Module 01 – Basic 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:*

* *The products involved in the analysis (id -> name)*
* *Average yearly profit per product*
* *Optional: observe monthly or weekly data, do you notice anything?*

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 variables, objective function, and constraints*

*Profit= .42x1+.38x2+.31x3*

*Constraint Butter= 1x+2y+1z<=1464*

*Constraint Flour= 6x+9y+4z<=6954*

*Constraint Sugar=8x+4y+1z<=4758*

Model Optimized for Profit

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

* *A screenshot of your optimized final model*

*A screenshot of a spreadsheet

AI-generated content may be incorrect.*

* *The optimal value with the number of recommended units to produce per product*
* *Assume that the amount of product being produced is per oz*

Model with Stipulation

*Please copy the tab of your original model before continuing with the next part. What happens if you add an additional constraint to the model such that the product being produced the least must produce more. Try constraining the model to add 1 more, than 10 more, etc. and show what you notice. Please include:*

* *Details on what constraints you tried*
* *Its impact on the optimal value*

For my first modification I added the constraint that the highest profit product had to greater than or equal to the most produced product previously. This dropped the optimal value down 1098 and changed the profit made to 406.26 from 556.32.

The second stipulation added was that all products need to be produced at least 200 times. This reduced the optimal value by 200 to 1264, and decreased the profit to 474.32 from 556.32.