OMM500N - Assignment 1 – Problem 2

Delhi Food

Part One. Background

Manisha's boss, the Director of Marketing, asked her to come up with a recommendation on the level of marketing expenses (advertising and promotion expenditures) for a line of frozen India n dinners as it enters its seventh year in the marketplace.

Part Two. Problem Statement

I'm think about two possible solutions. The first one is firstly fitting the data by minimizing rmse to get a,b's value, and then do maximization for profit,

The second one is the method I used, which is treating a,b as variables and throw them together to do optimization

0) Assumptions

The 7th year's demand follows the equation D = a*power(M,b)

Per unit revenue, materials, and other variable costs for the coming year appear to be known. Overhead and fixed production costs also seem to have been reliably estimated.

1) Variables

a- parameter for equation
b- parameter for equation

D – stands for demand

2) Objective Function

Maximize operating margin for 7^{th} year :
Max revenue per unit*a*power(M,b) – materials – fixed – other variable – marketing expense - overhead

3) Constriants:

The constraints here is each data record of 1-6 year, they need to follow the demand equation

4) Solver:

GRC solver, because it's nonlinear problem