



### HR5120P-Delivering Performance Excellence (DPE): Business Analytics

**Lecturer:** Dr Rajáa Clouse

**Business Analytics Assessment:** Analytics Lab Exercise ( 4 of 4)

**Mark:** 2.5% of DPE Module marks

**Submission date:** Thursday, 15th April 2021

**Format:** Upload your original work in Excel format

#### **Analytics Exercise Brief:**

Using the statistical software of your choice and solve the following exercises. Please submit ONE Excel book with two sheets, one sheet for part (a) and one sheet for part (b). Just show your work with Solver to answer the question for each part.

#### **Part a-**

A university graduate has an e-commerce platform to sell greetings cards and scarfs customized with Arabic calligraphy.

It takes her 2 hours to make 1 scarf and 1 hour to make one greeting card.

Due to her school commitment, she has a limit of 20 hours per week to work on the scarves and the greeting cards. Moreover, she can not make more than 15 scarves and greetings cards per week.

She makes a profit of SAR 80 on each scarf and SAR13 on each greeting card. *How many scarves and greeting cards should she make each week **to maximize her total profit?***

Set up the linear programming problem: identify the decision variables, write the objective function, set up the constraints and solve using Excel solver or equivalent.

#### **Part b-**

An SME of 300 employees is planning an employee engagement event that will require transport of its 300 employees to the event venue. They hired a transport

company that has large buses of 40 seats each and medium buses of 30 seats each. They have only 8 drivers and as such they can use a maximum of 8 buses in total.

The rental for one large bus (40 seats) is SAR 700 and the rental for one small bus (30 seats) is SAR 500. *How many of each bus type should they rent **to minimize the cost of transport rental?***

Set up the linear programming problem: identify the decision variables, write the objective function, set up the constraints and solve using Excel solver or equivalent.

**Guidelines:**

1. Academic work at MSc. Level should refer to academic evidence /third party sources to evidence independent research and discrimination. Please use Harvard or APA reference style.
2. There is a selection of relevant reading journal articles on all these areas of analytics on google scholar.
3. Plagiarism will not be condoned.