Assignment Background

We will begin to cover the finer elements of decision making. There are different ways to categorize decisions. The most common and useful way is based on the amount of uncertainty in the decision situation or the future. And there are three different levels of uncertainty: assumed certainty, risk, and uncertainty.

*Assumed Certainty.* The decision maker assumes that the future is known with certainty. In other words, there is only one possible future and the data and information about this future is known or knowable. There may be few or many options to choose from and relevant data about these options is obtained. In some cases, the data is estimated, but always with assumed certainty. Examples of this situation are: purchasing an item, such as a vehicle, house, copy machine, production machine, etc. OR deciding where to go on vacation, or where to hold the annual convention.

*Risk.* In this situation, the decision maker distinguishes several possible future states, and is able to determine the probabilities of these distinct futures, or estimate the probabilities with a degree of confidence. There may be few of many options to choose from and the outcomes of these options may be different in the possible future states. For example, consider the weather which is always risky. And we usually have some estimates of the future states based on what the weatherman says. Two possible states are Rain and No Rain. The choices to consider here might be: Walk w/no umbrella, Walk w/umbrella, or Drive. The decision maker can determine the probabilities of Rain/No Rain from the forecast, for example, 60% chance of Rain (and 40% No Rain.) There are costs and payoffs involved with each option. Walking is enjoyable, but you could get wet, not enjoyable. Driving costs money for gas. As the decision maker, you would look at the costs and payoffs of each option under each possible future and use a decision rule to decide your best option.

*Uncertainty.* In this type of situation, the scenario is much like that of Risk, but the decision maker does not have any idea of the probabilities of the future. He must use some form of decision rule to determine what is the best option without knowing how likely each possible future might be.

*Bounded Rationality*. Note that in each of the types of decisions, the decision maker must consider the future (after all, that is what a decision is all about, the future), and also consider what options are available. Novice decision makers may not see all of the possible futures nor all of the possible options. Experience provides skill in determining each of these. But even skilled decision makers are constrained by Bounded Rationality, as was discussed in the Home page of this module. The difference is that expert decision makers understand bounded rationality and are still able to discern the possible futures and options more quickly and easily than are novices and thereby achieve a more informed decision.

**Utility.** Many options are evaluated based on money, either Income or Costs, net Income less costs. But sometimes we need to use other ways to evaluate options, especially if there are factors that are measured differently. For example, if you were choosing a car to buy, the cost of the car is only one factor. You might consider gas mileage (MPG), color, safety rating, number of passengers, etc. All of these are measured differently. In order to compare options, these factors must be converted to a common metric for comparison. The metric that is used in this situation is Utility. This metric is a number between 0 and 1, where 0 is no utility and 1 is the maximum utility. The decision maker must convert (sometimes subjectively) each factors value to a Utility score. For example, in choosing between a red car and blue car, the decision maker may assign Red a utility of 1 and Blue a Utility of 0, and perhaps a Silver one a Utility of 0.5. The red color is most desirable, the silver color is half as desirable, and the blue one is not desired at all. But there are other factors to consider as well. And then all factors are aggregated into one final overall Utility score for each option.

Module 1 focuses on decisions under **assumed certainty**. The case assignment is about how to analyze data in a situation in which you can assume certainty. And the SLP assignment is about making a decision under assumed certainty uses the *multi-attribute decision matrix* (MADM). This method is also known by other names, i.e. MAU (multi-attribute utility), MADA (multi-attribute decision analysis).

**Readings and Videos**

Read these resources:

[*Multi-Attribute Decision Making (MADM)*](https://tlc.trident.edu/content/enforced/88075-BUS520-OCT2016FT-2/Modules/Module1/Fall%202014%20files/MADM.docx?_&d2lSessionVal=XnRgiYCM979IsC080iya1nxi3&ou=83058&_&d2lSessionVal=WPL6ZaGAKBtB90rQxGHcKx0c0&ou=88075) Word document (Attached)

[*Multi-Attribute Decision Making: MADM*](https://tlc.trident.edu/content/enforced/88075-BUS520-OCT2016FT-2/Modules/Module1/Fall%202014%20files/Multi-Attribute%20Decision%20Making.pptx?_&d2lSessionVal=XnRgiYCM979IsC080iya1nxi3&ou=83058&_&d2lSessionVal=WPL6ZaGAKBtB90rQxGHcKx0c0&ou=88075) PowerPoint presentation (Attached)

Video: link:[*http://permalink.fliqz.com/aspx/permalink.aspx?at=2cc5262c22b543ec928bec51be6c23f6&a=5fae3cf0f1624f39b0341263a6541ea0*](http://permalink.fliqz.com/aspx/permalink.aspx?at=2cc5262c22b543ec928bec51be6c23f6&a=5fae3cf0f1624f39b0341263a6541ea0)

Download this Excel file with the Car Decision Example. [*SLP 1-Car Example.xlsx*](https://tlc.trident.edu/content/enforced/70622-BUS520-JAN2016FT-1/Modules/Module1/Fall%202014%20files/SLP%201-Car%20Example.xlsx?_&d2lSessionVal=WPL6ZaGAKBtB90rQxGHcKx0c0&ou=88075) (Attached)

PRACTICE EXERCISE: Now that you have seen how to develop a Decision table, try this Practice Exercise. Then Check your solution in this Excel file. [*SLP 1-Practice.xlsx*](https://tlc.trident.edu/content/enforced/70622-BUS520-JAN2016FT-1/Modules/Module1/Fall%202014%20files/SLP%201-Practice.xlsx?_&d2lSessionVal=WPL6ZaGAKBtB90rQxGHcKx0c0&ou=88075) (Attached)

Practice Exercise Scenario: Hiring a key person:

You are hiring a person for a top position in your company. You have narrowed the field down to the top four candidates. You want to use multi-attribute decision analysis. You have determined that there are four decision criteria that are most important.

Four Attributes (criteria): Salary, experience, education, leadership personality.

The salary number is the amount that the candidate said he/she needed to accept the job.

Experience is based on number of years of direct experience, plus an add-on for other related experience that is equal to about half of the years.

Education is the level of degree plus any other training or certifications. You have decided to use a scale of 1 to 5 to evaluate. 1=bachelor, 3=master, 4=PhD or other doctoral degree. Add-ons for certifications, i.e. CPA, Certified Coach, etc. and for second degrees can be applied from .5 points, or 1 point. The max score cannot exceed 5 points.

Leadership Personality is based on your subjective evaluation including the opinion of your Supervisor who will be working with this person. This score is also a rating scale of 1 to 5.
1 = probably needs a lot of effort to be a leader, and 5 = probably will perform at top leadership capability.

Here is the information on the four top candidates:

**Bob:**

Salary: $75,000, Experience: 22 years direct, 8 other related, Education: Bachelors plus certified coach and certified leadership graduate; Leadership personality: 4

**Sam:**

Salary: $68,000, Experience: 18 years direct, 10 other related, Education: MBA; Leadership personality: 3.5

**Mary:**

Salary: $69,000, Experience: 15 years direct, 4 other related, Education: Masters, plus certified HR Professional; Leadership personality: 4.3

**Lisa:**

Salary: $62,000 Experience: 5 years direct, 6 other related, Education: Doctor of Business Administration (DBA); Leadership personality: 3.7

Create a multi-attribute decision analysis using Excel. What are the weights that you would assign to the four criteria? How do you convert the raw data into utility values? Which criteria are “Less is better” and which are “more is better”?

When you have worked through this example, download this Excel file and check your work: [*SLP 1-Practice.xlsx*](https://tlc.trident.edu/content/enforced/70622-BUS520-JAN2016FT-1/Modules/Module1/Fall%202014%20files/SLP%201-Practice.xlsx?_&d2lSessionVal=WPL6ZaGAKBtB90rQxGHcKx0c0&ou=88075)

**Optional Reading for Assignment**

Spaeder, K. (n.d.). How to Find the Best Location, retrieved from[*http://www.entrepreneur.com/article/73784#*](http://www.entrepreneur.com/article/73784)

For additional examples of MADM Utility Analysis, please review Dr. David Holcomb's presentation:

Holcomb, D. (n.d.) Module 1 - SLP: Multi-attribute decision making (MADM). [*PDF version*](https://tlc.trident.edu/content/enforced/70622-BUS520-JAN2016FT-1/MADM_UTILITY_ANALYSIS.pdf?_&d2lSessionVal=WPL6ZaGAKBtB90rQxGHcKx0c0&ou=88075) (Attached)

**Additional Required Reading**

What is bounded rationality? How does it affect decision making? Read this article that discusses the foundational theory expounded by Herbert Simon in 1956.

Ibrahim, M. (2009). Theory of bounded rationality. *PM. Public Management, 91*(5), 3-5. (Attached)