# M4L3. Expected Value

## Slide #1Expected Value

In this topic, we will discuss the concept of expected value, using the data from the biodiesel business case.

## Slide #2Popular analysis

A popular analysis of business decisions under uncertainty is based on the expected value concept.

An expected value is a weighted average of all possible outcomes of different scenarios.

In other words, it is obtained by multiplying the value of each possible outcome by the probability of that outcome, and summing the result.

## Slide #3Market Condition Table

Through the expected value method, the renewable company can determine the expected financial returns from its renewable energy project options considering the probabilities and values of different market scenarios.

The method enables the company to make well informed decisions by choosing the strategy that offers the highest potential monetary benefits while considering the associated uncertainties.

In this case, the first option, which involves building a new plant with a minimum cost technology solution, leads to an expected value of 14.1 million dollars.

This value is seven percent greater than that of the plant using technologies that maximize flexibility.

Based on this expected value analysis, the renewable energy company should opt for the cost leadership technology strategy, as it promises a 7% higher financial return on investment compared to the maximum flexibility technology option.

## Slide #4Advantages of Expected Value

The expected value method has obvious advantages and disadvantages.

The advantages of the expected value are.

First, it takes uncertainty into account by considering the probability of each possible outcome and using this information to calculate an expected value.

The expected value represents a weighted average of all possible outcomes.

Second, the information is reduced to a single number, resulting in an easier decision.

The expected value is suitable for analytical processes.

Third, the calculations are relatively simple.

It is just a linear combination of those weighted outcomes.

You can do that with Excel.

## Slide #5Disadvantages of Expected Value

The disadvantages of expected value are, first, the probabilities used are usually very subjective.

To overcome this, we need to have a robust business intelligence and forecasting system to improve the quality of the data.

The second disadvantage of expected value is that it may not correspond to any of the actual possible outcomes.

Many organizations use stage and gate process to manage this problem.

As the project progresses, the expected value gets closer to its actual outcome and the difference between possible outcomes narrows.