown as follows:



Vector Chart

Vector charts are a graphic format in which charts are presented in a more schematic manner. This chart/screen less presents information about land and other features, and water depths are presented more by color layers than by soundings. As you zoom in, the information changes.



Charts and Graphs are extremely useful in presentations, analysis and reports. Information can be easily presented and analyzed when data is plotted into charts and graphs.

This chart and graph collection is in vector format and contain many charts types like:

- Pie chart
- Bar Chart
- Circle Chart
- Line Chart etc.



Vector Charts - Advantages

- Less electronic storage room is required
- Zooming in and out makes movement unnoticeable and seamless
- Vector charts have a "clean" look
- Programs and apps using vector charts often build in additional features or layers

Vector Charts – Disadvantages

- Less information is presented
- Some specific information does not appear on the screen
- It can be confusing

 A learning curve is needed to use a vector hart accurately at the appropriate levels of zoom

Combo Charts

A combo chart is a chart that combines two or more chart types in a single chart.

A popular example of a combo chart is a bar and line graph.



Combo chart is also known as Combination charts.

The combination chart displays the data using a number of bars or lines. Each represents a particular category.

A combination of bars and lines in the same visualization can be useful when comparing values in different categories, since the combination gives a clear view of which category is higher or lower.

Series:

Series by in the combination chart is the way to divide the data into slices.

The slices in the combination chart are called series and can be defined as bars or lines as well as being coloured separately.

That is, each series in the combination chart will be represented by a line or a set of bars in the visualization.

With combination charts, you can:

- Add a line to an existing line, vertical column, grouped vertical column, or stacked vertical column chart.
- Add a cumulative line to an existing line cumulative chart.
- Add up to three columns to a vertical column chart.
- Add up to three bars to a horizontal bar chart.

Types of Combination Chart

Vertical Combination Chart Horizontal Combination Chart

Vertical Combination Chart:

Vertical combination charts map their presentation onto a rectangular area using a horizontal and vertical axis.



In a vertical combination chart, a column of data (a category) is a series of data points or columns along the horizontal axis (or x-axis).

The height of the point or column along the vertical axis (or y-axis) represents the value of the category item.

Horizontal Combination Chart:

Horizontal combination charts map their presentation onto a rectangular area using a horizontal and vertical axis.



In a horizontal combination chart, a column of data (a category) is a series of data points or columns along the vertical axis (or y-axis).

The length of the point or column along the horizontal axis (or x-axis) represents the value of the category item.

Example of Column-Line Combination Chart



Multiple Scales



Area Combination Chart



Bar-Line Combination Chart



Pie-Area-Column-Line-XY Combination Chart



You can create your own combination charts with a wider variety of combinations, by applying the Chart Type menu command to selected series in your chart, not on the chart as a whole.



On selecting this command, it works in either of two ways:

If a series is selected in the chart, the chart type that you choose applies only to the selected series.

Or

If anything other than a series is selected, the chart type that you choose applies to all series in the chart.

Example

1. First step is to create a column chart

 Select the second chart series and choose Chart - Chart Type, then select line chart type for that series

 Select the third series and repeat this command, but choose an area chart type. The result is a combination chart that shows three different chart types.

Steps to Create a Combination Chart

 First step is to generate a data. You can also use your own data. Here we are using a data of "Recent Home Sales". Enter or copy the data into a blank excel worksheet.

| | Month | Home Sold | Average Price |
|---|-------|-----------|------------------|
| 1 | Jan | 280 | 410 |
| 2 | Feb | 150 | 450 |
| 3 | Mar | 220 | 430 |
| 4 | Apr | 275 | 425 |
| 5 | May | 155 | 410 |
| 6 | Jun | 255 | 400 |

2. Select the data that you wanted to plot in the combination chart.

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| 1 | А | В | С | | | | | | | | | |
| 2 | Month | Home Sold | Average Price | | | | | | | | | |
| 3 | Jan | 280 | 410 | | | | | | | | | |
| 4 | Feb | 150 | 450 | | | | | | | | | |
| 5 | Mar | 220 | 430 | | | | | | | | | |
| 6 | Apr | 275 | 425 | | | | | | | | | |
| 7 | May | 155 | 410 | | | | | | | | | |
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3. Click on the insert tab. In the charts group, click Line.

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4. Under 2-D Line, click Line with Makers.

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| 8 | Jun | 255 | 400 | | Useful when there | are only a few | | | | | |
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5. Following line graph will display.



6. This chart uses two sets of data one is home sold and the other is average prices.



7. To plot column on the secondary axis:

1) Select any one of the marker line (here we have selected blue line) from the graph. Go to insert tab and click Column.

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2) Under 2-D Column, click Clustered Column.

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| 3 | Jan | 280 | 410 | | Comp | are value | s across | catego | ories | | | | | | | | |
| 4 | Feb | 150 | 450 | A I | by usi | ng vertica | al rectan | igles. | | | | | | | | | |
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On clicking the clustered column, you will get the following column as well as line combination chart.



You can also change the colour or style of the graph by selecting the graph and then clicking on the Design tab. You can select any one of the style.



 To change the size of the chart, on the Format tab, in the Size group, select the shape size that you want in the Shape Height and Shape Width boxes, and then press Enter.



10. To add, format, and position a chart title on the chart, click the chart area, and then do the following:



11. To move the legend, click the legend to select it. On the Layout tab, in the Labels group, click Legend, and then click the position that you want:



12. To add vertical axis titles you have to do the following:

1) On the Layout tab, in the Labels group, click Axis Titles:

- Click Primary Vertical Axis Title, and then click the title option that you want
- Click Secondary Vertical Axis Title, and then click the title option that you want

2) Click each axis title, and then type the text that you want for that title. For our combination chart, we typed Number of homes for the primary vertical axis title and Average price per home in thousands for the secondary axis title.

 To change the font size of the axis titles, click each axis title, and then click the size that you want in the Font Size box.



Recent Home Sales



Saving the Chart as a Template

1. Click the chart that you want to save as a template.

2. On the Design tab, in the Type group, click Save as Template.

3. In the File name box, type a name for the template.

Example of Line, Column and Area Combination Charts

Excel offers a very small number of combination charts from the Custom Charts tab of the Chart Wizard: Column-Area and a few Line-Column varieties.

However these are limited, with only a few series permitted, and you have to arrange the series in the right order on your worksheet.

Sample data

| | | Series A | Series B | Series C |
|---|---------|----------|----------|----------|
| 1 | Alpha | 9 | 7 | 3 |
| 2 | Beta | 4 | 7 | 6 |
| 3 | Gamma | 6 | 4 | 7 |
| 4 | Delta | 5 | 7 | 4 |
| 5 | Epsilon | 9 | 6 | 4 |

Line Chart



Line – Column Chart



Line – Column - Area Chart

