



Advantages of decision tree analysis

- The options and risks are set out clearly and logically.
- Decision trees show the amounts of money involved in each project and the likelihood of success for each possible outcome.
- By constructing a decision tree, courses of action not previously considered can be revealed: for example, to do nothing.
- Showing options in a visual form can help to explain alternatives to non-specialists.

Drawbacks to using decision tree analysis

Despite the advantages outlined above, this type of analysis should be used with caution.

- The probabilities are estimates and could therefore be inaccurate, out of date or liable to change.
- The data used are quantitative and do not include any consideration of the qualitative element of decision making.
- It would be quite easy to present biased data to favour one of the options.

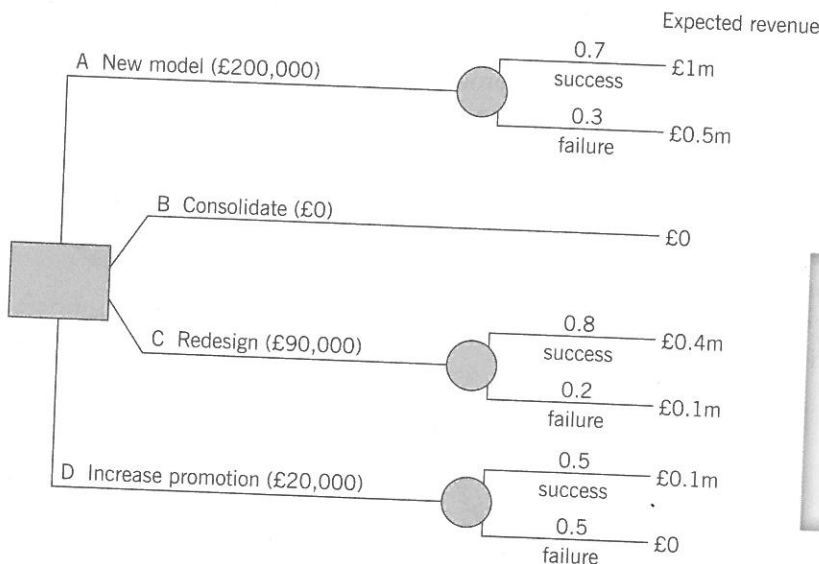


PRACTICE QUESTION

- 1 Company B is faced with four possible options: to consolidate the existing range; to introduce a new model at a cost of £200,000; to redesign and relaunch an existing product at a cost of £90,000; or to increase promotion on the existing product range at a cost of £20,000. The probability factors shown in the diagram below are the result of extensive research among current and past Company B customers.

Using the decision tree, advise the business how it should proceed.

- A = New model
- B = Consolidate existing range
- C = Redesign and relaunch existing product
- D = Increase promotion of existing products



REMEMBER: You will see variations in the terms used for decision trees. Do not be put off by an unfamiliar word – the process will be the same. Work from right to left to find the final EMV or expected return.

STRETCH YOURSELF

Hairdressers' decision

Gavin and Bella are qualified hairdressers who own their own salon. It is popular and profitable. They only employ two junior assistants, as they take pride in the fact that they deal with each customer themselves. This close personal service has worked well up until now. Gavin and Bella's daughter is planning to marry in India next April and this is a very busy period for the salon. Gavin and Bella both want to go to the wedding, but they realise that this will mean being absent from the business for two weeks. They have considered three alternative options:

- Close the salon for the entire period and give up the £6,000 profit it would have made over the two weeks.
 - Employ a professional hairstylist to take over the running of the salon for two weeks. She would cost £2,000 to employ but Gavin believes that there is a 50% chance of her making a £3,000 profit and a 50% chance of a £4,000 profit (before her salary is subtracted).
 - Ask two friends to manage the business in their absence. They would receive a payment of £500 each. They know most of the customers personally, but their experience of hairdressing is limited to taking a course at college several years ago. Gavin believes that the two relatives have a 60% chance of making a profit (before payment) of £3,000 and a 40% chance of making £5,000.
- a Draw a decision tree of the options available to Gavin and Bella and add to it the probabilities and possible returns of each option.
 - b Calculate the expected returns of the three options.
 - c Explain which option is best on financial grounds alone.
 - d Evaluate the other factors that you would advise Gavin and Bella to consider before taking the final decision.