



O.R. Applications

A taxing problem: The complementary use of hard and soft OR in the public sector

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Abstract

A review of the UK personal taxation system used a combination of hard and soft OR approaches in a complementary way. The hard OR was based on data mining to increase understanding of individual taxpayers and their changing needs within the personal tax system. The soft OR was based on soft systems methodology with two aims in mind. First, to guide the review and, secondly, as an auditable approach for collecting the views of key internal and external stakeholders. The soft and hard OR were used alongside one another, rather than one providing a contextual scheme for the other. The experience reveals that soft OR is much more than common sense and, that, used in parallel, soft and hard approaches have a powerful synergy.

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1. Introduction

During the last 25 years, an approach to OR, often known as soft OR, has been recognised as legitimate. Early discussions of how this relates to other OR approaches includes Jackson and Keys (1984), which provides an early discussion of how soft OR relates to other approaches, using

the typology of Burrell and Morgan (1979). Most commonly, it is contrasted with hard OR, though both terms are unfortunate, since the terms soft and hard have other connotations. That is, the approaches are often discussed as if they represent incompatible extremes but, as argued here, they can usefully complement one another.

1.1. Complementarity

If they are complementary, how can they best be combined? The term multimethodology

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(Mingers and Gill, 1997) is often used to describe approaches in which different methodologies are combined. Rosenhead and Mingers (2004, p. 540), citing Munro and Mingers (2002) in which practical applications of multimethodology were investigated, comments that ‘there are relatively few combinations of hard and soft together’. One of the rare such accounts is Lehany and Paul (1996), in which soft systems methodology (SSM) was combined with discrete event simulation to develop ways to improve a hospital outpatients department.

There is a tendency to assume that soft approaches are best regarded as Problems Structuring Methods (PSMs—see Rosenhead and Mingers (2004), for example). Such a view suggests that in an application based on combined soft and hard approaches, the soft will precede the hard. That is, the soft approach will be used to make sense of things and will help to establish the proper context within which the hard approach is used. Just such a combination is presented in Lehany and Paul (Rosenhead and Mingers, 2004).

This paper describes a study in which both soft and hard methods were consciously used. The soft method (SSM) was, however, used for much more than problem structuring. Paradoxically, a substantial portion of the problem structuring came from the sensitive use of hard OR. Indeed, as will become clear later, the soft and hard approaches fed off one another during the project, as shown in Fig. 1. This parallel and iterative use of hard and soft approaches proved very powerful and is a useful example of the practical complementarity of hard and soft approaches. The paper discusses aspects of hard and soft OR, presents the case study and reflects on what it shows about complementarity.

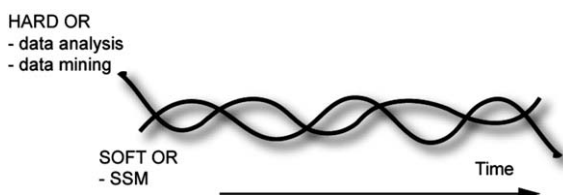


Fig. 1. Complementarity in the tax study.

1.2. The taxing problem

The Inland Revenue is a major department of the UK Civil Service. Its original remit was to collect the taxes needed by the Government to finance public services. Until recently, its major task was the collection of income taxes from individuals and corporate taxes from businesses. Its remit is now broader and includes a number of other responsibilities such as the payment of tax credits (for example, to working families) and the management of the system for collecting student loan repayments. Formerly a department with the more or less single pre-occupation of collecting taxes, it has become an agent of social change with tasks that include helping people to move into and to remain in work.

The Inland Revenue keeps its operations under continuous review trying to find more efficient and effective ways of meeting the goals set for it by Government. The study described here allowed some blue-sky thinking and analysis, set within the context of continuous review. The terms of reference for the overall study were set by the Board of the Inland Revenue and can be summarised as follows.

A study, in consultation with stakeholders, of the scope for modernising the operation of the UK’s personal tax system. The study should take account of the current situation, developments elsewhere in the world, the possibilities for simplification and the opportunities provided by new technologies. It should take account of the need for a more ‘joined-up’ approach to public policy and service provision.

The study team was a small group of tax policy experts that was able to draw on other resources it felt necessary. It chose to draw on the Inland Revenue’s own Operational Research resources and those of Lancaster University. This led to parallel work in both soft and hard OR. The hard OR was, mainly, based on data mining to establish profiles of customer groups and was conducted by in-house OR staff. The soft OR was based on Checkland’s soft systems methodology (SSM), which was used to provide a structured and rigorous approach to the study and also as a

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