MGMT 651 – Analytics for Managerial Decision-Making

Homework 7

Worth 100 points

**DO NOT FORGET TO TYPE YOUR NAME ON THE FIRST PAGE OF YOUR HOMEWORK SUBMISSION DOCUMENT**

1. (15 points) Chapter 15 Problem 23.
2. (15 points) Chapter 15 Problem 26 parts a *and* c only. Use POM-QM software for part c.
3. (20 points) Denny’s collected the following data on the relationship between advertising and sales at a sample of five restaurants.

|  |  |
| --- | --- |
| Advertising Expenditure ($) | Sales ($) |
| 1000 | 19000 |
| 4000 | 44000 |
| 6000 | 40000 |
| 10000 | 52000 |
| 14000 | 53000 |

1. Use regression analysis to develop a straight-line approximation of the relationship between the two variables. Use POM-QM or MS-Excel template file posted in Moodle.
2. Use the equation developed in part (a) to forecast sales for an advertising expenditure of $8000.
3. Interpret the values of *r* and *r2* obtained from the analysis.
4. (10 points) Chapter 13 Problem 1.
5. (10 points) Chapter 13 Problem 5.
6. (15 points) Chapter 13 Problem 9, parts a, b, c, and d only.
7. (15 points) This question relates to the journal article:

Carbajal, J. A., Williams, P., Popescu, A., & Chaar, W. (2019). Turner blazes a trail for audience targeting on television with operations research and advanced analytics. *INFORMS Journal on Applied Analytics*, *49*(1), 64-89.

Read the article and based on your understanding, write a one-page (12 font, single line spacing) extended abstract that (a) articulates Turner’s business objectives, (b) describes the forecasting and optimization methods developed for audience targeting, and (c) summarizes the benefits and value added by analytics.