

## Decision Trees

### Decision Trees

**Definition:** A method of tracing the alternative outcomes of any decision.

**Advantages:**

- Clearly lay out the problem so that all options can be considered.
- Allow managers to analyse fully the possible consequences and risks of a decision.
- Provide a framework to quantify the values of outcomes and the probabilities of achieving them.
- Decision trees give an easy-to-understand visual representation of the problem.

**Disadvantages:**

- Can oversimplify a decision and focus too much on the financial outcome.
- Don't include other factors such as manpower considerations, managers' opinions and marketing issues.
- Probabilities are difficult to predict and may reflect bias.
- There may be other options that are not included in the decision tree.
- Can be time consuming to construct and may be interpreted with bias.
- Time lags often occur in decision-making so information may be out of date.
- Use probabilities which only gives an estimate which may be inaccurate.

GG Adventure Holidays Ltd is thinking of ways of advertising its next year's programme, but is not sure which media to use. It has narrowed them down to three options: advertising in a Sunday newspaper, advertising on commercial radio or using direct mail.

The costs, probability of success and estimated revenues for each option are shown in the table below.

	Cost (£)	Probability of success	Estimate Revenue (£)	
			Success	Failure
Sunday Newspaper	120 000	0.6	600 000	120 000
Commercial Radio	100 000	0.4	700 000	150 000
Direct Mail	70 000	0.5	500 000	100 000

(a) Use the information provided to create a decision tree diagram and recommend which one of these media the company would be best advised to use. [7]

### Evaluative Considerations

The predicted outcomes and estimates need to be based on valid data and research if they are to have any real quantitative value.

As with all decision-making methods, decision tree analysis should be used in conjunction with other types of decision-making. Decision trees are just one important part of a business decision-making tool kit.

**Qualitative factors** will also have an influence on the decision made, such as:

- the effects of decisions on stakeholders e.g., employees, management, suppliers and customers
- training costs
- recruitment costs
- capacity management
- marketing impacts.

All these need to be considered before a final decision is made.

