Introduction to Business Analytics
CASE ASSIGNMENT 2 (15%)

Due Date: 16 Nov 2018, 1159pm

Note: This case assignment will be done in groups of 3 students, of the same students as in Case Assignment 1. Type your answers using Microsoft Word and save your file as "C2_[Group#].docx" (e.g. C2_Gp1.docx). Save your R script as "C2_[Gp1].R". Submit zip both your word document and R script (as well as any data files you have created) into a single file "C2_Gp1.zip" and submit it to "Case Assignment 2 Submission" workbin in IVLE by the deadline. Please do not switch/change groups.

Performance Lawn Equipment Case
This assignment is adapted from the Running Case on Performance Lawn Equipment in Evans. Please refer to page 60-61 of Evans for a synopsis of this case. Also, please refer to pages 298, 366 and 440 of Evans for case information to Tasks 1, 3 and 4 respectively.

Data
The Performance Lawn Equipment excel file can be downloaded from the companion website (http://wps.pearsoned.co.uk/ema_ge_evans_bus_2/).

Tasks:

1) **Improving production using regression analysis** **(3 marks)**

   Read the case information on Page 298 of Evans. Use techniques of regression analysis to evaluate the data in the respective worksheets and reach useful conclusions. Summarize your work in a formal report with all appropriate results and analyses.

2) **Predicting manufacturing capacity using forecasting models of sales** **(4 marks)**

   Elizabeth Burke is interested in forecasting sales of mowers and tractors in each marketing region as well as industry sales to assess future changes in market share. She also wants to forecast future increases in production costs. Develop forecasting models for these data and prepare a report of your results with appropriate charts and output.

3) **Generating customer insights using data-mining techniques** **(4 marks)**

   Analyze the respective data provided by apply appropriate data-mining techniques, to generate customer insights, such as segmenting PLE customers with similar perceptions about the company into groups, or insights about the drivers of satisfaction and usage level, etc. Summarize your results in a report.

4) **Simulating manpower resources using Monte Carlo simulation** **(4 marks)**

   Develop a model to simulate 260 working days (1 year), and count the number of additional shifts that are required. Assume that the initial additional inventory is 100 units. Find the distribution of the number of shifts that the company would expect over the next year. Explain and summarize your findings in a report to the plant manager and make a recommendation as to how many shifts to plan in next year's budget.