BIA 650 A Homework#6 W&A Chapter 6, Problem 4

# Management Overview

Problem Statement:

The Objective is to maximize the total Net Present Value.

Data Sources:

* + The **inputs** are identified as Capital required for each investment and Net Present value for each investment
  + The key **decision variable** is the decision itself. It is represented by 0 and 1.
  + **Constraints** are as follows
    - The total money invested cannot be greater than the budget.
  + **Output** is the Net present value – which has to be maximized.

Model Approach:

* + Separate the data into inputs, decision variables, constraints and output and enter them on the spreadsheet. Inputs, Decision Variables, Constraints and objective cell to be minimized are added in Solver and it is run. We select the simplex method because this is a linear problem.

Condition a: *We can have utmost 2 investments in Investments 1 -5*

Solution: In this case, the maximum net profit that we can achieve is 45500$. But we will need to invest the entire money in hand. The investments selected are 1, 5 and 7

Condition b: *If investment 1 is selected, investment 3 should also be selected*

Solution: In this case, we can achieve a maximum net profit of 45500$ investing all the money in hand. Investments selected are 1, 3 and 4

Condition c: *At least one of the investments 6 and 7 must be selected*

Solution: We can still make an NPV of 45500$ investing the entire budget.

The investments selected are 1, 5 and 7

Condition d: *Investment 2 can be selected only if Investment 1 and 3 are selected*

Solution: We can still make an NPV of 45500$ investing the entire budget. The investments selected are 1, 5 and 7

Conclusion: For all the conditions discussed above, the maximum NPV that can be earned is the same even though a different investments combination is selected in one particular case.