

PREFERENCE CASE SELECTIONS

CASE II - FORECAST MANAGEMENT

Demand and production planning are usually based on sales forecasts, and unreliable forecasts serve as risky tools for making decisions today who affect the future of a company. The violent market fluctuations of today, especially in the ICT business, decrease the possibilities to produce reliable sales forecasts. Such forecasts are of highest importance, since they are the basis for demand and production planning. Overage- and underage costs are effects of decisions made from inaccurate forecasts, a risk that should be analysed in the practise of planning.

FORECAST MANAGEMENT

Forecast management may be defined as the process of interpreting, judging, adjusting, and acting upon a given forecast. The entire justification for producing forecasts will be their use in making decisions. The implication of this is that using forecasts helps make better decisions. In particular, the forecasts play specific roles in improving the quality of decision making. However, the quality of forecasting has not improved despite today's technological development, and while it is hard to increase the quality in forecast accuracy, there remain a great possibility to improve the quality in forecast management. The decision analytic approach to forecast management used by Preference yields the following benefits:

- It may reveal previously unidentified alternatives more likely to achieve the objectives.
- It reveals the costs of different outcomes.
- It structures and exposes the intuition of a decision maker or a decision making group.
- It provides a common language which improves a discussion and helps building consensus, which may speed decision implementation.
- It forces an organisation to behave rational, despite the bounded rationality among its members.

Instead of presenting a forecast as a precise value, which always will be more or less incorrect, we present our belief in the form of a prediction interval with an associated belief distribution. By studying historical forecast errors according to various error measures, as well as taking the intuitive beliefs of the organisation into account, the size and shape of a reasonable prediction interval is obtained. As different product portfolios do not share prediction interval, there is an increased complexity in the planning procedure. The problem becomes multi-criteria, while considerations about both the quantity and the portfolio's composition must be taken into account in the analysis.

EXAMPLE

Consider the following situation. A manufacturer of telecommunication hardware have witnessed a drawback in demand, however expects a market upswing for a number of products related to upcoming technology. To enter such an upswing with a high capacity in demanded products is of high concern, due to heavy competition in market shares. From historical and up to date forecasts delivered from headquarters, together with market intelligence and planning experience we create a prediction interval for these products. The aim of a decision analysis is then to find the best approach to planning, not exposing the company of unwanted risks associated with under- and over capacity concerning the most significant products and labour. We identify a set of possible tactical or strategic planning alternatives, e.g.,

- Build no extra inventory.
- Build inventory of the specific product portfolio during a given period of time, which corresponds to an increased capacity of 200 units during the following time period to meet expected demand.
- Build inventory of the specific product portfolio during a given period of time, which corresponds to an increased capacity of 300 units during the following time period to meet expected demand.

Such problems can be represented in *DecideIT* as decision trees as shown in the figure below

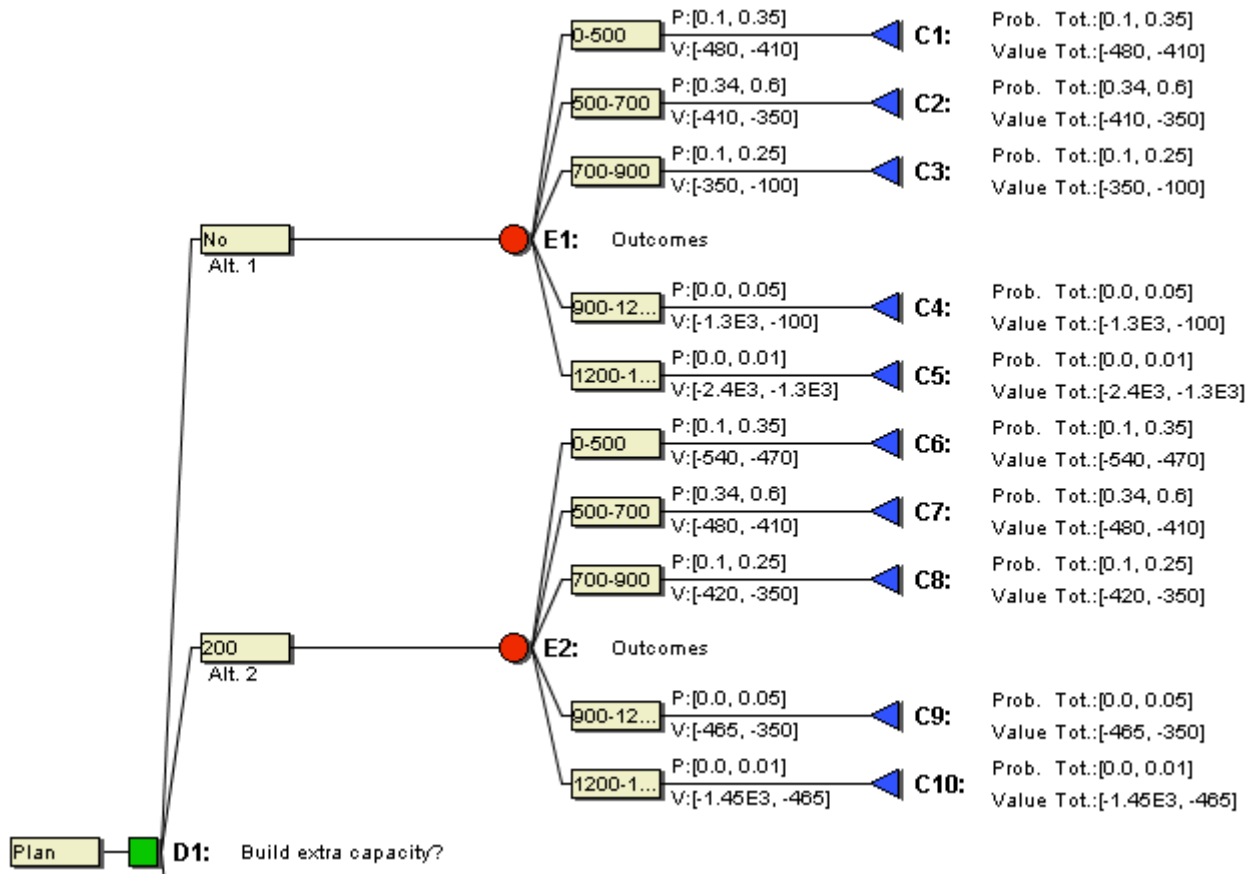


Figure: A decision tree

In the figure below, an evaluation of the planning options is shown as pairwise comparisons between the alternatives.

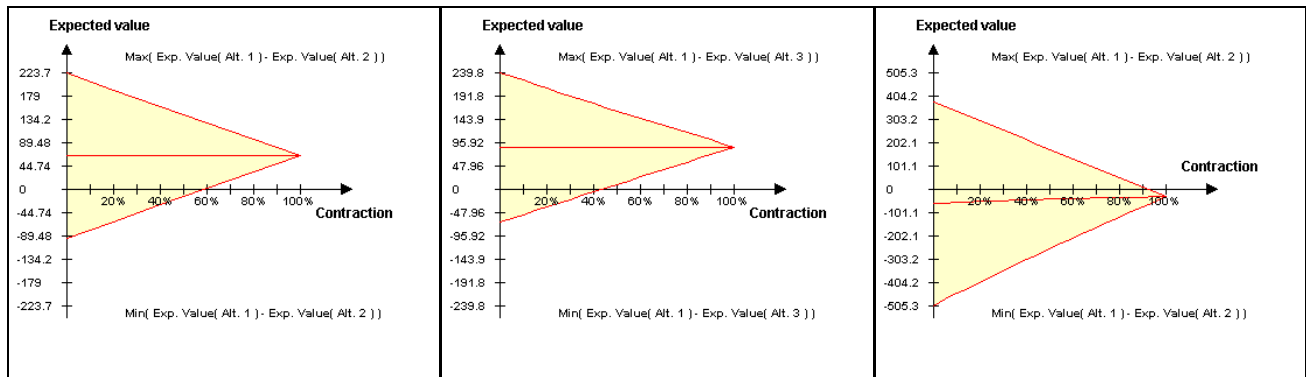


Figure: Example of evaluation of planning options

From the analyses above, we see that option 1 is better than both option 2 and 3, illustrated in the left and central graphs. Further sensitivity analysis show that the situation is extremely sensitive to more optimistic forecasts and beliefs, while a slight increase in probabilities for a market upswing yield the evaluation graph to the right when comparing option 1 and 2. The situation may be further analysed according to complementary rules and evaluation techniques.

Please contact Preference for further details.