Module 03 – Production Modeling

Exploratory Data Analysis

*In this section, you should perform some data analysis on the data provided to you. Please format your findings in a visually pleasing way and please be sure to include these cuts:*

* *Make a table of average demand, production capacity, and costs for each quarter, are there differences between quarters?*
* *Since we have temporal data (i.e. year and quarter), see if you can make a yearly and/or quarterly chart showing these metrics over time.*

*A screenshot of a spreadsheet

AI-generated content may be incorrect.*

Model Formulation

*Write the formulation of the model into here prior to implementing it in your Excel model. Be explicit with the definition of the decision variables, objective function, and constraints*

MIN: 51.23P1 + 51.66P2 + 51.32P3 + 55.75P4 + 1.34(B1 + B2) + 1.34(B2+B3) + 1.34(B3 + B4) + 1.34(B4 + B5)

P1 ≤ 519

P2 ≤ 518

P3 ≤ 608

P4 ≤ 483

48.1 ≤ B2

60.5 ≤ B3

64.6 ≤ B4

60.3 ≤ B5

Model Optimized for Cost Reduction

*Implement your formulation into Excel and be sure to make it neat. This section should include:*

* *A screenshot of your optimized final model (formatted nicely, of course)*
* *A text explanation of what your model is recommending*

A chart with numbers and a price list

AI-generated content may be incorrect.

This model is showing me the amount of product produced per quarter and how much will be sold, including the different costs that play into production and carrying the product to the coming quarters.

Model with Stipulation

*Please copy the tab of your original model before continuing with the next part to avoid messing up your original solution. If we remove the production capacity constraint from the model & we removed the carrying cost, what do you think will happen? Try it out and see if it matches your expectation. Try to explain what is happening and talk a bit about fallbacks of models.*

*A screenshot of a spreadsheet

AI-generated content may be incorrect.*

When we delete the production capacity constraint from the model what ends up happening is everything being produced in quarter 1 and none being produced in the ones after. Also when you remove the carrying costs it makes the production costs increase by a lot in quarter 1. Also it makes the carrying costs increase tremendously.