

UNIT 6: BUSINESS DECISION MAKING

1

WEEK EIGHT
LECTURER: N. QUARRIE

Learning Outcome Two (2)

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- LO3 Be able to produce information in appropriate formats for decision making in an organisational context.

Objective

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- By the end of this lesson you should be able to:
- 3.2 create trend lines in spreadsheet graphs to assist in forecasting for specified business information



Overview

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- Last week's session focused on how to create graphs using data collected. Some of the graphs that looked at included line, pie, bar charts and histograms.
- This week we want to focus on how to produce trend lines, as well as, how to use them to assist in forecasting for specified business information

Note!

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- Please note that the procedures used to produce all the mentioned graphs in excel is the same. I decided therefore to explicitly show you how to do one (line graph). Once you know how to do this you will be able to do the others.

Trend Lines

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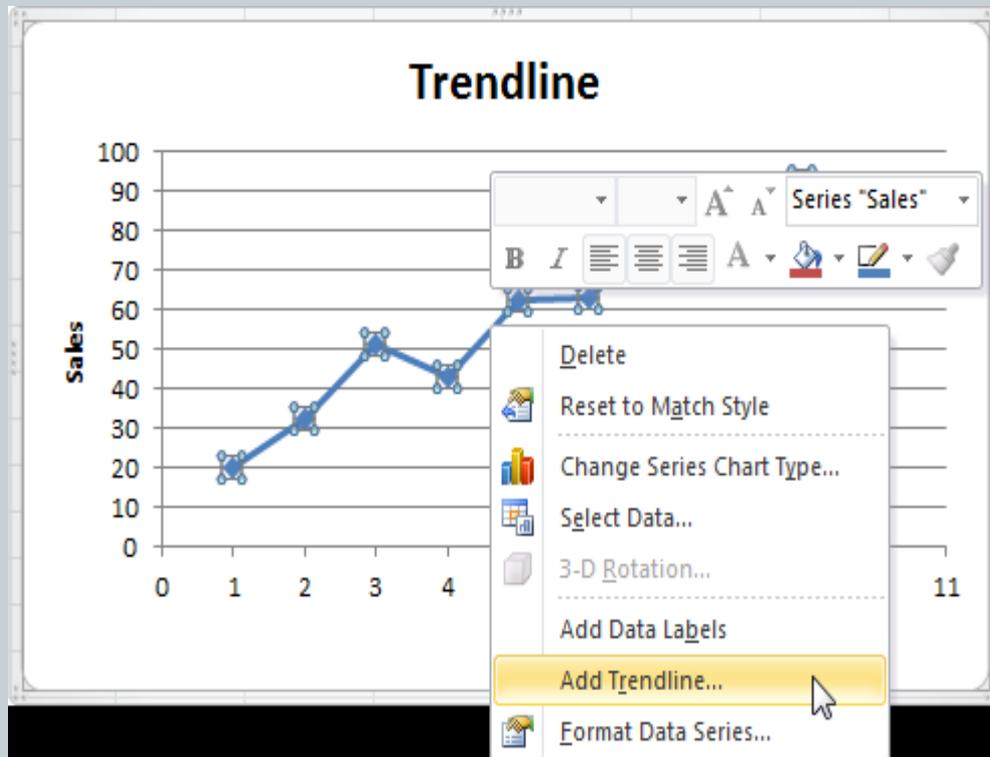
- According to (BusinessDictionary.com, 2016) “Straight or curved line in a trend chart that indicates the general pattern or direction of a time series data (information in sequence over time). It may be drawn visually by connecting the actual data points or (more frequently) by using statistical techniques such as 'exponential smoothing' or 'moving averages.’”

Trend Lines: Example using Excel

Source: (Excel-easy.com, 2016)

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- 1. Right click the data series, and then click Add Trendline.



Trend Lines: Example using Excel

Source: (Excel-easy.com, 2016)

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- 2. Choose a Trend/Regression type. Click Linear.
- 3. Specify the number of periods to include in the forecast. Type 3 in the Forward box.
- 4. Check "Display Equation on chart" and "Display R-squared value on chart".

Trend Lines: Example using Excel

Source: (Excel-easy.com, 2016)

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The screenshot shows the 'Format Trendline' task pane in Microsoft Excel. The 'Trendline Options' tab is selected. The 'Trend/Regression Type' section includes radio buttons for Exponential, Linear (selected), Logarithmic, Polynomial (with an 'Order' spinner set to 2), Power, and Moving Average (with a 'Period' spinner set to 2). The 'Trendline Name' section has 'Automatic' selected with the name 'Linear (Sales)', and an empty 'Custom' text box. The 'Forecast' section has 'Forward' set to 3 periods and 'Backward' set to 0.0 periods. At the bottom, there are checkboxes for 'Set Intercept = 0.0' (unchecked), 'Display Equation on chart' (checked), and 'Display R-squared value on chart' (checked). A 'Close' button is at the bottom right.

Format Trendline

Trendline Options

Trend/Regression Type

- Exponential
- Linear
- Logarithmic
- Polynomial Order: 2
- Power
- Moving Average Period: 2

Trendline Name

- Automatic : Linear (Sales)
- Custom:

Forecast

Forward: 3 periods

Backward: 0.0 periods

Set Intercept = 0.0

Display Equation on chart

Display R-squared value on chart

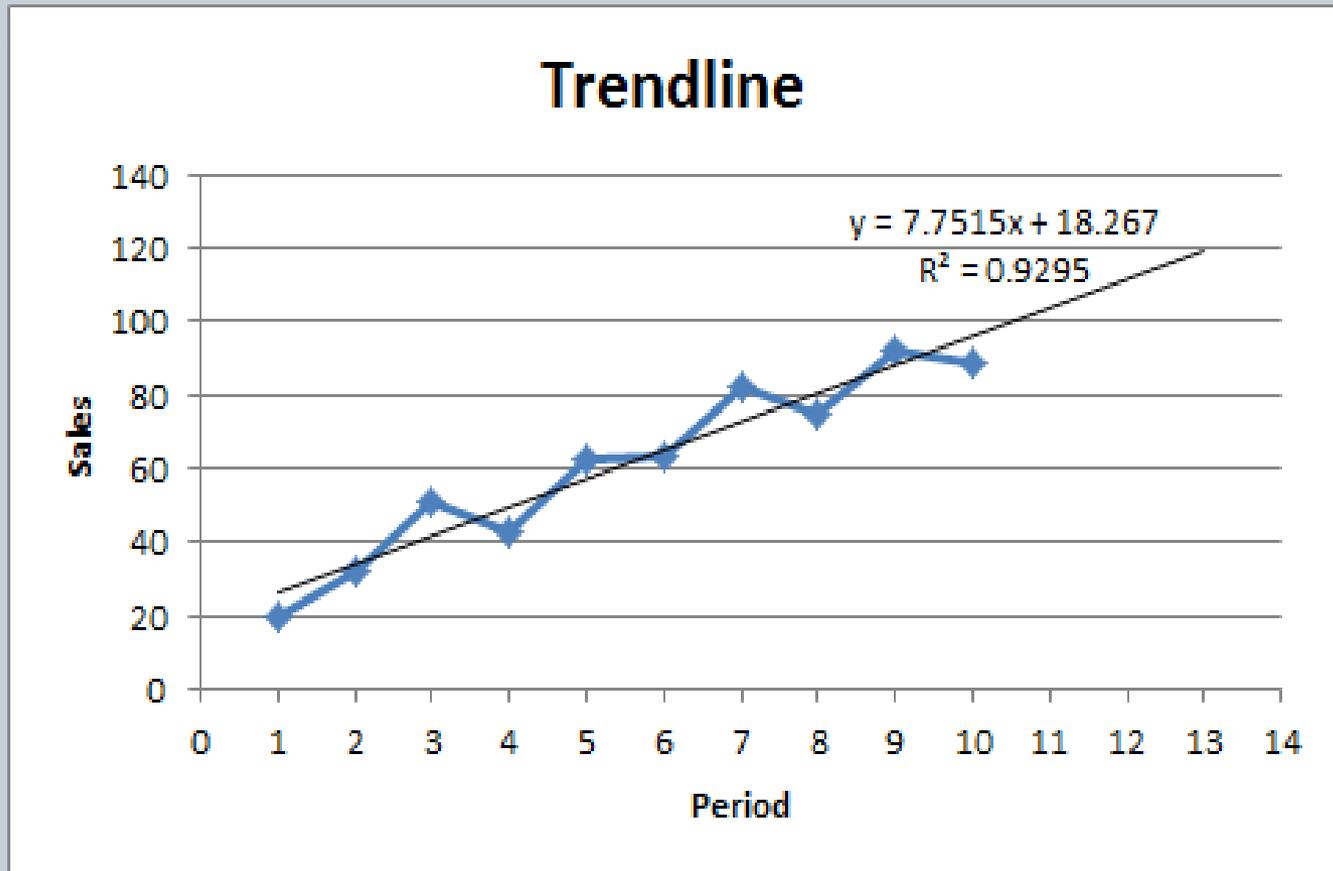
Close

Trend Lines: Example using Excel

Source: (Excel-easy.com, 2016)

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- 5. Click Close.
- Result:



Scatter Plots

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- According to (Mste.illinois.edu, 2016) “Scatter plots are similar to line graphs in that they use horizontal and vertical axes to plot data points. However, they have a very specific purpose. Scatter plots show how much one variable is affected by another. The relationship between two variables is called their correlation.”

Scatter Plot: Example using Excel

Source: (Academic.brooklyn.cuny.edu, 2016)

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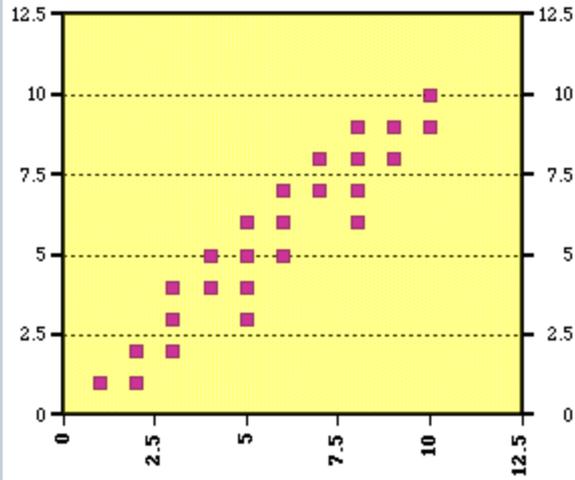
- Creating a Scatter Plot in Excel 2007 or later.
 - (1) Highlight the data. Note: The first column will become the X-Axis and the second column will be the Y-Axis.
 - (2) From the Excel menu, click on INSERT, click on SCATTER, then click on ALL CHART TYPES this will make the chart options box bigger.
 - (3) Click on XY (Scatter) – it should be on the left.
- (4) Click OK. The Scatter Plot should be on the same page as your data.
 - (5) If you wish, you can change the size of the chart window and drag it anywhere you want on the worksheet.
 - (6) To make changes to the chart, you can use DESIGN, LAYOUT, and/or FORMAT on the chart tools menu.

Scatter Plot: Interpretation

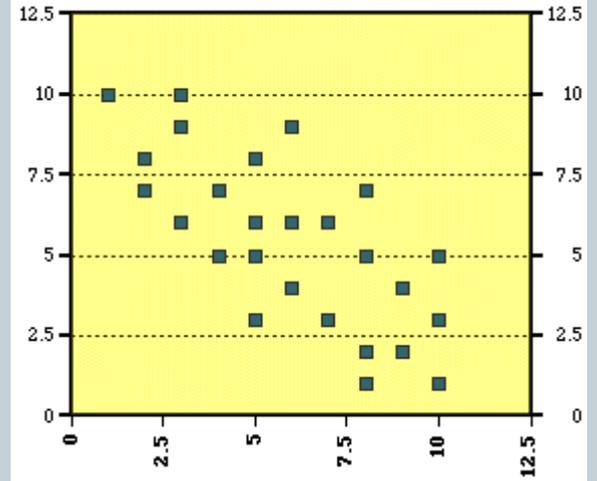
Source: (Mste.illinois.edu, 2016)

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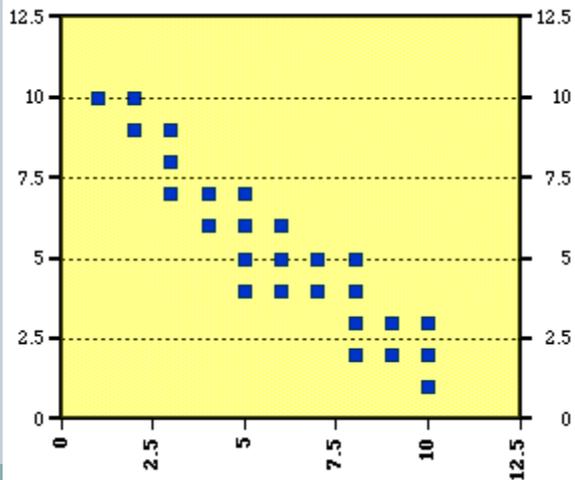
High Positive Correlation



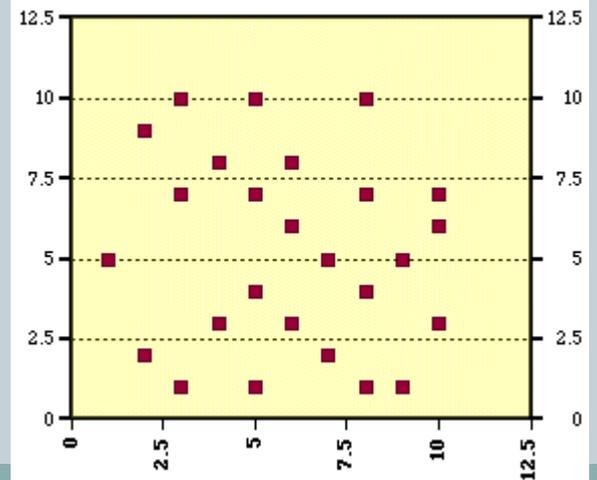
Low Negative Correlation



High Negative Correlation



No Correlation



Videos: Using Excel to produce scatter plot and trend line.

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Trend line: <https://www.youtube.com/watch?v=svFSKnmAlKQ>

[Interpreting Trend Lines](#): Khan Academy, (2016). *Interpreting a trend line*. [online] Available at:

<https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-data/cc-8th-line-of-best-fit/v/interpreting-trend-line> [Accessed 23 Feb. 2016].

Scatter Plot: <https://www.youtube.com/watch?v=bYf6qO-iBWo>

Interpreting Scatter Plot:

Uow.edu.au, (2016). *statlit - interpret*. [online] Available at:

<http://www.uow.edu.au/student/qualities/statlit/module3/5.4interpret/index.html> [Accessed 23 Feb. 2016].

Review Questions

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1. Explain the steps that should be followed whenever you produce to produce line Scatter plot and trend lines in excel.
2. a. Assume that you collected data from students regarding their age and grades received in a Statistics class that it is represented in the table below. Produce to produce a trend line and a scatter plot.

X (age)	Grade
23	50
19	70
30	100
27	20
29	16
50	45

- 2b. Interpret the results from part “a”

References/Additional Reading List

- Academic.brooklyn.cuny.edu, (2016). *Creating a Scatter Diagram in Excel*. [online] Available at: <http://academic.brooklyn.cuny.edu/economic/friedman/scatterdiagramexcel.htm> [Accessed 23 Feb. 2016].
- BusinessDictionary.com, (2016). *What is trend line? definition and meaning*. [online] Available at: <http://www.businessdictionary.com/definition/trend-line.html#ixzz412fQ49nl> [Accessed 23 Feb. 2016].
- Excel-easy.com, (2016). *Trendline in Excel*. [online] Available at: <http://www.excel-easy.com/examples/trendline.html> [Accessed 23 Feb. 2016].

References/Additional Reading List

- Khan Academy, (2016). *Interpreting a trend line*. [online] Available at: <https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-data/cc-8th-line-of-best-fit/v/interpreting-trend-line> [Accessed 23 Feb. 2016].
- Mste.illinois.edu, (2016). *Scatter Plots*. [online] Available at: <http://mste.illinois.edu/courses/ci330ms/youtsey/scatterinfo.html> [Accessed 23 Feb. 2016].
- Uow.edu.au, (2016). *statlit - interpret*. [online] Available at: <http://www.uow.edu.au/student/qualities/statlit/module3/5.4interpret/index.html> [Accessed 23 Feb. 2016].