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 data

AI-generated content may be incorrect.

A graph of a number of people

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: 53X1 + 49X2 + 47X3 + 50X3 + 1.87(Y1+Y2)+ 1.87(Y2+Y3)+ 1.87(Y3+Y4)+ 1.87(Y4+Y5)

X1<=408

X2<=377

X3<=520

X4<=431

38<=Y1

68<=Y2

50 <=Y3

46<=Y4

Model Optimized for Cost Reduction

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

A screenshot of a spreadsheet

AI-generated content may be incorrect.

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.*

The model shifts to producing most or all units in the earliest period(s), especially when production costs are lower. This minimizes total production cost, since there's no downside to holding extra inventory.

*A spreadsheet with numbers and a few words

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