Decision Making for Investment in Innovation

Challenge

A client with a mature business supplying speciality chemical products wanted to explore prospects for better meeting their customers' need for a more agile response to consumer trends through an improved product mix and faster response times. Two modular flexible production options had been proposed as supply chain transformations with the potential to improve costs and product lead times.

Approach

Britest tools were initially used with other strategic business analysis methods, identifying *location* as the key flexibility* for delivering the desired benefits.

The Britest *ChemDecide* decision support software was then used in three cycles to compare the new supply chain models against "business as usual." Helped by a Britest technical facilitator, the project team structured the decision to be made, the alternatives to be considered, and the selection criteria and weightings to be applied.

The first cycle indicated a strong preference for new Option B, but also identified significant uncertainty in the results. In the second cycle, Net Present Values were derived for each option using the Britest PrISM tool to build an initial financial model. In the third round, the potential impact of hypothetical new enabling technologies was built into the model.

Benefits

- A structured approach to decision making, with key business and technical information and the desired business benefits captured.
- Qualitative and quantitative financial and practical criteria evaluated side by side within a single tool. Decisions made and the basis for them both clearly recorded.
- Target operating window for the new process established, and a clear lead for technology review and prioritisation of the development work needed to move the existing process towards this.
- A clear technical target set, making early identification / elimination of candidate technologies easier.

Key Features:

Client - A speciality chemical manufacturer considering various investment options to enhance production flexibility in response to volatile market demand.

Industry - Application Area

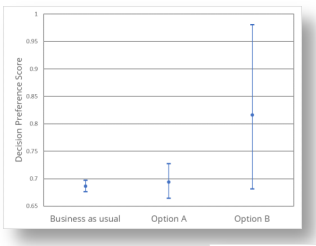
Specialty chemicals – strategic decision making

Challenge

Developing sound business cases to support investment proposals which take early stage data uncertainty into consideration.

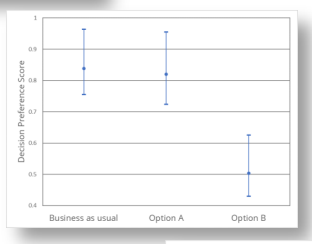
Outcomes

A structured decision making approach was applied, capturing key business and technical information and the business benefits sought. Qualitative and quantitative financial and practical criteria evaluated side by side within a single tool. Decisions made, and the basis for them, both clearly recorded.



Homing in on the prize: *decision summaries from three cycles of analysis in ChemDecide.*

The Decision Preference Score is a weighted composite index of multiple quantitative (e.g. delivery time, Net Present Values) and qualitative (e.g. technical risk) criteria related to manufacturing flexibility. High decision preference scores are favourable.



The use of the ChemDecide multi-attribute range evaluations (MARE) algorithm allows data uncertainty to be modelled using low, most likely and high values for each score—indicated by the error bars in each case.

van Kranenburg et al, TNO 2015, proposed five types of flexibility for analysing the requirements for flexible, modular production proposals:* ***product, capacity, feedstock, innovation, and location.*

A structured methodology for making complex decisions, dealing with uncertainties, and documenting the entire process.

Supporting organisations in gaining value from process understanding

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