Module 11 – EOQ

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:*

*Use a forecast method to determine annual demand for 2025 to use for our model*

* + *Naïve*



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. Please restate the variables in the algorithm (i.e. D = Annual Demand)*

Min:DC+(D/Q)S+(Q/2)Ci

Subject to Q>=1

Model Optimized for Minimizing Costs with Optimal Order Quantity



Model with Stipulation

*Please copy the tab of your original model before continuing with the next part to avoid messing up your original solution.*



*Implement the below EOQ extension, EOQ with planned backorders. We have added 2 new variables: A = shortage cost & b = planned back orders. Restate the previous variables with these new ones please. Note, you’ll need to solve for both Q\* and b\* here to get the optimal solution. You should start Q out as the EOQ from the previous section and b as 0. Also, note that this algorithm does not include `D \* C` as it’s not relevant to this analysis*

*A math equation with white letters

AI-generated content may be incorrect.*

*Lastly, do the following:*

* *Explain why you may include planned backorders (i.e. plan to accept purchases when out-of-stock such that some customers will wait for their purchase). Please think critically prior to doing any searches for why* – This could help maintain customer satisfaction as it would allow customers to still purchase a good while it might be out of stock, keeping them from changing to an alternative. It also can help limit demand issues or fluxuations by allowing for some leeway in demand planning
* *Make a similar “sawtooth chart” with the results here. Note, it will be very similar as before, but inventory will go below 0 before replenishing*