40: Weighting of criteria

The four cycles method combines the strengths of different planning processes to be able to recognize emerging trends and to make an e-business strategy. It provides a basic schedule for organizing planning activities. The objective of the four cycle method is to promote continuous planning that involves sufficient degree of formalism to ensure that all critical areas of information systems (IS) planning are addressed periodically (Salmela & Spil, 2002).
This method divides a chosen time period into four different planning cycles. Weighting of criteria is part of the fourth cycle: authorizing actions in which clear proposals for action are prepared.

Before one can start weighting the criteria, an uniform set of selection criteria should be defined in selecting IS projects. A few examples of these criteria are: project costs and benefits; and availability of resources (expertise, time and money) for execution. When the level and importance of the criteria differ too much then a weighting of the criteria can be defined. To do this, a weighting method of criteria can be helpful.

Different forms of weighting methods exist. For example Multiple-Attribute Utility Theory (MAUT), Analytic Hierarchy Process (AHP) and SMARTER. But for the weighting of criteria the simplest form will be used: Simple Multi-Attribute Rating Technique (SMART). This technique is widely applied because of the simplicity of both the responses required of the decision maker and the manner in which these responses are analyzed (Goodwin & Wright, 2004).

There are eight main stages in the analysis, listed in table 1.

Stage	Explanation	Possible tools	How to use it?
1 – Identify the decision maker	It is important that the person experienced a problem, otherwise there will be no problem. The person should also feel some responsibility for solving the problem.	-	
2 – Identify alternative courses of action	Find possible solution to the problem.	-	 Click at the website at this help button.
3 – Identify the attributes which are relevant to the decision problem	Select attributes that will make a distinction between the different solutions	Value tree (see also way 39)	
4 – Measure the performance of the alternatives on that attribute	Determine the costs/ benefits associated with the possible solutions. Then make a value scale for the attributes that are easy/ difficult to quantify.	Value scale (direct rating) & Value functions	Example value scale (p. 112) & value function (p.115)
5 – Determine a weight for each attribute	Give a weight to each attribute, to reflect the importance of this attribute to the decision maker.	Swing weights	Example swing weights (p. 255)
6 – For each alternative, take a weighted average of the values assigned to that alternative	Determine the performance of each possible solution by combining the scores allocated to each solution.	Adaptive model	
7 – Make a provisional decision	Select from the possible solutions the one with the best overall score.	-	
8 – Perform a sensitivity analysis	To test how robust the decision is to changes in the figures supplied by the decision maker.	Sensitivity analysis	Tutorial

Table 1 – Eight stages of the SMART method

With the following application one can calculate the weighting of criteria with most of the MAUT methods.

References

Goodwin, P., & Wright, G. (2004). *Decision Analysis for Management Judgment,* New York: Wiley.
Salmela, H., & Spil, T.A.M. (2002). Dynamic and emergent information systems strategy formulation and implementation. *International Journal of Information Management, 22,* 441-460.