WORKING WITH PIVOT TABLES

Introduction

- Perhaps the most powerful analytical tool that Excel provides is the PivotTable command, with which one can **cross-tabulate** data stored in Excel lists.
- A **cross-tabulation** is a two (or more) dimensional table that records the number (frequency) of respondents that have the specific characteristics described in the cells of a table.
- Cross-tabulation analysis, also known as contingency table analysis is most often used to analyze categorical (nominal measurement scale) data.

Introduction (cont'd)

- Cross-tabulations performed by PivotTables in Excel are a basic and very interesting analytical technique that can be tremendously helpful when looking at data that one's business or life depends on.

Pivot Tables

- **Pivot tables** and **pivot charts** are a great tool for organizing large amounts of data in a format which is clearer for the user to understand.
- They can be useful tools for displaying large amounts of output to a user in a DSS application.

Pivot Tables (cont'd)

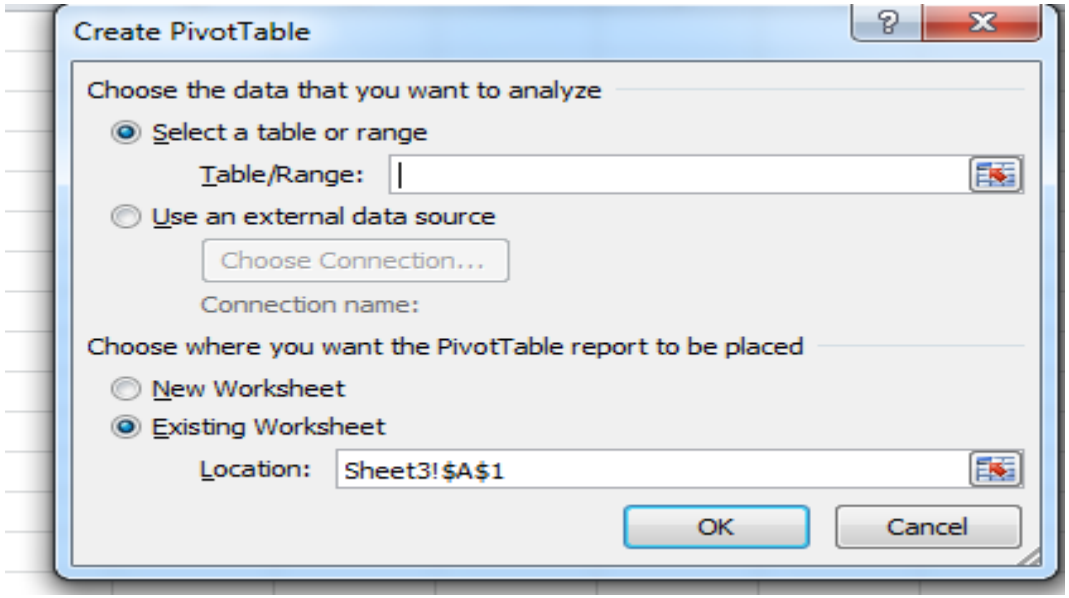
- Pivot tables are used to transform large amounts of data from a table or database into an organized summary report.
- The word "pivot" refers to the ability to rotate and reorganize the row and column headings from an original database into a new table.

Example

- A table contains the "Costs" for varying "Maximum Weights" and the number of "Days to Arrive" for two different "Shipping Companies." Suppose that an employee is assigned the task of comparing the performance of these shipping companies and presenting the results to his/her manager. The employee wants to summarize this data so that a clear comparison can be made between the "Cost" values of each company.

Creating a Pivot Table

- To create a pivot table, the first step is to create the Excel table (as in the Example in the previous slide) that you want to cross-tabulate.
- By clicking the **PivotTable** option in the **Tables** groupings under the **Insert** tab, one is asked to identify the location of the data that he/she wants to analyze.



Creating a Pivot Table (cont.)

- Excel lists two main data location options: If data is from Microsoft Excel list, one is given the opportunity to select the data source by highlighting the range of data cells and column headings to be used.
- The second option is **Use an External data source.**

- Demonstration session to be taken in class

Terminology

- **Row Field:** Each value, or item, in this field is shown as a row.
- **Column Field:** Values are shown as column headings.
- **Values:** The main area of the table where comparative values are shown.
- **Grand Totals:** Calculations applied to rows or columns of data in the Data Field.
- **Subtotals:** Calculations applied to Row or Column Fields.
- **Field Setting:** Specified calculations for Grand Totals and Subtotals.
- **Items:** Values within a field.

Drop-down arrows

- There is a drop-down arrow next to each field on the pivot table that gives a list of all values, called **Items**, in the corresponding field.
- Using this drop-down list, one can select or deselect, (i.e., filter) the values that should be displayed in the pivot table.

Note

- When using pivot tables, any changes made to the original data source will not be updated automatically in the pivot table.
- One has to update the pivot table manually.

Creating Pivot Tables from External Data

- The second option is **Use an External data source**
  - Here one chooses a connection to open all connections where your Access database is located
  - Select the appropriate data source and specify the location of the PivotTable

Pivot Charts

- The Pivot chart option creates a chart with filtering tools similar to those found in pivot tables.
- Demonstration session to be taken in class

Using Excel as a Database

- Excel defines any well-defined table of items grouped by similar categories as a **database.**
  - For example, a teaching assistant for a course may develop a detailed table of student records; he could consider this table a database. In this database, he can store the students' names, homework grades, exam scores, and attendance, and he can also calculate their class average in the same table.

Using Excel as a Database (cont.)

- The basic menu options provide several simple functions that can be performed on Excel databases.
- **Sorting**
  - To sort means to order all entries in a database by a particular field; a **field** is a category name.
- **Filtering**
  - Filtering differs from sorting in that it selects a specified set of data from the database instead of ordering the entire database.
  - Filtering allows one select a group of entries in a database that is equal to a particular data entry within a field.

DFunctions

- There is a group of Excel functions that are meant specifically for working with Excel as a database; we call these functions **Dfunctions.**
- These are specific functions designed for use with databases. They include **DSUM**, **DAVERAGE**, **DMIN**, and **DMAX,** which are essentially the same functions as SUM, AVERAGE, MIN and MAX.

Dfunctions (cont'd)

- Dfunctions specify certain criteria before performing the function. That is, the formats of these functions have extra parameters (using DSUM to illustrate the general format):
  - = DSUM(database, field, criteria)
  - The criteria parameter must include a field name and a criteria cell

Dfunctions (cont'd)

- DMIN
  - Returns the smallest number in the field (column) of records in the database that match the conditions specified.
- DMAX
  - Returns the largest number in the field (column) of records in the database that match the conditions specified.

Dfunctions (cont'd)

- DSUM
  - Adds the numbers in the field (column) of records in the database that match the conditions specified.
- DAVERAGE
  - Averages the values in a column in a list or database that match conditions specified.