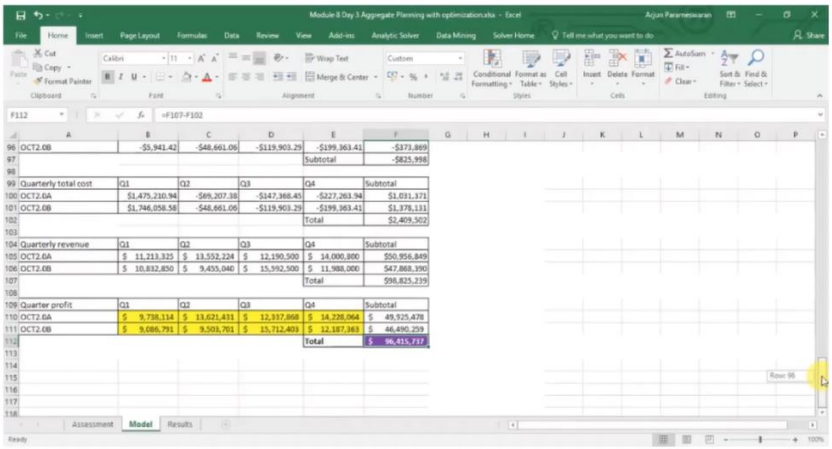
M7L7c. Optimization Business Case

Slide #1

Slide #2

Operation and production business case – solver setup



The video clip demonstrates the setup of the optimization model with the analytical solver add in tool.

Now let us set up the model in our tool.

This is my objective function.

I'll select this objective and I need to maximize my profit.

My objective is added.

Now let's add the variables.

The variables here are the number of units to be produced, which is what we are here to determine.

So I'll add that as a normal decision.

Now let's add the constraints one by one.

The first constraint is the capacity constraint.

The overall total number of units produced should not exceed the plant capacity limits.

We have added that constraint.

The next constraint is the labor constraint.

That is, the total number of labor hours required for production should not exceed the limit.

We have added that constraint.

The next constraint is the inventory constraint.

We need to ensure that the ending inventory is within the minimum and maximum inventory levels.

The ending inventory should be greater than the minimum inventory levels.

And the same inventory should be less than the maximum inventory levels.

Similarly, for model B as well, it should be greater than the minimum inventory level, and less than the maximum inventory level.

These are the constraints provided to us.

Now, apart from this, we'll add the non-negativity constraint.

You need to ensure that these variables are not negative, that is greater than or equal to zero.

Also ensure that these variables are integers.

You need integer values as a production number of units produced.

So we have all our constraints in place.

Non negativity is done. Integer is done. So let us solve it.

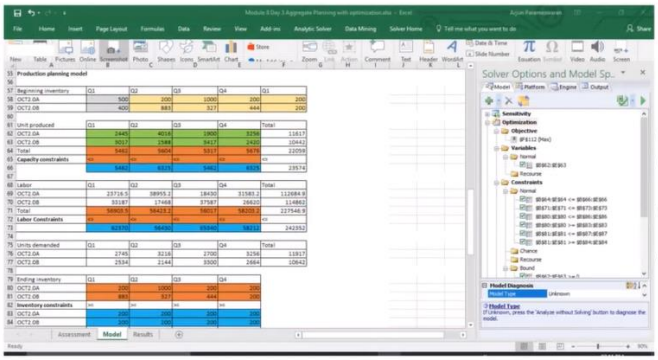
So we have the number of units to be produced.

And this is the maximum profit. that is achieved by the company.

And these are the quarterly production quantities for both the models.

Slide #3

Aggregate Planning Analytical Decision



Decisions: Production of OCT2.0A and B each quarter

Objective: **Max profit**

Constraints: Capacity limit
Labor limit
Inventory bound (risk management)

The screenshot of the operation and the production business optimization model illustrates the model setup.

The decision variables, constraints, and objectives are in the analytic solver window.