Extended Learning Module D
Decision Analysis with Spreadsheet Software

STUDENT LEARNING OUTCOMES

1. Define a list and list definition table within the context of spreadsheet software and describe the importance of each.
2. Compare and contrast the Filter function and Custom Filter function in spreadsheet software.
3. Describe the purpose of using conditional formatting.

STUDENT LEARNING OUTCOMES

4. Define a pivot table and describe how you can use it to view summarized information by dimension.
5. Describe the purpose of Goal Seek.
INTRODUCTION

- IT plays an important role in aiding decision making
- Spreadsheet tools can aid in decision making
  - Filter
  - Conditional formatting
  - Pivot tables

MODULE ORGANIZATION

1. Lists
   - Learning outcome #1
2. Basic Filter
   - Learning outcome #2
3. Custom Filter
   - Learning outcome #2
4. Conditional Formatting
   - Learning outcome #3
5. Pivot Tables
   - Learning outcome #4
6. Goal Seek
   - Learning outcome #5

LISTS

- List - information arranged in columns and rows
  - Each column has one type of information
  - First row contains headings or labels
  - No blank rows
  - Blank columns/rows all around
LISTS

List Definition Table

- **List definition table** - description of a list by column (see Figure D.2 on pp. 388-389)
  - **CUST ID** - Unique ID for customer
  - **REGION** - North, South, etc.
  - **RENT VS. OWN** - customer rents or owns a home
  - And so on

BASIC FILTER

- **Filter function** - filters a list and hides rows that don’t match criteria
- Good for seeing only certain rows of information
- Basic Filter supports only “equal to” criteria
- Example: customers in the North **REGION**
Basic Filter Steps

1. Open workbook
   (XLMD_Customer.xls from www.mhhe.com/haag)
2. Click in any cell in the list
3. Menu bar – click on Data and then click on Filter
   • Will see list box arrows next to each label or column heading

Basic Filter Steps

From the menu bar, click on Data and then click on Filter

Basic Filter Steps

Each column will have a pull-down arrow. Click on it and select the criteria
Basic Filter Steps

Excel will respond by showing only those records that meet the selection criteria (i.e., North REGION).

Turning off Basic Filter

- Perform either of the following
  - From the menu bar, click on Data and then Filter
  - Turn off selected column filtering by clicking on the appropriate list arrow box and clicking on Clear Filter from “columnname” where columnname is the name of the column.
**Basic Filter**

- Can also filter on multiple columns
- Example
  - Customers in North region (select North in \textit{REGION})
  - Own a home (select Own in \textit{RENT VS. OWN})
  - Only one household member (select 1 in \textit{NUM HOUSEHOLD})

**CUSTOM FILTER**

- \textit{Custom Filter function} - hides all rows except those that meet criteria, besides “is equal to”
- Example
  - Customers with more than 3 household members
Custom Filter Steps

1. Turn on Filter
2. Click on pull-down arrow in appropriate column
3. Click on **Number Filters**
4. Complete Custom AutoFilter dialog box with criteria
5. Click on **OK**
Custom Filter Steps

Enter the appropriate value and click on OK

Excel will respond by presenting only the records that meet the selection criteria

Another Custom Filter Example

- Customers who spent less than $20 or more than $100
Another Custom Filter Example

Complete both selection criteria appropriately

Another Custom Filter Example

Excel will respond appropriately

CONDITIONAL FORMATTING

- **Conditional formatting** - highlights the information in a cell that meets some criteria
  - Does not hide any rows
  - Let’s you see the whole list
  - While highlighting certain information
- Example
  - Customers show purchased more than $100
Conditional Formatting Steps

1. Select entire appropriate column
2. From menu bar, click on **Home** and then **Conditional Formatting** within **Styles**
3. Select **Highlight Cells Rules**
4. Click on the appropriate boolean operator
5. Complete the dialog box
6. Click on **OK**
Conditional Formatting Steps

In the Conditional Formatting box, enter the appropriate value and click on OK.

Excel will highlight those cells meeting your selection criteria.

Removing Conditional Formatting

- Option #1 (click anywhere in the list)
  1. Click on **Conditional Formatting**
  2. Select **Clear Rules**
  3. Click on **Clear Rules from Entire Sheet**

- Option #2 (select the entire column)
  1. Click on **Conditional Formatting**
  2. Select **Clear Rules**
  3. Click on **Clear Rules from Selected Cells**
PIVOT TABLES

- **Pivot table** - enables you to group and summarize information
  - Shows summaries of information by dimension
  - Can be two-dimensional
  - Can be three-dimensional
- Similar to data warehouse concept from Chapter 3

Pivot Table Example

This is a pivot table

2D Pivot Table Steps

1. Click anywhere in list
2. From menu bar, click on **Insert** and then **PivotTable**
3. Click on **OK**
4. Drag/drop labels in row and column fields
5. Provide appropriate formatting
2D Pivot Table

- Count of customers
  - By REGION
  - By RENT VS. OWN

2D Pivot Table Steps

To create a 2D pivot table, from the menu bar click on Insert and then PivotTable.

Click on OK.
Now, drag and drop appropriate column headings (labels) from the Pivot Table Field List Box to the appropriate places in the pivot table summary area.

Example: Number of customers by

- REGION
- RENT VS. OWN
The default aggregation for a pivot table is summing. To change that, click on the pull-down arrow next to Sum of CUST ID.

You will then see the Value Field Settings dialog box.

To change it, select another aggregation in the Summarize value field by box and click on OK.
Pivot Tables

- Can have multiple pieces of information in the body of the pivot table
- Example
  - Count of customers (already present)
  - Total of purchases (new information)
    - Drag/drop TOTAL PURCHASES into Values in lower right portion of screen
3D Pivot Tables

- Desired dimensions
  - REGION
  - RENT VS. OWN
  - NUM HOUSEHOLD
- Drag/drop NUM HOUSEHOLD into lower right portion of the screen called “Report Filter”
GOAL SEEK

- **Goal Seek** works backward from objective to compute an unknown value.
- Scenario (movie posters from Chapter 1):
  - Buy poster for $4 and sell for $9
  - $2 shipping for each poster
  - Fixed costs of $1,500 per year
  - What is the breakeven point?

GOAL SEEK – BREAKEVEN POINT

- Download **XLMD_BreakEven.xls**
- C14 = C13*C7
- C15 = C13*C8
- C16 = C13*C9
- C18 = C14 - C15 - C16 - C17
- Now, for a given net profit, we want Excel to compute **Units Sold** (C13)

GOAL SEEK – BREAKEVEN POINT

1. From menu bar, click on Data and What-If Analysis
2. Select Goal Seek
3. For Set cell, enter C18
4. For To value, enter 30000
5. For By changing cell, enter C13
6. Click on OK
Sell 10,500 units to achieve a profit of $30,000.