

BANA Consulting

(www.bana-consulting.pt)

BANA Consulting (www.bana-consulting.pt) is a Portuguese based consulting company operating in the decision analysis field. Starting in 2006, BANA is proud to be one of the few organizations in Portugal providing public and private organizations with MCDA know-how and tools needed to improve organizations' decision making processes. It aims to help decision makers or decision groups in the difficult task of decision making when facing problems which deal with different objectives or points of view like balancing costs, benefits or risk.

The company was built upon the long range consulting and studying work of Prof. Carlos Bana e Costa during the last 20 years not only helping to further develop decision aiding theory but also providing organizations all over the world with the practical expertise they need in numerous consulting projects.

BANA develops consulting projects, provides training services and is able to build decision support tools suited to each clients needs.

Unlike the traditional expert 'black box' approach to decision support, BANA provides its clients with an interactive process-consultation approach designed to transfer its know-how to the client along the development of a socio-technical process of decision-aiding. This improves organizational management skills, resulting in gains of efficiency in resource allocation and efficacy is achieving core objectives.

Some services provided by BANA are:

- Development of strategic plans
- Allocation of resources
- Comparison of alternative locations for development of major infrastructures
- Participative evaluation of social, economic and environmental impacts of major infrastructures
- Resolution of horizontal and vertical conflict in when implementing public policy
- Analysis of cost, benefit and risk associated with projects and programs
- Evaluation of employee performance
- Evaluation of supplier performance
- Evaluation of bids in public calls for tenders
- Development of risk models and scenario analysis

To achieve its goals BANA makes use of several state of the art methodologies namely MACBETH. This pairwise comparison methodology has been implemented in the M-MACBETH software package commercialized by Bana Consulting (download available at www.M-MACBETH.com).

Measuring Attractiveness through a Category Based Evaluation Technique is the goal of the MACBETH approach. It permits the evaluation of options against multiple criteria. The key distinction between MACBETH and other methods is that it needs only qualitative judgements about the difference of attractiveness between two elements at a time, in order to generate numerical scores for the options in each criterion and to weight the criteria. The seven MACBETH semantic categories are: no, very weak, weak, moderate, strong, very strong, and extreme difference of attractiveness. As the judgements expressed by the evaluator are entered in the M-MACBETH software, their consistency is automatically verified and suggestions are offered to resolve inconsistencies if they arise. The MACBETH decision aid process then evolves into the construction of a quantitative evaluation model. Using the functionalities offered by the software, a value scale for each criterion and weights for the criteria are constructed from the evaluator's semantic judgements. The value scores of the options are subsequently aggregated additively to calculate the overall value scores that reflect their attractiveness taking all the criteria into consideration. Extensive analysis of the sensitivity and robustness of the model's results will then provide a deeper understanding of the problem, contributing to attain a requisite evaluation model: a sound basis to prioritise and select options in individual or group decision-making contexts.

Some of BANA's most recent projects include:

- Construction of models for bid evaluation in public calls for tenders as it was the case of the acquisition of armed vehicles by the Portuguese Ministry of Defence.
- Public call for tenders for the introduction of the Digital Terrestrial Television (DTT) in Portugal which is being carried out by the Portuguese regulatory authority for electronic and postal communications.
- Construction of a multiple criteria decision model to help the Secretary of Social Development and Human Rights (SESDSH) of the Government of the Brazilian State of Pernambuco to elaborate its medium term strategic plan.
- Construction of a multiple criteria decision model for the selection of a concept for the new Lisbon's airport reference plan.
- Development of reusable bid evaluation models for the Portuguese Electric Transmission Company (this application is described in an article recently published in *Decision Analysis*, march 2008, vol. 5, issue 1, pp. 22-42). Development of reusable bid evaluation models for the Portuguese Electric Transmission Company REN (Bana e Costa, C.A., Lourenço, J.C., Chagas, M.P., Bana e Costa, J.C. (2008), "Development of reusable bid evaluation models for the Portuguese Electric Transmission Company", *Decision Analysis*, 5, 1 (22-42).)