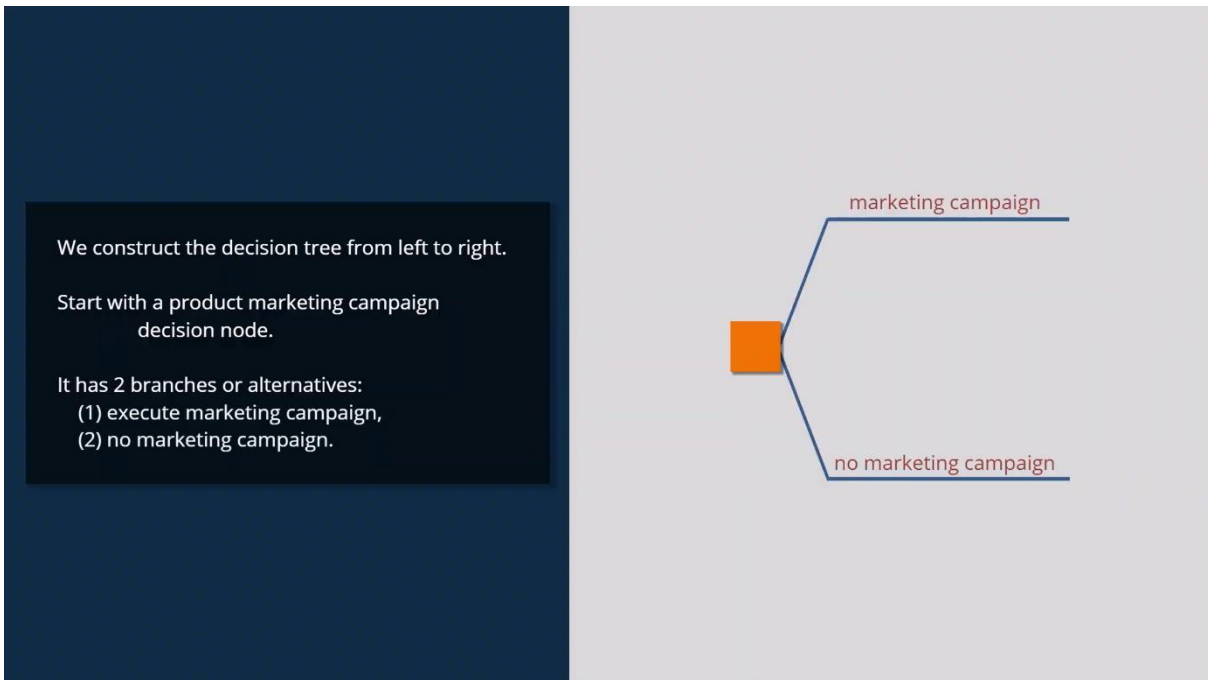
M4L7. Building and Solving Decision Trees

Slide #1

In this topic, we will discuss how to build and solve decision trees using the previous simple example.

Slide #2

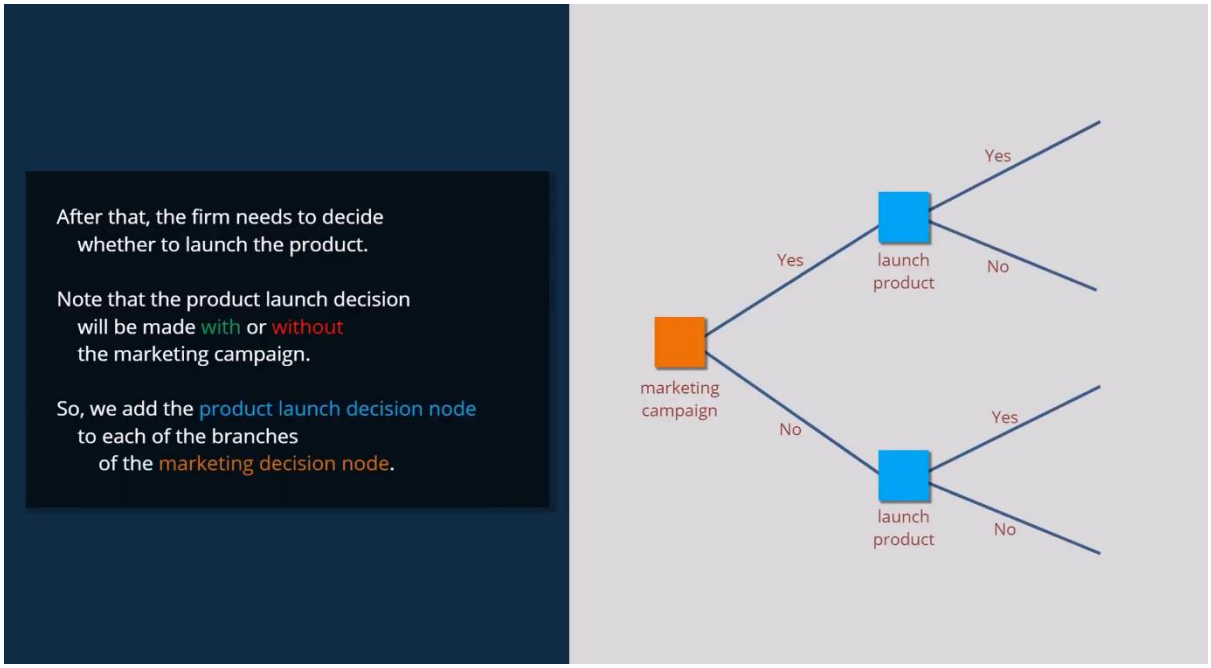


We construct the decision tree from the left to the right.

Start with a product marketing campaign decision node.

It has two branches or alternatives. The alternatives available to the firm are Execute Marketing Campaign or No Marketing Campaign.

Slide #3

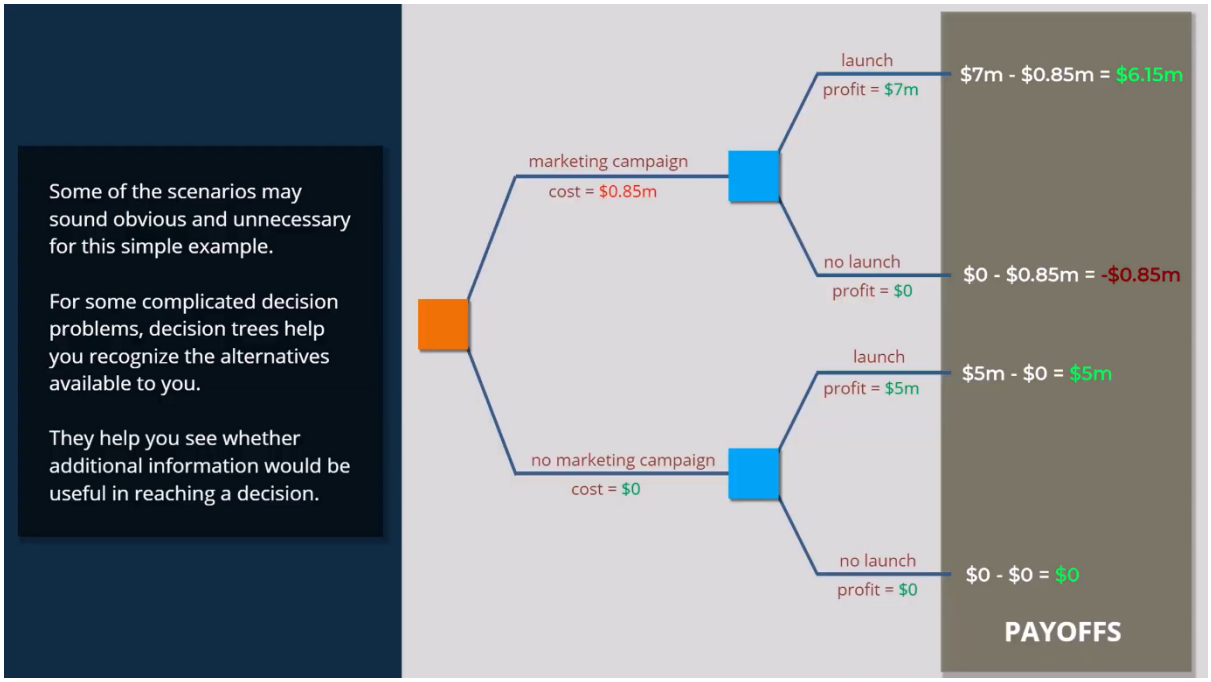


After that, the firm needs to decide whether to launch the product.

Note that the product launch decision will be made with or without the marketing campaign.

So we add the product launch decision node to each of the branches of the marketing decision node.

Slide #4



At the end of the product launch branch is the payoff, or consequences, of each of the four scenarios.

Launch product with marketing campaign.

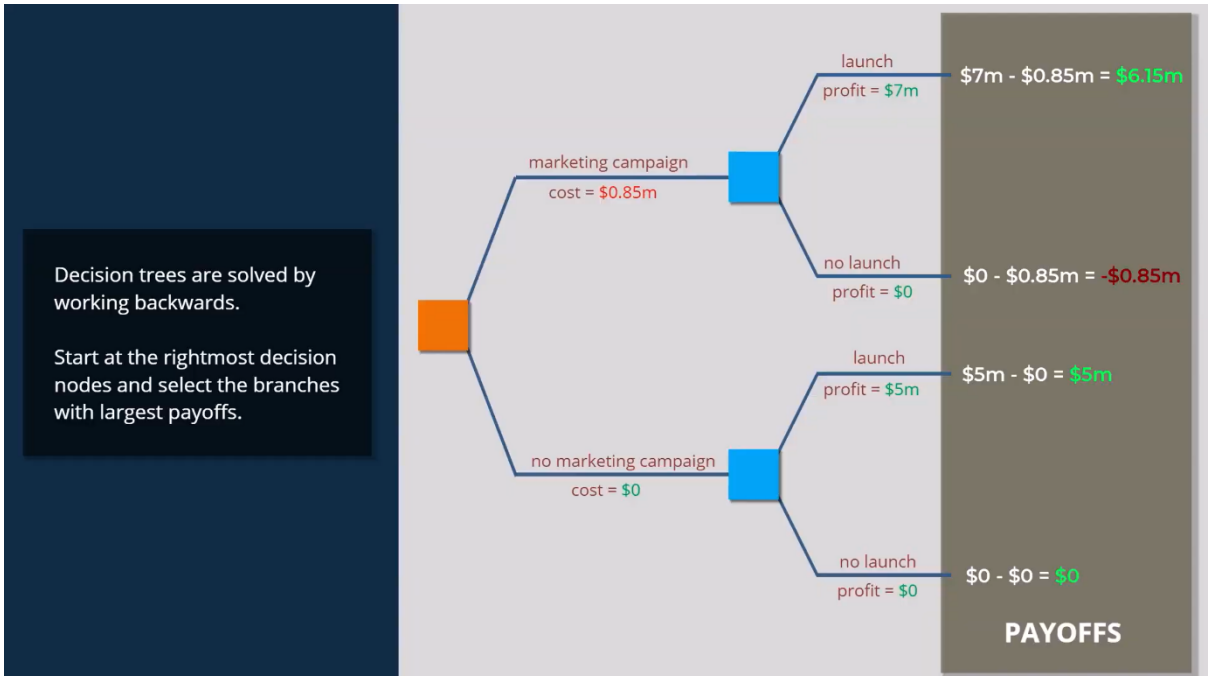
Do not launch product after marketing campaign.

Launch the product without marketing campaign and do not launch the product after the marketing campaign.

Some of the scenarios may sound obvious and unnecessary for this simple example, but for some complicated decision problems, decision trees help you recognize the alternatives available to you.

They help you see whether additional information would be useful in reaching a decision.

Slide #5



Trees are solved by working backwards.

Start at the rightmost decision nodes and select the branches that give the decision maker the largest payoffs.

For the tree in the figure, this means choosing the launch branch for the first and second launch decisions, since any profit is better than no profit.

Then, we need to count the marketing cost and subtract it from the top marketing campaign branch.

This means that the net profit becomes 6.15 million dollars.

The best outcome of not doing a marketing campaign is only 5 million dollars, less than the other alternative.

So, the decision is to execute the marketing campaign followed by launching the product.

The series of decisions will lead to a 6.15 million dollar net profit.