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Minimising the effects of dysfunctional corporate culture in estimation and evaluation processes: A constructively simple approach

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Abstract

This paper explores connections between subjective judgements about uncertainty and corporate culture which are relevant to everyone interested in estimating project parameters or interpreting estimates prepared by others. The basis of the discussion is a simple example, drawn from an actual case. It involves estimating the uncertain duration of a project activity in an organisation with two common cultural conditions: a 'conspiracy of optimism', and 'irrational objectivity'. After considering some conventional approaches, the paper goes on to suggest a 'constructively simple' approach to estimation which is responsive to the emerging analysis and which also incorporates end-user adjustments to counter culturally driven uncertainties and bias.

Keywords: Culture; Estimates; Models; Probabilities; Uncertainty; Project risk management; Optimistic bias adjustments; Subjectivity and objectivity

1. Introduction

The estimation and evaluation of uncertain parameters is a core aspect of most project management processes. It is therefore important to understand the factors that influence parameter estimation and in particular, the extent to which bias may be involved. These factors are framed by the ideologies, beliefs and deep-set values within an organisation [1] and they will impact on how the shared attitudes to risk and uncertainty affect the estimation process.

Fig. 1 places estimation and evaluation activities within a general decision support process [2]. For present purposes this is a more useful framework than any particular conventional project risk management process, but the ideas developed in this paper can be embedded in any specific risk management process (PRAM [3], PMBOK [4], RAMP [5], MoR [6] or AS/NZS 4360 [7], for example), and used to interpret simple deterministic estimation processes.

As Fig. 1 indicates, a decision support process and embedded estimation and evaluation processes can be highly iterative. This is because uncertainty about how to proceed has to be progressively resolved by using simple working assumptions for early passes which are refined as necessary in later passes.

The decision making process illustrated in Fig. 1 recognises that estimating expected values and associated variability for parameters cannot be decoupled from: (1) understanding the context, (2) choosing a specific process for the analysis, (3) specifying the model structure, and (4) evaluating and interpreting the consequences of associated uncertainty. An holistic view of uncertainty is a key aspect of the present transformation

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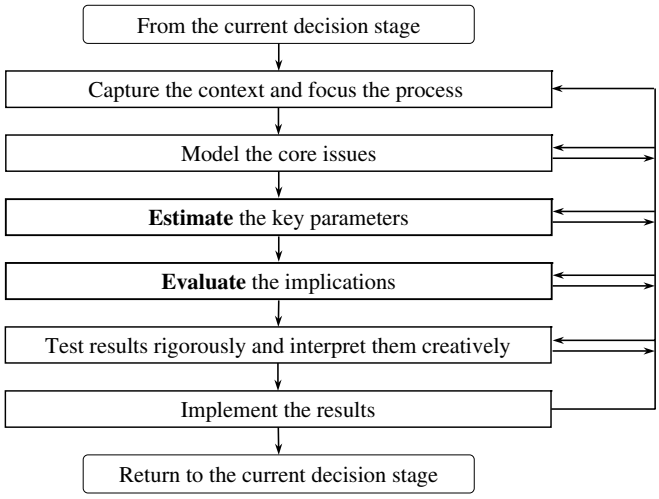

Fig. 1. Estimation and evaluation in a general decision support process.

of project risk management into project uncertainty management [8]. Uncertainty management must embrace ambiguity as well as variability. Ambiguity is associated with lack of clarity because of a lack of data, lack of detail, lack of structure to consider the issues, lack of clarity about the nature and variety of assumptions employed, sources of bias, and ignorance about how much effort it is worth expending to clarify the situation. Failure to recognise this can lead to estimation processes which are irrational as well as ineffective and inefficient.

This weakness is sometimes reinforced by a 'hard science' view of the desirability of rigorous theory and 'objective' data. In principle, we would like all estimates to be entirely objective, based on unambiguous interpretation of appropriate data employed in theoretically correct models. However, in practice there is no such thing as a completely objective estimate of any probability distribution model which is suitable for rational decision making. Assumptions are almost always involved in estimation and evaluation processes, even when lots of relevant data are available. Any assumptions which are not *strictly* true make associated parameter estimates and overall evaluations subjective. Particularly important are the fundamental 'framing' assumptions which influence the choice of model. There is virtually never 'one best theoretical model', as model choices are themselves subjective.

If we wish to make decisions which are consistent with our beliefs, we must use subjective estimates of parameters for subjectively selected models. This means our decisions will be non-optimal to the extent that our beliefs are misguided about model parameters, and to the extent that underlying assumptions about models are inappropriate. However, assuming our beliefs have some rational basis, if we make decisions which are consistent with our beliefs, the chances of optimal decisions will be much higher. This is 'rational subjectivity', now widely understood and subscribed to in terms of subjective probabilities and associated decision tree models, and the basis of most modern decision analysis textbooks since the period of Raiffa's classic '*Decision Analysis: Introductory Lectures on Choices Under Uncertainty*' [9]. Given that objectivity is not feasible, it should not be an issue. What is always an issue is the rationality of estimates, in Simon's sense of 'procedural rationality' [10]. Subjective estimates that are rational are what is needed, and 'irrational objectivity' has to be avoided. Unfortunately, irrational objectivity and a reluctance to recognise the significance of ambiguities are often encouraged by inappropriate organisational cultures.

Failure to recognise the significance of ambiguity is also reinforced by a reluctance to take subjective probabilities to their logical conclusion and adopt a pragmatic framework which emphasises the importance of being 'approximately right' in terms of a broad view of the right question. Being 'precisely wrong' in the sense of having a precisely correct answer to the wrong question is a standing joke, but there are clear cultural pressures within organisations driving many people in this direction. These cultural pressures, including a 'hard science' view of objective data and models, need to be recognised and managed if the effectiveness and efficiency of estimation and evaluation processes are to be improved. The 'constructively simple' approach is designed to neutralise these pressures in the context of a direct focus on process effectiveness and efficiency.

The origins of a 'constructively simple' approach to decision making lie in mainstream operational research [11]. Its recent development in terms of estimation [12,13] and more generally [14] has a project risk management focus, but it is a general approach, relevant to all management practice. This paper will now use a