

POWERPOINT

Adding Charts to a Presentation

A cornerstone of the Microsoft Office suite of programs is the seamless way programs join, or integrate, with one another. In this chapter, you will learn how to place an Excel workbook into a PowerPoint presentation to harness the strength of Excel features in PowerPoint. You'll also use SmartArt to add a beautifully arranged organization chart that is clear, concise, and stylish.

LEARNING OBJECTIVES

- Insert charts to display numerical data
- Link to and use data in an Excel worksheet to create a chart
- Format charts and change chart types
- Repair broken links to external documents
- Create and reorder SmartArt diagrams

CHAPTER TIMING

- Concepts/Develop Your Skills: 3 hrs 00 mins
- Self-Assessment: 15 mins
- Apply Your Skills: 1 hr 00 mins
- Total: 4 hrs 15 mins





PROJECT: SECURING A LOAN

As an employee of Green Clean, a janitorial product supplier and cleaning service contractor, you schedule a meeting with the loan committee at Twilight Hollow Bank in hopes of securing a loan to expand the business. You're concerned that you'll have to spend hours re-creating your best Excel workbook of financial projections until you remember you can simply link the Excel file to the PowerPoint presentation!

Inserting Charts

PowerPoint is an intensely visual application. Although it's often the case that you will be creating presentations that represent concepts or goals, you may also present financial statistics or numerical data. PowerPoint allows you to create charts based on numerical data in a spreadsheet. PowerPoint and Excel will work together to provide you with advanced options to design the chart layout and edit chart data.

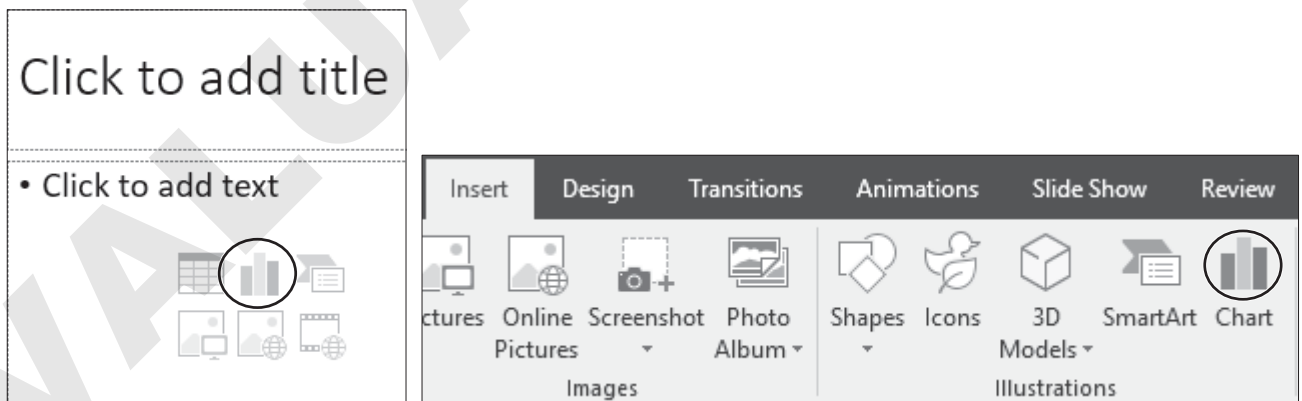
Certain chart types are best-suited to display specific types of data.

COMMON CHART TYPES		
Chart Type	Icon	Best Used to...
Column		Show one-time (nonadjacent) results, such as those of a survey, depicted as vertical bars
Bar		Show the same type of results as a column chart, but with horizontal bars
Line		Show continual change over time, such as profit or loss over several months
Pie		Compare portion(s) to a whole, such as hours spent on various tasks in a single day

≡ Insert→Illustrations→Chart | Insert Chart  icon on slide

Embedded Charts

PowerPoint has four layouts (Title and Content, Two Content, Comparison, and Content with Caption) that make inserting new charts simple. Each of these common layouts includes an Insert Chart icon that you can click to insert a new chart. What if your slide doesn't use one of these layouts? You can always insert a chart manually from the Ribbon no matter what layout your slide uses.



You can insert a chart via the Insert Chart slide icon or from the Ribbon.

Editing Chart Data

When you create a new chart, PowerPoint launches a minimal version of Excel called Chart; there's also a button that opens the full version of Excel. This way, you can edit data in a simple interface (Chart) or directly in Excel, taking advantage of Excel's powerful tools for working

with numeric data. Don't be confused when you insert a new chart and see data already entered in the spreadsheet window. This is sample data that PowerPoint inserts to get you started. Simply replace it with your headings and numbers.

This illustration shows a chart as it appears on a PowerPoint slide:

The data is displayed in the Excel-style Chart interface.

Data can be edited with Excel.

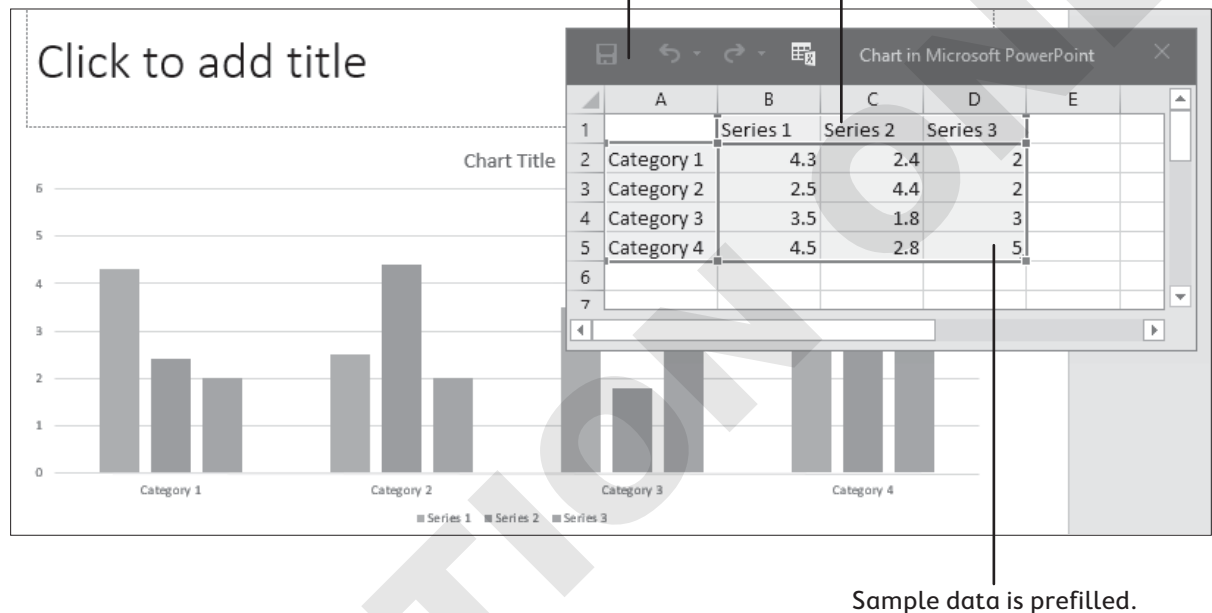


Chart Tools→Design→Data→Edit Data

Formatting Charts

After a chart has been inserted, simply click to select it. PowerPoint's Chart tools are displayed on the Ribbon as the Design and Format contextual tabs. You can use these tabs to create, modify, and format your chart without leaving the PowerPoint window.

DEVELOP YOUR SKILLS: P5-D1

In this exercise, you will create a chart within your PowerPoint presentation and revise the default datasheet with your own custom data.

Before You Begin: Download the student exercise files from the Student Resource Center (labyrinthelab.com/office19) and determine your file storage location before beginning this exercise.

NOTE! The instructions for this and other charting activities assume that Excel is installed on your computer.

1. Start PowerPoint, open **P5-D1-Chart** from your **PowerPoint Chapter 5** folder, and save it as: **P5-D1-ChartRevised**

2. Choose **slide 3, Our Expansion Plan**.

In the next few steps, you will add a new slide after this one.

3. Choose **Home**→**Slides**→**New Slide menu button** ▼→**Two Content**.

PowerPoint adds a slide with the new layout, which includes a placeholder box on the left that you will use for your text and a placeholder box on the right that you will use for your chart.

4. Type **Year-To-Date Results** as the title.

The title is automatically formatted with all capitals because that is defined by the theme.

5. Click in the placeholder box on the left side and add these bulleted text items, pressing **Enter** after each one except the last:

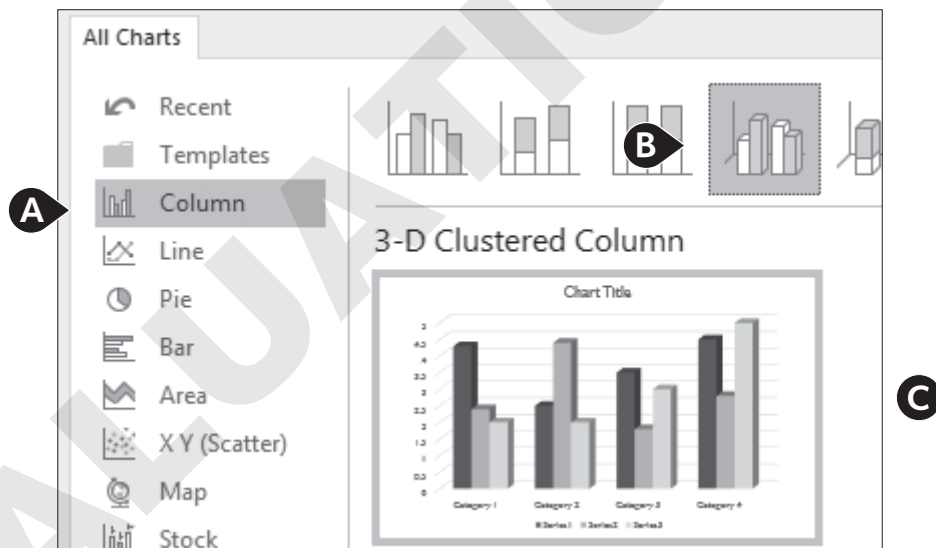
- **25% growth rate** **Enter**
- **Positive cash flow** **Enter**
- **Margins increasing**

Set Up the Chart

6. Click the **Insert Chart**  icon in the middle of the placeholder box on the right side.

The Insert Chart dialog box appears. Knowing the type of data you are charting will make it easier to select the appropriate chart type. You are charting one-time results, so a column or bar graph is appropriate.

7. Follow these steps to insert a chart from the Insert Chart dialog box:



- A Choose the **Column** category.
- B Choose the **3-D Clustered Column** chart type.
- C Click **OK**.

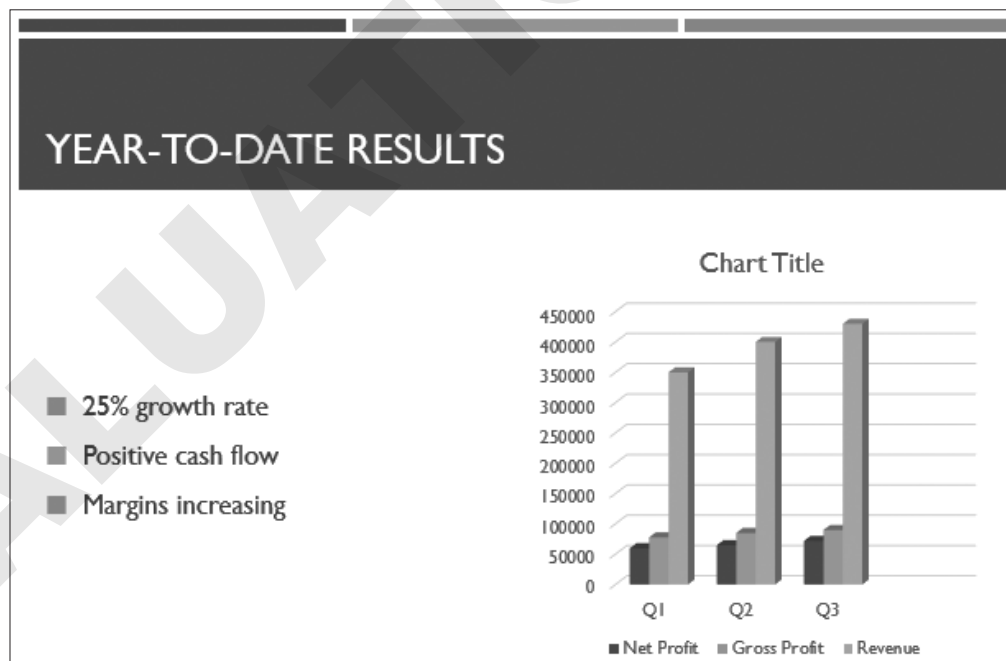
The chart opens with sample data. You will replace the sample data with your own headings and numbers.

8. Follow these steps to set up the chart datasheet:

	A	B	C	D
1		Net Profit	Gross Profit	Revenue
2	Q1	60000	78000	350000
3	Q2	65000	85000	400000
4	Q3	72000	90000	430000
5	Category 4	4.5	2.8	5

- Click in **cell A2** (with *Category 1*) and then type **Q1** and tap **Enter**.
 - Enter the remaining data. Click a cell, type the cell data, and then click another cell.
 - Point to the left of the bottom row until your mouse pointer turns into an arrow, click to select the row, and tap **Delete**.
 - Close the chart window.
9. Click a blank area of the slide to deselect the chart.

Notice how tightly squeezed the chart appears. Additionally, there is unwanted extra space to the right of the three graphs. In the next topic, you will learn how to modify a chart to aid readability and make it visually attractive.



10. Save your presentation.

NOTE! Always leave your file open at the end of an exercise unless instructed to close it.

Modifying Charts

After you insert a chart, you can make changes to it. For example, you can edit the chart data, change the color scheme, and even change to a different chart type. As you would expect, the two Chart Tools contextual tabs on the Ribbon give access to these modification commands.

TIP! If you don't see the Chart Tools contextual tabs, make sure the chart is selected (displays sizing handles).

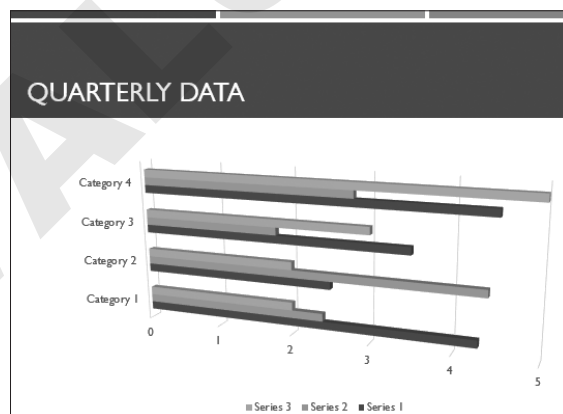
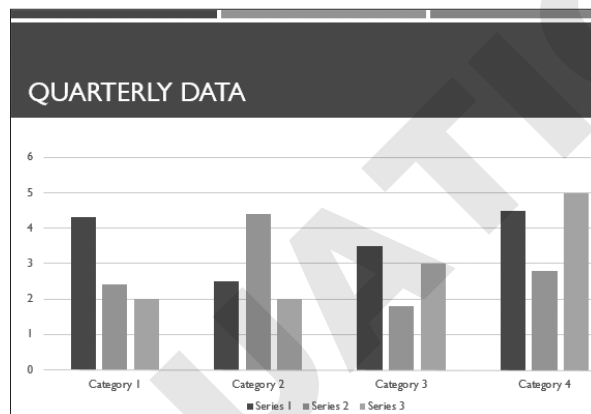
Chart Size and Color Scheme

Circular sizing handles appear along the chart's border and may be used to drag the chart to the desired size. These handles work just as they do on pictures and other figures on slides. You can size the chart by dragging the sizing handles and position the chart by dragging it to a different location. You can also choose a different layout for the chart from the Design tab under Chart Tools.

☰ Chart Tools→Design→Quick Layout gallery

Changing the Chart Type

You may want to change the chart type to better display the data. For example, you might want to switch from a normal bar chart to a 3-D bar chart. Or you may want to use a stacked bar chart style if space is limited on the slide. Additionally, you can change the chart's layout and reposition the chart's text components around the chart graphic.

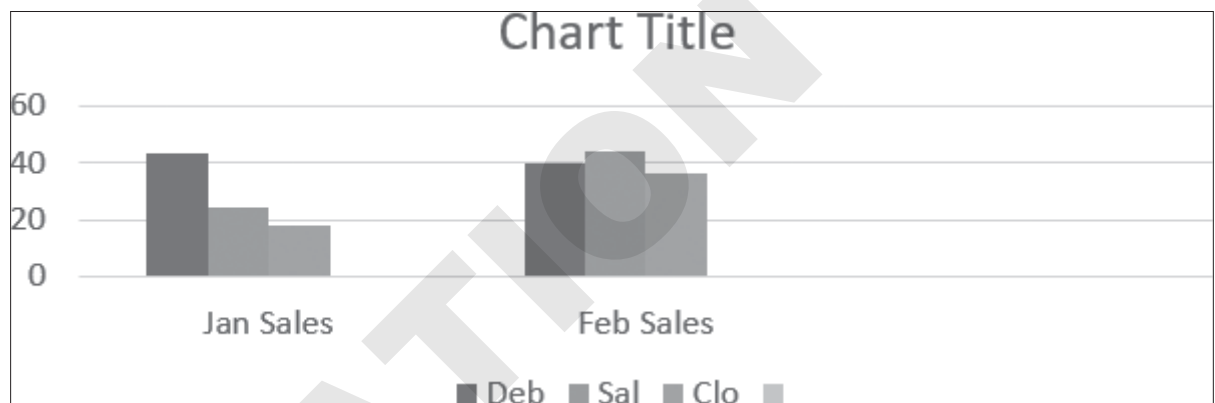
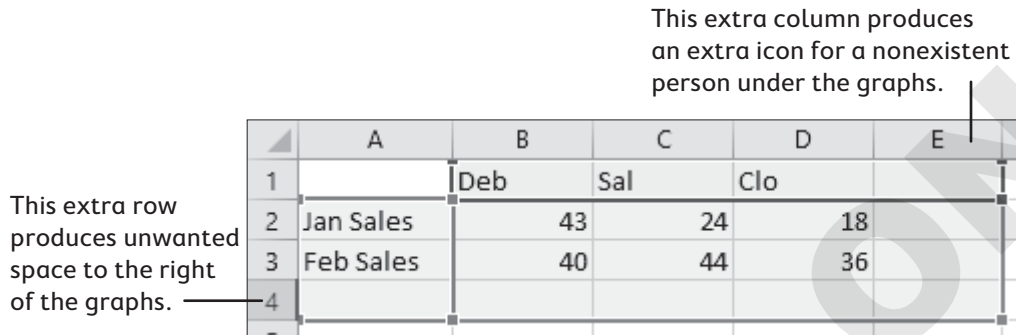


The same chart data displayed as a clustered column (top) and as a 3-D clustered bar (bottom)

☰ Chart Tools→Design→Type→Change Chart Type

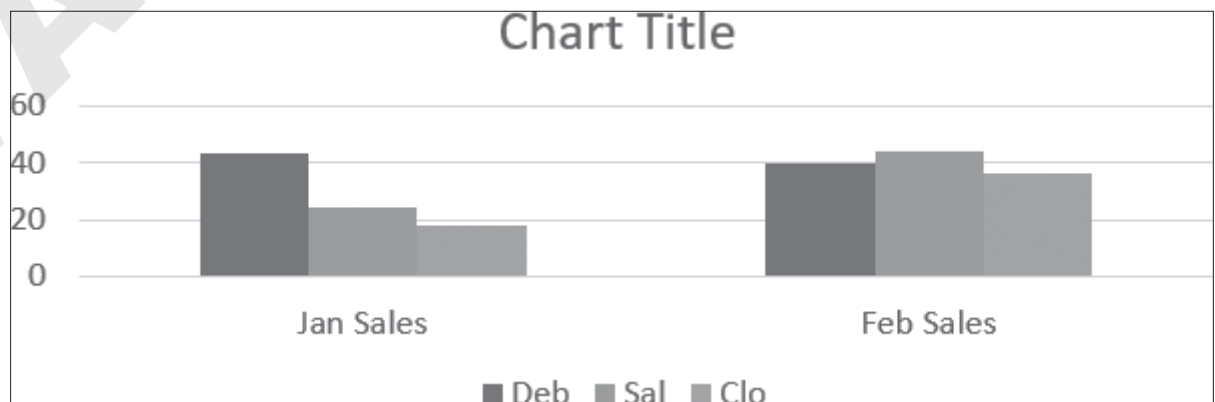
Unwanted Space

When editing chart data, be sure to exclude empty rows and columns from the data window. If you leave empty rows or columns selected, unwanted space or elements are added to your chart. Depending on the chart type, empty rows and columns may be automatically deselected, or you may have to manually exclude them. Different chart types show the unwanted space and elements in different ways. The following figures show how a bar graph deals with it.



A data window without extra rows or cells selected creates a clean chart.

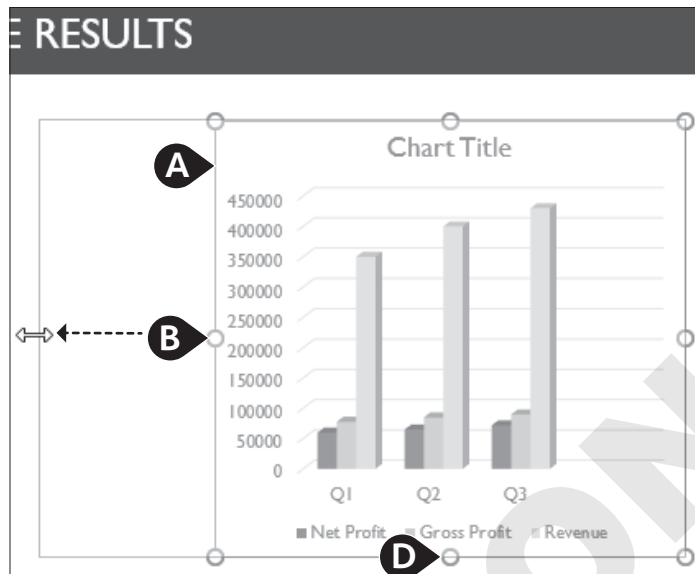
	A	B	C	D
1		Deb	Sal	Clo
2	Jan Sales	43	24	18
3	Feb Sales	40	44	36



DEVELOP YOUR SKILLS: P5-D2


In this exercise, you will modify the chart slide by adjusting its size and editing the chart data.

1. Save your file as: **P5-D2-ChartRevised**
2. Follow these steps to resize the chart:



- A If necessary, click anywhere in the chart to display its border.
- B Point to the left-center sizing handle until the mouse pointer becomes a double-arrow and then drag left so the chart's left edge is just to the left of the *R* in *Results*.
- C Use the same method to drag the right border until it snaps to the right edge of the slide.
- D Use the same method to snap the bottom border to the bottom edge of the slide.

You have resized the chart but have maintained some breathing room (white space) between the left border of the chart and the bulleted text. You have also maintained some white space between the right edge of the chart and the slide's right edge.

3. Make sure the chart is still selected and the Chart Tools contextual tabs are visible.
4. Choose **Chart Tools**→**Design**→**Data**→**Edit Data** .

This is an embedded chart. You can always edit the data in an embedded chart by selecting this command.

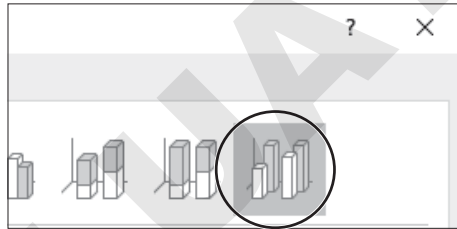
5. Follow these steps to edit the chart:

	A	B	C	D
1		Net Profit	Gross Profit	Revenue
2	Q1	160000	178000	350000
3	Q2	165000	185000	400000
4	Q3	172000	190000	430000
5				
6				

- Ⓐ Click in **cell B2** and then type **160000** and tap **Enter**.
 - Ⓑ Click the remaining numerical cells in **columns B–C** and increase them all by 100,000, tapping **Enter** after each change.
- The chart on the PowerPoint slide is updated every time you tap **Enter**.*
- Ⓒ Point to the bottom square handle of the data border until the mouse pointer becomes a diagonal arrow and then drag up one row to remove the empty row 5 from the data. If the borders don't display, simply point to and drag from the lower-left corner of cell B5.
 - Ⓓ Close the chart window.

Now you will change the chart type to a more visually interesting style.

6. Select the chart, if necessary, to display the Chart Tools contextual tab and then choose **Chart Tools→Design→Type→Change Chart Type**.
7. Double-click the **3-D Column** icon.



The chart type changes. However, the bars in the graph are too congested, and the text is difficult to read.

8. Choose **Chart Tools→Design→Chart Layouts→Quick Layout menu button ▼→Layout 3**.

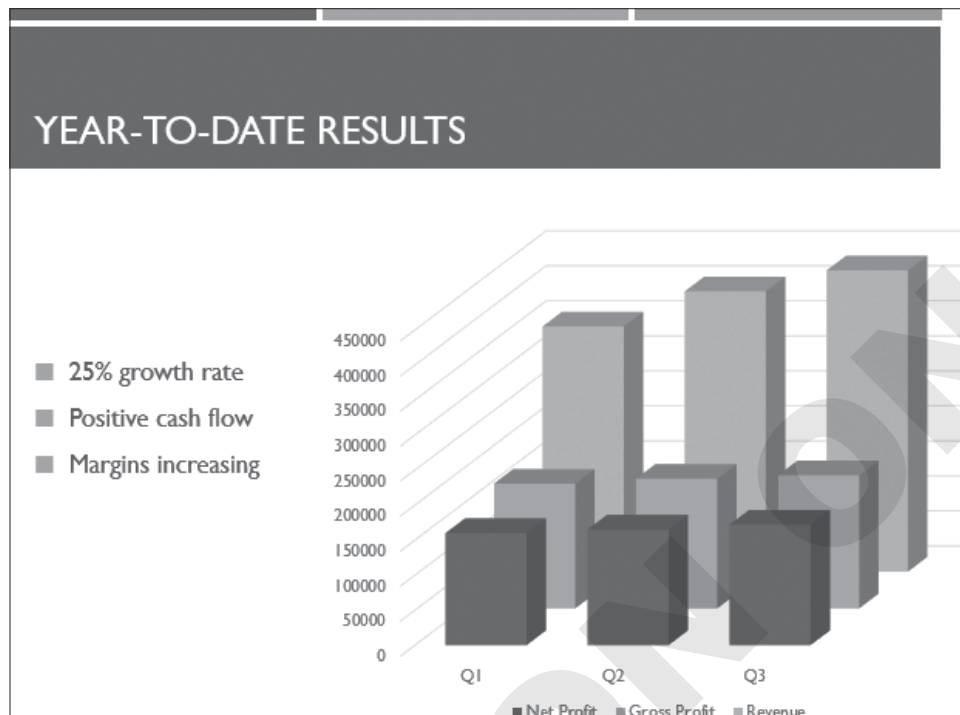
PowerPoint rearranges the slide layout to remove the text on the right side of the chart. The slide itself has a title, so you can delete the additional title in the chart.

9. Click once on the **Chart Title** placeholder so it displays handles and tap **Delete**.



The chart title disappears, and the chart gets a little bigger.

10. Click a blank area of the slide to deselect the chart.

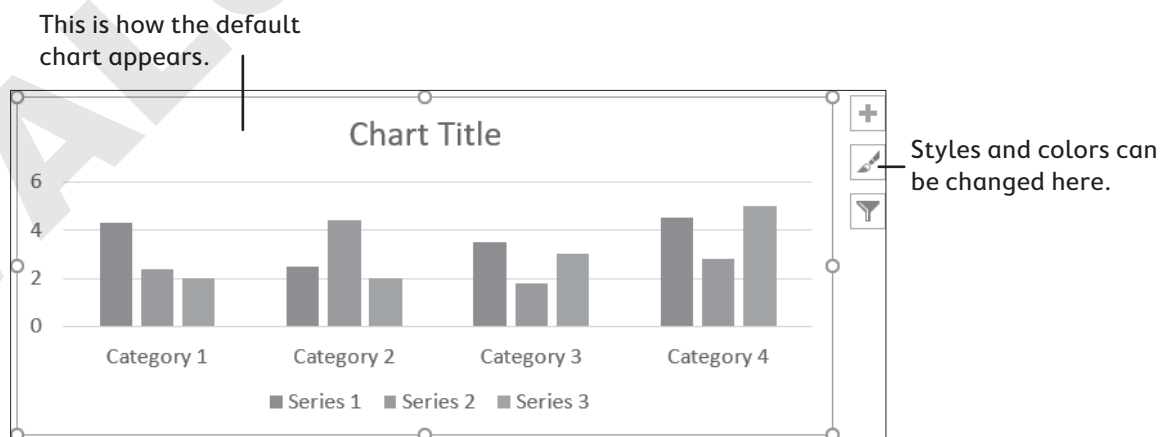


11. Save your presentation.

Changing Chart Style and Color Scheme

You can format charts with predesigned styles that alter several chart characteristics, including text used as labels, chart color fills, and effects. Additionally, you can change the colors used in a chart to make it stand out from the rest of the slide or just make it easier to see from a distance.

While these changes can be made from the Ribbon, PowerPoint also displays three small buttons to the right of a selected chart, allowing you to quickly preview and apply changes to chart elements, style, and even the data being displayed.



This is the same chart after the styles and colors have been changed.

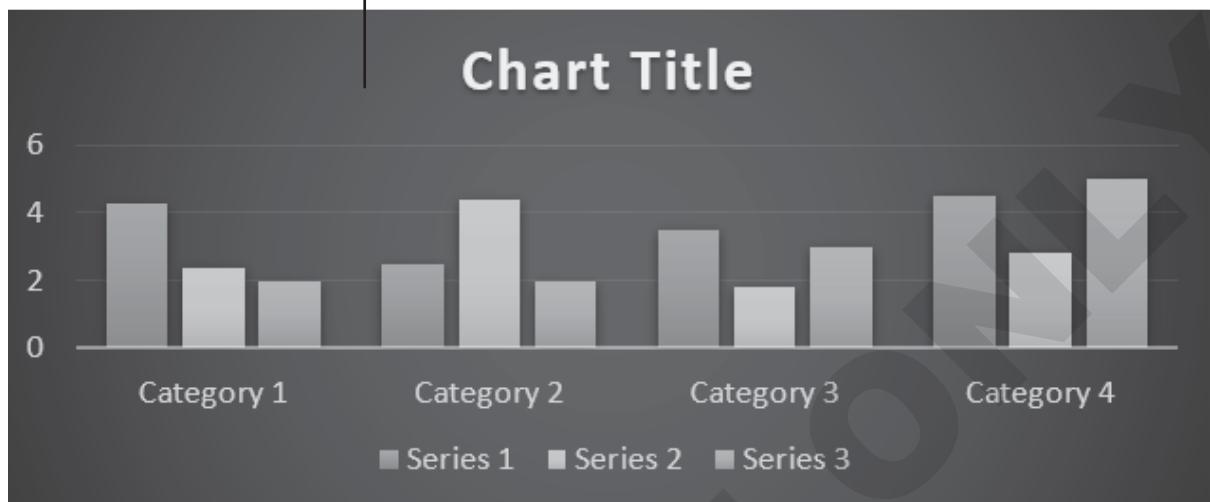


CHART BUTTONS		
Button Name	Icon	What It Does
Chart Elements		Show or hide chart title, axis labels, gridlines, and other elements
Chart Styles		Change a chart style or color scheme
Chart Filters		Filter chart data to display only desired data

≡ Chart Tools→Design→Chart Layouts→Add Chart Element

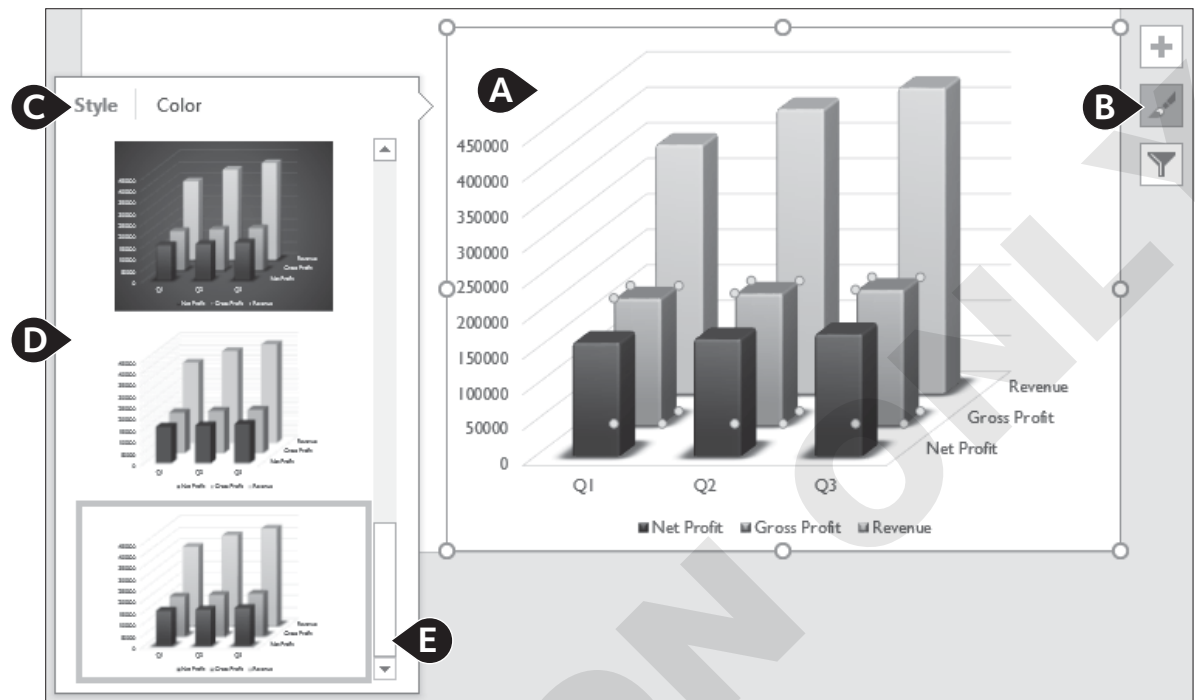
≡ Chart Tools→Design→Chart Styles

DEVELOP YOUR SKILLS: P5-D3

In this exercise, you will modify the chart elements, style, and color scheme.

1. Save your file as: **P5-D3-ChartRevised**

2. Follow these steps to change the chart's style:



A Select the chart, if necessary, to display the chart buttons.

B Click the **Chart Styles** button.

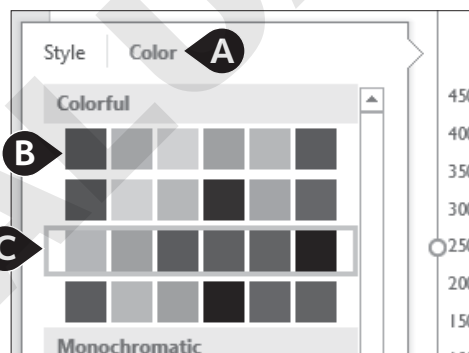
C Click **Style**.

D Point to a few styles to see a preview on the slide.

E Scroll to the bottom and click **Style 11**.

The new style added back text to the right of the chart. You will delete it later in this activity.

3. Follow these steps to change the chart's color scheme:

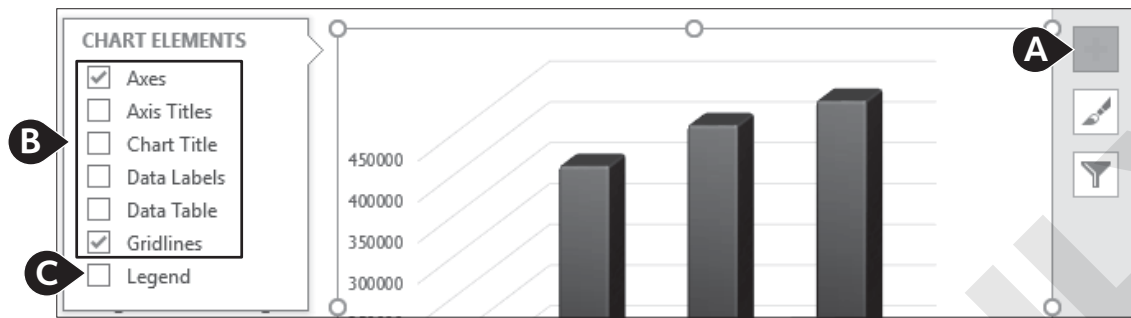


A Click **Color**.

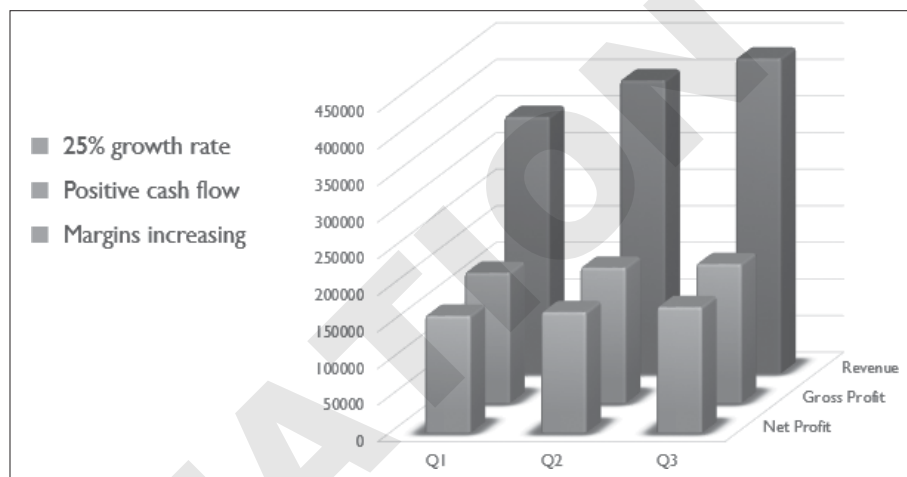
B Point to a few color rows to see a preview on the slide.

C Click the **Color 3** row to apply it.

4. Follow these steps to change the chart's elements:



- A Click the **Chart Elements** button.
- B Point to each unchecked item to see a preview of the item on the chart—but don't click!
- C Uncheck **Legend** to remove the legend from the right side of the chart.
5. Click a blank area of the slide to deselect the chart.



6. Save your presentation.

Working with External Excel Documents

Microsoft Office provides a variety of tools and techniques to let you exchange data among applications. Object Linking and Embedding (OLE) allows you to create links between source documents and destination documents. For example, you may want a chart in an existing Excel spreadsheet to appear in a PowerPoint presentation. This makes it possible for another individual or department to maintain the Excel spreadsheet and its numerical data while you simply link to it and display an attractive chart based on its contents.



View the video “Benefits of Linking.”

Only Data Is Linked

A linked chart on a PowerPoint slide is linked to the Excel *data*, not to the Excel chart. The chart on the Excel spreadsheet simply establishes the initial link to its data. So, deleting or changing




the Excel chart's format has no effect on the PowerPoint chart. This independence allows PowerPoint to format the chart so it's consistent with the presentation theme's colors and fonts.

Linking Excel Charts

Your first step in linking to an Excel spreadsheet is to create the Excel spreadsheet that contains numerical data and an Excel chart. You simply copy and paste the chart (not the spreadsheet cells containing numerical data) from the Excel spreadsheet onto your slide. The chart on the PowerPoint slide will be linked to the Excel spreadsheet's numerical data by default.

Paste Options

After you paste a chart from Excel, PowerPoint displays a set of three Paste Options buttons that allow you to control formatting of the pasted chart.

PASTE OPTIONS		
Option	Icon	What It Does
Use Destination Theme & Embed Workbook		Changes the formatting of the chart to match the slide theme (default setting)
Keep Source Formatting & Embed Workbook		Keeps the formatting of the Excel chart
Picture		Pastes the chart as a picture so data is no longer editable

DEVELOP YOUR SKILLS: P5-D4

In this exercise, you will link to an existing Excel chart. You will then edit the Excel data to update the chart in PowerPoint.

1. Start Excel.
The Excel program loads, and the Excel window appears.
2. Choose **Open Other Workbooks** from the bottom of the left column on the Excel Start screen.
3. Choose **Browse**, navigate to your **PowerPoint Chapter 5** folder, and open **P5-D4-FinancialProjections.xlsx**.
4. Click anywhere on the Excel chart to select it.
A border appears around the chart to indicate it is selected.
5. Choose **Home**→**Clipboard**→**Copy**.
6. Close Excel.
You are returned to the PowerPoint window.

Link the Chart to PowerPoint

7. Save your PowerPoint presentation as: **P5-D4-ChartRevised**
8. Choose the **Year-To-Date Results** slide.
9. Choose **Home**→**Slides**→**New Slide menu button ▼**→**Title Only**.

10. Click the title box and type **Financial Projections** and then click below the title in a blank area of the slide.

The title box becomes deselected.

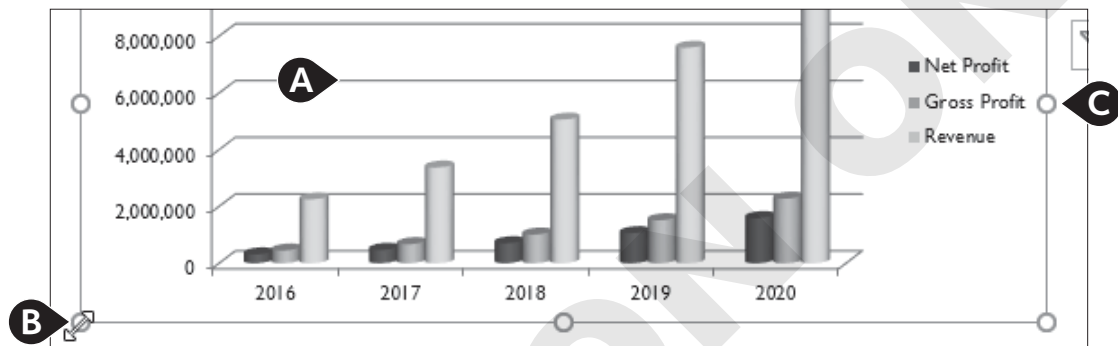
11. Choose **Home**→**Clipboard**→**Paste**.

PowerPoint pastes the chart into the slide.

12. Tap **[Esc]** twice to dismiss the Paste Options buttons and accept the default setting.

Resize and Format the Chart

13. Follow these steps to resize the chart:



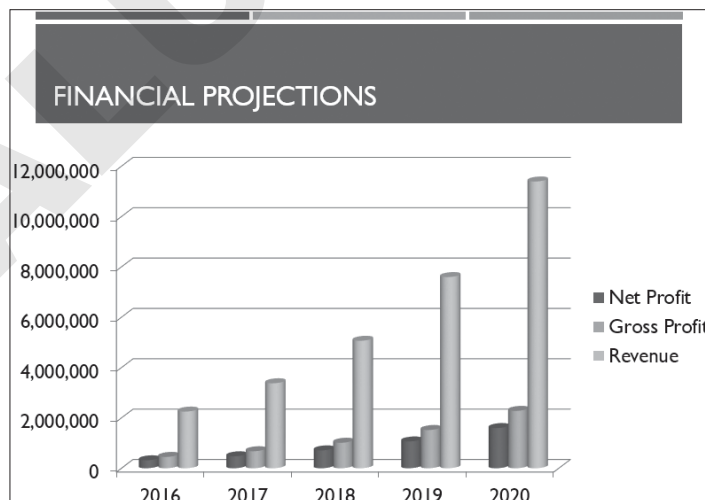
- A** Click the chart to select it.

- B** Point to the bottom-left sizing handle on the chart border so the mouse pointer becomes a white double-arrow and then drag the border to the bottom-left corner of the slide.

- C** Drag the **right sizing handle** so the chart's border snaps to the right edge of the slide.
The chart's text is too small to read comfortably. You will fix that next.

14. With the chart selected and its border displayed, choose **Home**→**Font**→**Font Size menu button ▼**→**20**.

All text on the chart is enlarged to 20 points and is easier to read.




15. Save your presentation.

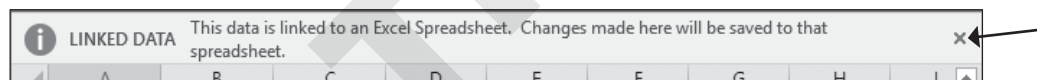
Effects of Linking

When working with a linked chart, any changes made to the Excel spreadsheet are reflected in the PowerPoint chart, but not necessarily immediately. If the data is edited from within PowerPoint, the slide's chart is updated automatically, but if the data is edited by opening Excel outside PowerPoint, the chart data must be refreshed in PowerPoint before the changes are visible on the slide. If you paste an unlinked chart, changes to the Excel spreadsheet will have no effect on the chart in the PowerPoint slide. If you attempt to edit linked chart data from within PowerPoint, a Linked Data window will open and present the linked spreadsheet, ready for editing. The Linked Data window will also give you the option to open the spreadsheet in Excel. If the linked spreadsheet cannot be found, you will not be able to edit the chart data until the link is repaired.

DEVELOP YOUR SKILLS: P5-D5

In this exercise, you will edit the data in a linked Excel spreadsheet.

1. Save your file as: **P5-D5-ChartRevised**
2. Select the **Financial Projections** slide.
3. If necessary, click the chart to select it and then choose **Chart Tools→Design→Data→Edit Data** .
The Linked Data window opens the data source for the chart.
4. If a message about linked data appears at the top of the chart data, click the **X** to dismiss it so you can see more of the cells and data.



5. Follow these steps to edit the chart data:

	A	B	C	D
1	Financial Projections			
2				
3	Net Profit			708,
4	Gross Profit			1,012,
5	Revenue			5,062,
6				

- Click **cell B2**.
- Press **[Shift]** and click **cell C5** and then release **[Shift]**.
- Tap **[Delete]**.

The selected data is deleted and the change shows immediately on the slide, but there is a large gap on the chart where the data used to display. You will fix that next.

6. Follow these steps to remove the empty cells:

	A	B	C	D	E	F
1	Financial Projections					
2				2018	2019	2020
3	Net Profit			708,750	1,063,125	1,594,688
4	Gross Profit			1,012,500	1,518,750	2,278,125
5	Revenue			5,062,500	7,593,750	11,390,625


	A	B	C	D
1	Financial Projections			
2		2018	2019	2020
3	Net Profit	708,750	1,063,125	1,594,688
4	Gross Profit	1,012,500	1,518,750	2,278,125
5	Revenue	5,062,500	7,593,750	11,390,625

- A** Click **cell D2**.
 - B** Press **[Shift]** and click **cell F5** and then release **[Shift]**.
 - C** Point to the left edge of the selected cells so the mouse pointer displays as a four-headed arrow and then drag the selection left so it starts in column B.
 - D** Your chart data should look like this.
7. Close the Linked Data window and click **Save** when prompted to save changes to the Excel spreadsheet.
- The blank cells are removed from the chart on the slide.*
8. Save the presentation.

Editing the Source (Linked) Document

If you make a change to the source document outside PowerPoint, you must manually refresh the data to see the edits on the slide. Refreshing data works only when you have healthy links because PowerPoint can locate the source document.

≡ Chart Tools→Design→Data→Edit Data 

≡ Chart Tools→Design→Data→Refresh Data 


DEVELOP YOUR SKILLS: P5-D6

In this exercise, you will edit and refresh the data source.

1. Start Excel and choose **Open Other Workbooks** from the bottom of the left column of the Start screen.
2. Choose **Browse**, navigate to your **PowerPoint Chapter 5** folder, and open **P5-D4-FinancialProjections**.

3. Click in **cell A5** and type: **Big Money**
Excel replaces the word Revenue with Big Money.
4. Save the worksheet and exit Excel.

Refresh the Data Source

5. In PowerPoint, display the **last slide**, *Financial Projections*, if necessary.
Notice that the legend to the right of the chart still shows the word Revenue. The chart must be refreshed to reflect the changes in the data source.
6. Save your presentation as: **P5-D6-ChartRevised**
7. Select the chart so the Chart Tools contextual tabs appear and click **Chart Tools→Design→Data→Refresh Data** .
*PowerPoint should refresh the chart legend and show the phrase Big Money.
At the time of this writing, there is a bug in PowerPoint that may prevent the chart from refreshing. If your chart doesn't update to show the phrase Big Money, choose Chart Tools→Design→Data→Edit Data and then immediately close the Linked Data window to refresh the chart.*
8. Save your presentation.

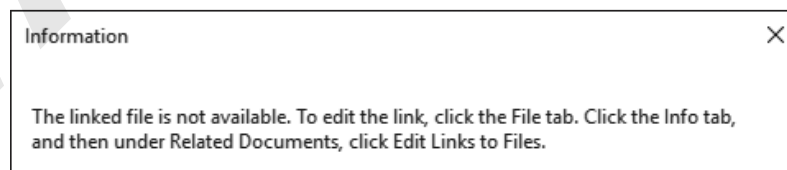
Maintaining Healthy Links

Linked objects can reflect changes in the source document only if the link is maintained. Moving files to other locations on your file system or deleting or renaming files can lead to broken links. If your presentation has broken links, your linked objects (such as charts) will no longer reflect changes made to the source document.

TIP! If you try to edit chart data in PowerPoint and the Excel spreadsheet fails to open, you probably have a broken link.

Example

If you copy a chart from an Excel spreadsheet named *Chart Data* that is stored in a folder named *My Excel Documents*, PowerPoint will look for a file with that name and in that location. If you move the Excel file (or the containing folder) to another folder or change its name, PowerPoint will not be able to find it; therefore, any changes made to the spreadsheet will have no effect on the chart in PowerPoint. And if you try to edit the data from within PowerPoint, PowerPoint won't be able to find the Excel spreadsheet and, thus, won't be able to edit the data.



PowerPoint displays a prompt if you break a link to an external file, for example, if you move or rename the data source file and then try to edit a chart from PowerPoint.

 **File→Info→Edit Links to Files→Change Source**

DEVELOP YOUR SKILLS: P5-D7

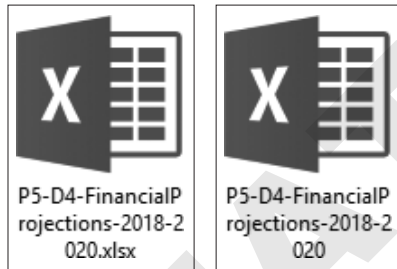
In this exercise, you will break a link by renaming the linked data file and then repair the link from within PowerPoint.


1. Save your file as: **P5-D7-ChartRevised**
2. Minimize the PowerPoint window to the taskbar.
3. Click the **File Explorer** icon on the taskbar to open a folder window and then navigate to your **PowerPoint Chapter 5** folder.

WARNING! In the next step, you will rename a file. Most Windows systems hide the ends of filenames (called extensions), but if they're visible, take care not to change them.

4. Click (don't double-click) **P5-D4-FinancialProjections** to select it.
5. Tap **[F2]** to highlight the filename.
6. Add **-2018-2020** to the end of the filename, taking care to maintain the **.xlsx** file extension if visible, and tap **[Enter]**.

If the filename displayed the .xlsx file extension, be sure your new filename shows as P5-D4-FinancialProjections-2018-2020.xlsx. Otherwise, your filename should simply be P5-D4-FinancialProjections-2018-2020. By renaming the source document, you have broken its link to PowerPoint.



7. Close the folder window and then click the **PowerPoint** button on the Windows taskbar to restore PowerPoint to the screen.
 8. Click the chart to select it, if necessary, and choose **Chart Tools**→**Design**→**Data**→**Edit Data** .
- You receive an error. PowerPoint is looking for a source document named P5-D4-FinancialProjections, but you changed the name of the file.*
9. Click **OK** in the error box.

Fix the Broken Link



10. Choose **File**→**Info** and then click **Edit Links to Files** at the bottom right of the right column.

The Links dialog box appears, listing all links to external files from the presentation. In this case, there is just one linked item, the Excel spreadsheet.

11. Click **Change Source**.

12. In the Change Source dialog box, navigate to your **PowerPoint Chapter 5** folder, select **P5-D4-FinancialProjections-2018-2020**, and click **Open**.
PowerPoint updates the link. There may not be enough space in the dialog box to make the new name visible.
13. Click the **Close** button (not the X) to close the Links dialog box.
You have reestablished the link between the PowerPoint chart and the Excel source document.

Test the Repaired Link

14. Click **Back**  to close Backstage view; click the chart to select it, if necessary.
The chart must be selected to display the Chart Tools contextual tabs.
15. Choose **Chart Tools**→**Design**→**Data**→**Edit Data** .
The source document opens, ready to edit.
16. Click in **cell A5**; then type **Revenue** and tap **Enter**.
Excel replaces Big Money with the new word Revenue, and the change is immediately visible on the slide.
17. Close the Linked Data window and click **Save** when prompted.
18. Save your presentation.



Creating SmartArt Diagrams

SmartArt graphics are diagrams that automatically resize to accommodate the text within and allow the average user to enhance slides with visually appealing figures without having to learn advanced graphics software. With SmartArt, you simply select the type of diagram you'd like to create and enter your text. The SmartArt diagram automatically sizes and flows your text. It also inherits colors and 3-D effects from your document theme. The resulting diagrams can help crystallize concepts in your presentation so your audience will clearly understand your ideas. Using SmartArt, you can add graphics such as:

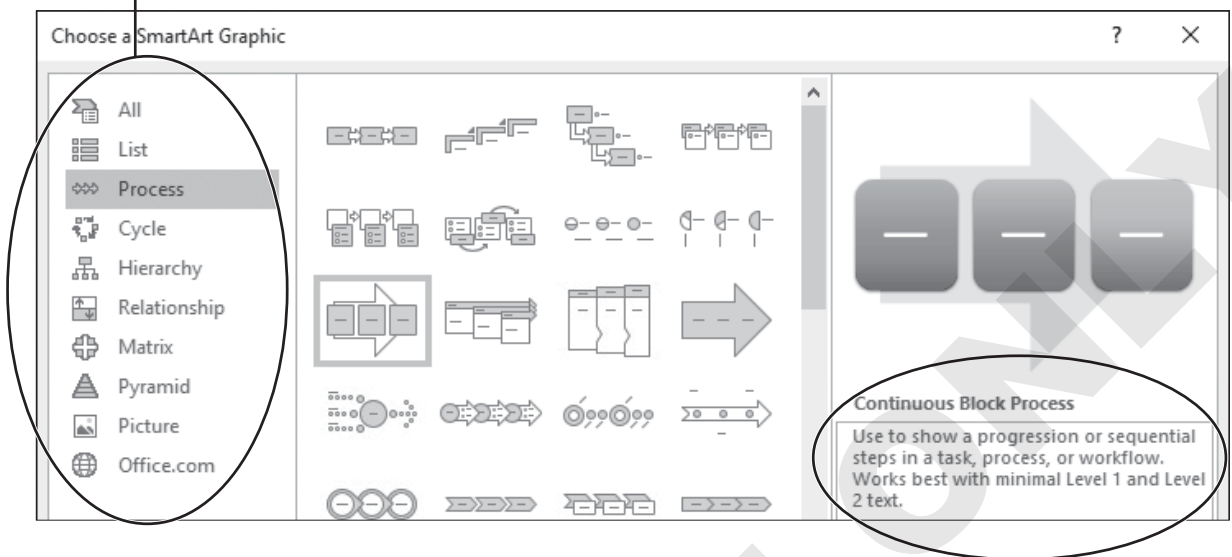
- Organization charts
- Flowcharts
- Colorful lists
- Other sophisticated graphics

Inserting and Formatting SmartArt Graphics

Most slide layouts include an Insert SmartArt Graphic icon. Alternatively, SmartArt can be inserted at any time via the Ribbon. When you click the Insert SmartArt Graphic icon, the Choose a SmartArt Graphic dialog box appears. You can choose a diagram type from the gallery and then construct the diagram directly on the slide. PowerPoint displays examples and descriptions of the various SmartArt graphics as you select them in the gallery.

 **Insert**→**Illustrations**→**SmartArt** | **Insert a SmartArt Graphic**  on slide icon

SmartArt graphics are categorized by chart type.

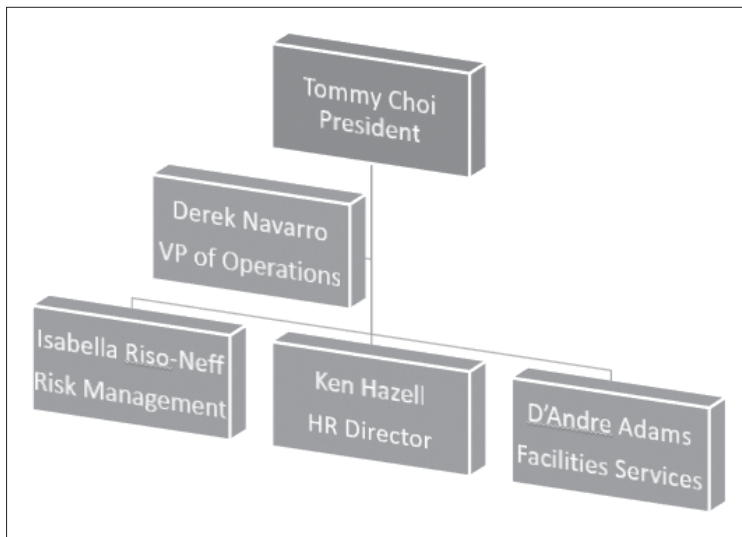


In addition to previews, the dialog box describes the best uses of each type of diagram.

SMARTART GRAPHIC CHART TYPES	
Graphic Category	Usage
List	Show nonsequential or grouped blocks of information
Process	Show a progression or sequential flow of data
Cycle	Show a continuing sequence of stages
Hierarchy	Show hierarchical relationships
Relationship	Show ideas, interlocking or overlapping information, or relationships to a central idea
Matrix	Show the relationships of components to a whole
Pyramid	Show proportional, interconnected, hierarchical, or containment relationships
Picture	Show a variety of information with a central picture or several accent pictures
Office.com	Includes graphics from a variety of categories that can be downloaded from Office.com

Example


In your presentation, you want to include an organization chart that features the leadership team of your organization. You give the command to insert a SmartArt graphic, browse through the Hierarchy list, and choose an organization chart. You type the various organizational units in the SmartArt's text box and three minutes later, you're finished!

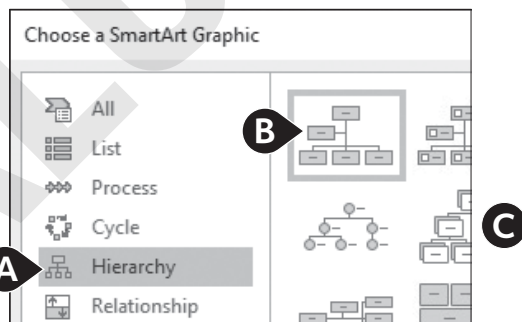


SmartArt organization charts automatically create and align boxes and lines as you type the names of the people and their departments.

DEVELOP YOUR SKILLS: P5-D8

In this exercise, you will create an organization chart in PowerPoint, adding text to the various levels of the chart.

1. Save your file as: **P5-D8-ChartRevised**
2. Choose **Home**→**Slides**→**New Slide** menu button ▼→**Title and Content**.
3. Type **Our Management Team** in the Title placeholder.
4. Click the **Insert a SmartArt Graphic**  icon in the middle of the slide.
The Choose a SmartArt Graphic dialog box appears.
5. Follow these steps to insert an organization chart:

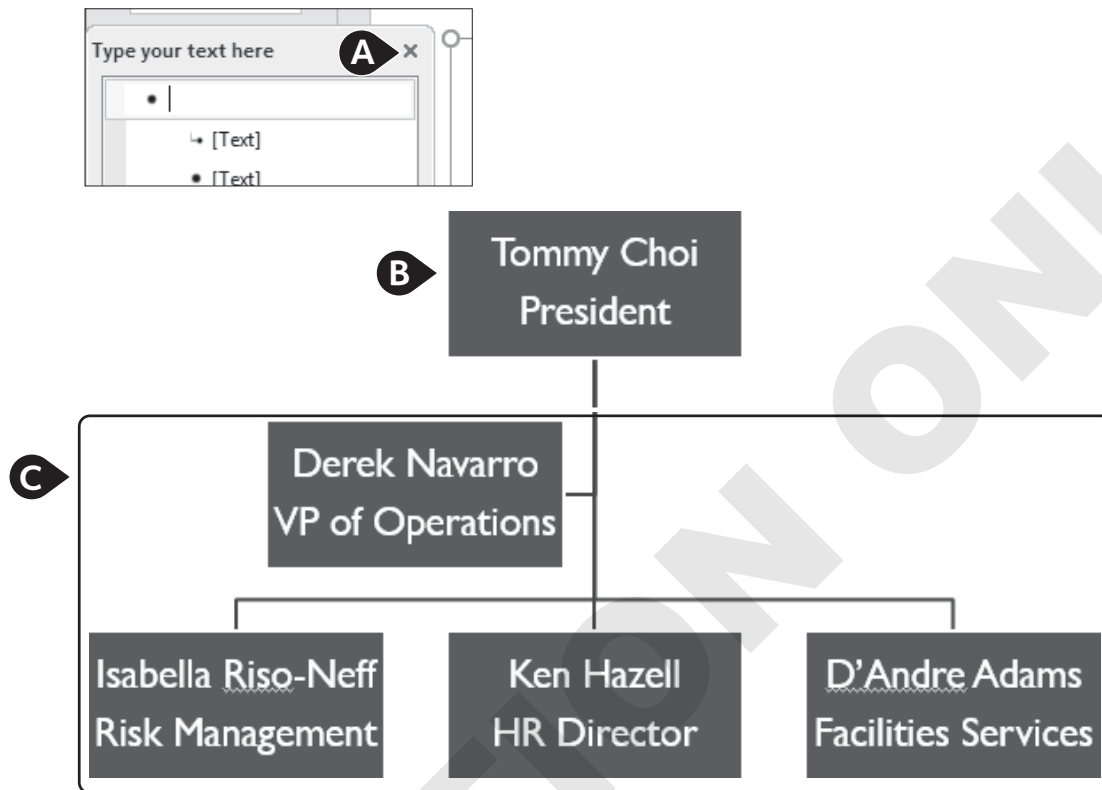


- A Click the **Hierarchy** category.
- B Click the **Organization Chart** graphic.
- C Click **OK**.

A sample organization chart is inserted. The contextual SmartArt Tools tabs—**Design** and **Format**—appear on the right side of the Ribbon.

Add Text

6. Follow these steps to add text to the organization chart:



- Ⓐ If the text pane appears with the SmartArt graphic, click its **Close** button. (It's easier to type directly in the chart.)
- Ⓑ Click in the first box, if necessary; type **Tommy Choi** and tap **Enter** and then type: **President**
- Ⓒ Click the remaining boxes and fill them in as shown, tapping **Enter** to move to a new line in each box.

7. Save your presentation.

Converting Lists to SmartArt Graphics

If you already have a bulleted list on a slide, you can convert it to a SmartArt graphic rather than create the graphic from scratch. This works well for lists where every item is the same level or for simple SmartArt graphics. If you have a complex list or want to use a complex SmartArt graphic, you are better off creating it from scratch. Conversely, you can convert a SmartArt graphic into a bulleted text list.

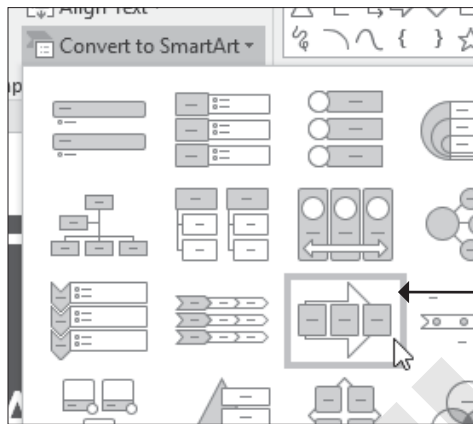
☰ List to SmartArt: Home→Paragraph→Convert to SmartArt 

☰ SmartArt to List: SmartArt Tools→Design→Reset→Convert menu button ▼→Convert to Text

DEVELOP YOUR SKILLS: P5-D9

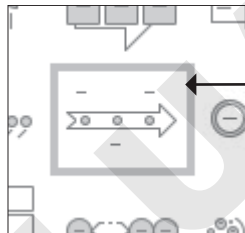
In this exercise, you will convert a list to a SmartArt graphic.

1. Save your file as: **P5-D9-ChartRevised**
2. Display **slide 3**, *Our Expansion Plan*.
3. Click anywhere in any of the bulleted paragraphs to display the border around them.
Since the paragraphs indicate a sequence of events, it makes sense to apply a SmartArt graphic that shows a timeline or other sequence.
4. Choose **Home**→**Paragraph**→**Convert to SmartArt** menu button ▼→**Continuous Block Process**.



The list is converted to a SmartArt graphic, but maybe there is another one that looks nicer.

5. Choose **SmartArt Tools**→**Design**→**Layouts**→**More** ▾→**Basic Timeline**.



6. Save your presentation.

Formatting SmartArt

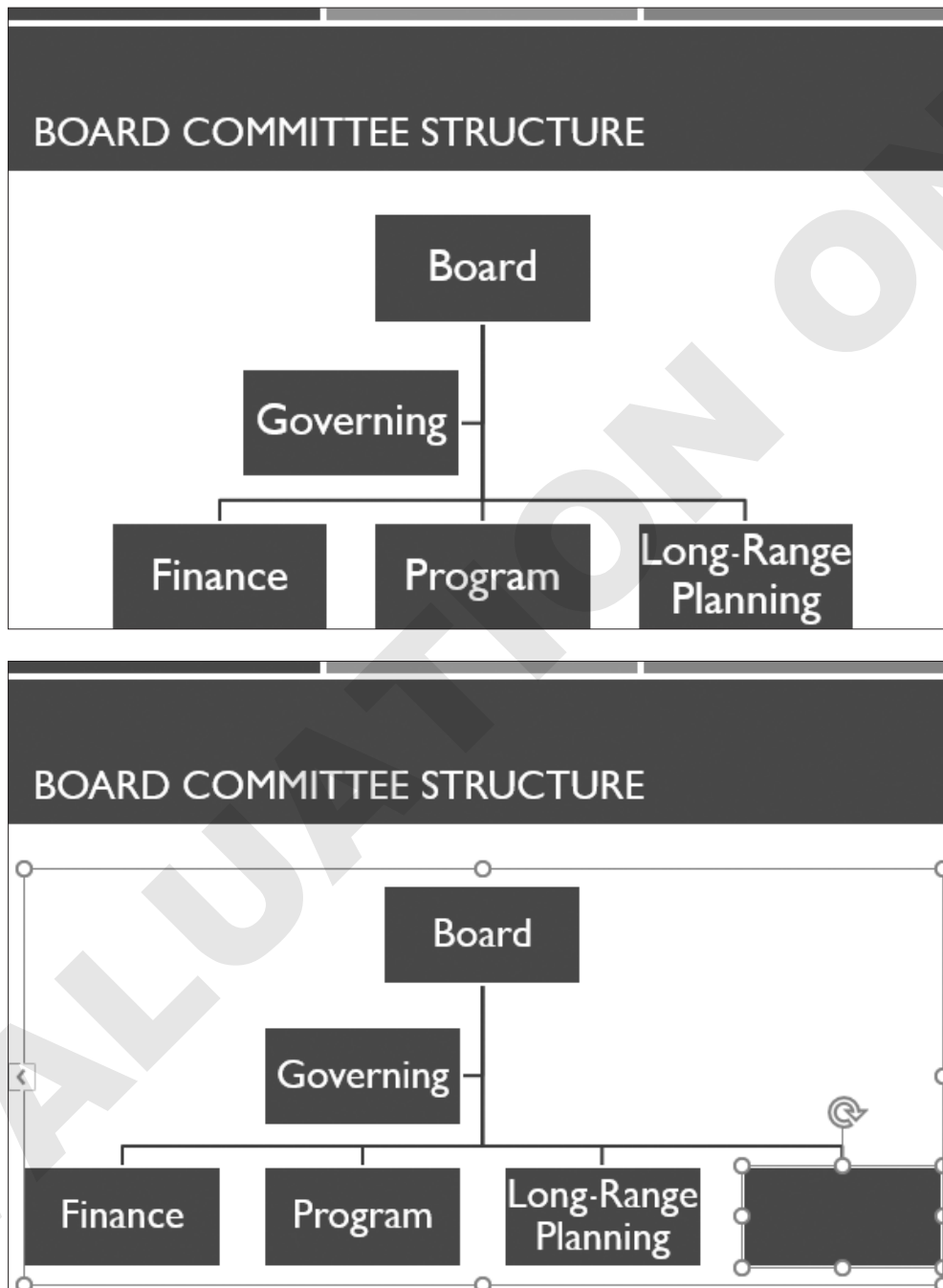
After a SmartArt graphic has been added to a slide, you can format its colors and other effects. For example, you can customize the graphic's text formatting, color scheme, and other features. Many SmartArt graphics have 3-D schemes and other cool effects that you can experiment with to add visual impact to a slide. And if you don't like your changes, you can return the graphic to its original state with a click of a button. Just as with charts and other figures, circular sizing handles along the border allow you to drag and change the size of the SmartArt graphic.

≡ SmartArt Tools→Design or SmartArt Tools→Format

≡ SmartArt Tools→Design→Reset→Reset Graphic

Adding Elements to SmartArt

You can also add elements to an original SmartArt graphic. For example, an organization chart might need a new branch for adding a department or lateral relationship. You may insert additional shapes above, below, or next to an existing shape. The SmartArt graphic will automatically resize itself and scale its text to accommodate the extra shapes.



When a shape was inserted next to the Long-Range Planning box, PowerPoint automatically resized the SmartArt to make room for the new, blank shape.

☰ SmartArt Tools→Design→Create Graphic→Add Shape

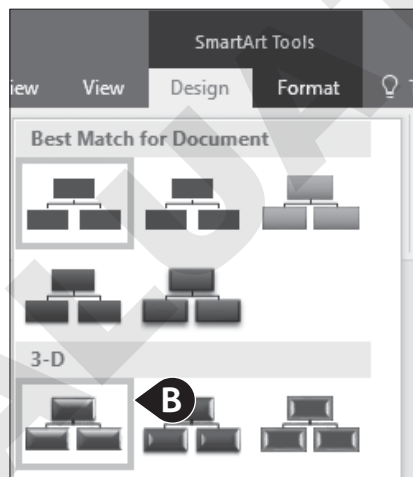
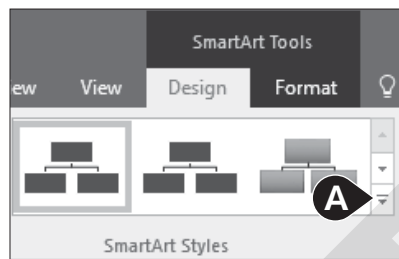
DEVELOP YOUR SKILLS: P5-D10

In this exercise, you will add a new position in the organization chart and enhance its appearance with a different formatting effect.

1. Save your file as: **P5-D10-ChartRevised**
2. Display the last slide and click in the **Ken Hazell** box in the organization chart.
This selects the appropriate box so you can add another shape beside it.
3. Choose **SmartArt Tools**→**Design**→**Create Graphic**→**Add Shape** menu button ▼→**Add Shape After**.
A new box is added to the right of the Ken Hazell box and is ready to accept text.
4. Type **Talos Bouras** in the new box, tap **[Enter]**, and type **Sales Manager** on the second line in the box.

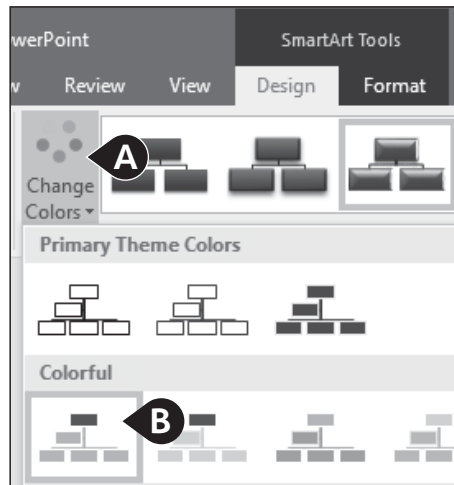
Format the Chart

5. Follow these steps to format the chart:



- A Choose **SmartArt Tools**→**Design**→**SmartArt Styles**→**More** [More button].
- B Select the **3-D**→**Polished** style.
The Polished style is applied to every box in the chart.

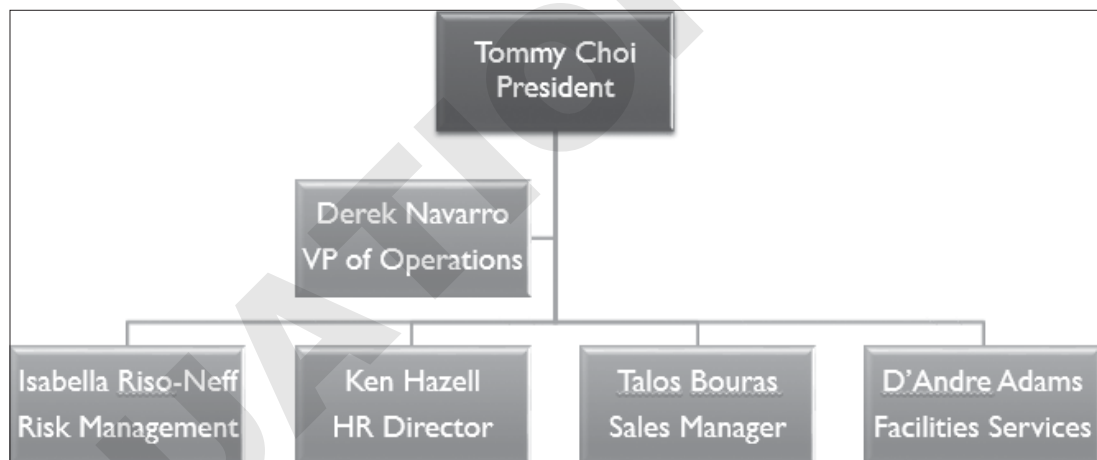
6. Follow these steps to change the chart's colors:



A Choose **SmartArt Tools**→**Design**→**SmartArt Styles**→**Change Colors**.

B Select the **Colorful**→**Colorful – Accent Colors** style.

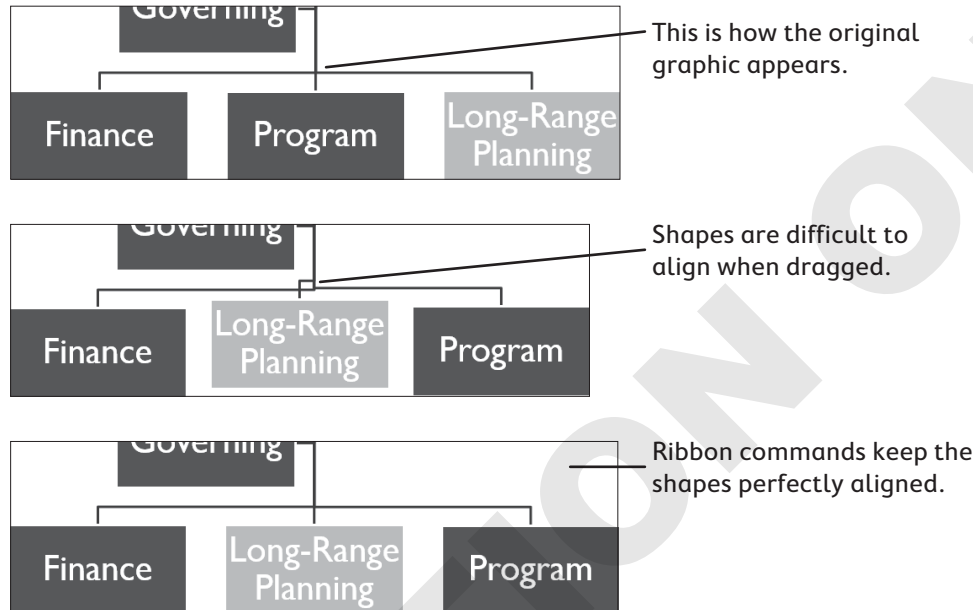
The organization chart should resemble this illustration.



7. Save the presentation.

Reordering Shapes in SmartArt Graphics

You may need to rearrange shapes within a SmartArt graphic. While you can simply drag a shape to a different location within the graphic, using Ribbon commands ensures the shapes remain aligned. Note that the Ribbon commands, labeled Move Up and Move Down, are a bit misleading. Moving a shape “up” or “down” refers to the shape’s position in the hierarchy—not physically up or down. In the following figure, the Move Up command was used to move the shape up in the hierarchy or to the left and into the second position of shapes along the bottom row.



DEVELOP YOUR SKILLS: P5-D11

In this exercise, you will reorder shapes within a SmartArt graphic.

1. Save your file as: **P5-D11-ChartRevised**
2. Display **slide 3, Our Expansion Plan**.
3. Click in the text of the last item in the SmartArt graphic (the text about training the staff).
4. Choose **SmartArt Tools**→**Design**→**Create Graphic**→**Move Up**.
The shape is moved up from the third position to the second position.
5. Save your presentation and then exit PowerPoint.

Self-Assessment

Check your knowledge of this chapter’s key concepts and skills by completing the Self-Assessment on the Student Resource Center.

Apply Your Skills

APPLY YOUR SKILLS: P5-A1

Insert and Format an Embedded Chart

You are working with the marketing manager to help pinpoint when Universal Corporate Events needs to increase its advertising budget. In this exercise, you will create a new presentation highlighting event activity by annual quarter.

1. Start PowerPoint; create a new, blank presentation and save it to your **PowerPoint Chapter 5** folder as: **P5-A1-Review**
2. Apply the **Retrospect** theme.
3. Type **Universal Corporate Events** as the title and **Quarterly Review** as the subtitle.
4. Add a new slide and enter **Quarterly Breakdown** as the title.
5. Insert a **Clustered Column** chart with this data:

	A	B	C	D	E
1		Q1	Q2	Q3	Q4
2	Total Events	22	72	34	115

6. Drag the handle in the bottom-right corner of **cell E5** up so only rows 1–2 are included and then close the chart window.

Edit and Format a Chart

7. Change the chart type to 3-D Clustered Column.
The 3-D Clustered Column chart type is more visually appealing.
8. Change the chart layout to **Layout 2** and the chart style to **Style 11**.
9. Edit the chart's data so **cell B2** has a value of **18** and **cell E2** has a value of **132**.
10. Remove the chart's Title, Gridlines, and Primary Vertical Axis.
11. Resize the chart so it fills the maximum area of the slide without overlapping the slide title.
12. Set the font size of the chart to **24**.
13. Click the number **18** above the first bar, locate the **Chart Tools→Format→Shape Styles gallery**, and choose the first style, **Colored Outline – Black, Dark 1**.
14. Apply the same shape style to the numbers on top of the remaining bars.
15. Save the changes and then exit PowerPoint.

APPLY YOUR SKILLS: P5-A2

Work with Linked Charts and SmartArt

You want to sway the advertising team toward promoting Universal Corporate Events' ability to host training seminars and office parties. In this exercise, you will add a chart linked to an external data source. You will also add and format SmartArt.

1. Start PowerPoint, open **P5-A2-Projections** from your **PowerPoint Chapter 5** folder, and save it as: **P5-A2-ProjectionsRevised**
2. Add a new third slide with the title: **Event Projections**
3. Start Excel and open **P5-A2-Data.xlsx** from your **PowerPoint Chapter 5** folder.
4. Copy the chart from the Excel spreadsheet and paste it onto the **Event Projections** PowerPoint slide (you may need to scroll down to see it); exit Excel.
5. Resize the chart so it fills the maximum area of the slide without overlapping the slide title.
6. Use the **Chart Elements** button to display Data Labels.
7. Set the font size of the chart to **28**.
8. Change the colors of the chart to **Colorful Palette 2**.

Fix a Broken Link and Edit a Linked Data Source

9. Select the chart on slide 2 and attempt to edit the data.
You must repair the broken link before you can edit the data.
10. Edit the link to the chart so that, instead of pointing to the PriorEvents.xlsx workbook, the chart points to **P5-A2-Events.xlsx**.
11. Edit the chart data so **cell B2** (*Award Ceremonies value*) contains **67** instead of 7.

Insert and Modify SmartArt

12. Add a new fourth slide with the **Title and Content** layout, using **Growth** as the slide title.
13. Add these three items to the text placeholder:
 - **Improved Catering**
 - **Economic Transportation**
 - **Building Ownership**
14. Convert the list to a SmartArt Graphic; use the **Process**→**Upward Arrow** graphic.



15. Add a shape after the text box farthest to the right with the text: **Growth This Year**

16. Use the **SmartArt Tools**→**Design** tab to apply the **Colorful**→**Colorful Range – Accent Colors 3 to 4** colors to the SmartArt.
17. Use the **SmartArt Tools**→**Design** tab to apply the **3-D**→**Polished** SmartArt Style.
18. Change all the SmartArt text colors to **Green, Accent 3**.
19. Enlarge the graphic to fill the slide and make the text bold.
20. Save the changes and then exit PowerPoint.

APPLY YOUR SKILLS: P5-A3

Work with Charts and SmartArt

To help the accounting team prepare for upcoming expenses, you are adding the relevant information to a presentation to be delivered at the annual debriefing meeting. In this exercise, you will add and format charts and SmartArt to the Universal Corporate Events presentation.

1. Start PowerPoint; create a new, blank presentation and save it to your **PowerPoint Chapter 5** folder as: **P5-A3-Supplies**
2. Apply the **Ion** theme with the fourth (orange) variant.
3. Use **Universal Corporate Events** as the slide title and **Supplies** as the subtitle.
4. Add a second slide with the title **Projected Catering Supplies** and then use the slide icon to insert a **Clustered Column** chart.
5. Type this data in the spreadsheet and remove **row 5** from the chart data:

	A	B	C	D
1		2018	2019	2020
2	Bamboo skewers	1250	1300	1500
3	Foil pans	251	372	475
4	Foil trays	175	310	400
5				

Format a Chart and Edit Chart Data

6. Resize the chart so it fills the maximum area of the slide without overlapping the slide title.
7. Delete the chart title.
8. Apply **Chart Style 6**.
9. Use the **Chart Elements** button to display data labels and hide both gridlines and the primary vertical axis.
10. Apply the **Colorful Palette 3** colors to the chart and increase the font size to **24**.

11. Edit the chart data to include the following data in **row 5**. Be sure to extend the data's border so row 5 is included in the chart.

3	Foil pans	251	372	473
4	Foil trays	175	310	400
5	Sterno cans	200	250	290

Link and Format a Chart

12. Create a new third slide with the **Title Only** layout and type **Popular Dishes** as the title.
13. Copy the chart from the **P5-A3-Favorites.xlsx** Excel spreadsheet and paste it onto the **Popular Dishes** PowerPoint slide. Exit Excel.
14. Resize the chart so it fills the maximum area of the slide without overlapping the slide title.
15. Change the chart type to **3-D Pie**, apply the **Style 1** chart style, and change the chart layout to **Layout 1**.
16. Use the **Chart Elements** button next to the chart to hide the Chart Title and show **Data Labels**→**Data Callout**.
17. Set the font size of the chart to **24**.

Break and Fix a Link and Edit a Linked Data Source

18. Minimize PowerPoint and use File Explorer to navigate to the **P5-A3-Favorites.xlsx** workbook in your **PowerPoint Chapter 5** folder.
19. Rename the file: **P5-A3-FavoritesUpdated**
20. Restore PowerPoint, click the chart, and attempt to edit the data.
21. Dismiss the Information dialog box.
22. Edit the link to the spreadsheet so PowerPoint can find the newly named **P5-A3-FavoritesUpdated** file.
23. Edit the chart data to show **1938** servings of grilled shrimp.
At the time of this writing, a bug in PowerPoint causes the chart to no longer display even though the data is still linked. It may be necessary to delete and copy/paste the chart again if Microsoft hasn't released an update yet.
24. Save the presentation and then exit PowerPoint.

Edit and Refresh External Data

25. Start Excel and open the **P5-A3-FavoritesUpdated** spreadsheet.
26. Change the lasagna servings to **1164** and the eggplant servings to **1223**.
27. Save the workbook and exit Excel; then start PowerPoint and open **P5-A3-Supplies**.
28. Refresh the data on **slide 3**.
29. Save the changes and then exit PowerPoint.