Chapter VI

Using Decision Support Systems to Help Policy Makers Cope With Urban Transport Problems

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ABSTRACT

More than 70% of Europe’s population lives in urban areas. Transport pollution contributes significantly to severe health problems in many European cities. The impacts of air pollutants are particularly severe in busy city centres, where congestion creates long queues of stationary traffic pumping fumes onto streets crowded with pedestrians. Although improvements in vehicle technologies have led to steady reductions in pollutant emissions, the decrease has been slower than expected due to the ever-increasing transport demand.

Getting urban transport “right” is a challenging task for decision-makers given the number of policy areas affected, the large range of stakeholders and the high political sensitivity of almost any option adopted (including “do nothing”). Ultimately any decision must rest with the skills and informed judgement of the decision-maker or decision college. It remains difficult.

The work presented shows the development of a DSS called Navigate Utopia. It is a web-style tool based on Multicriteria Analysis which has been developed to allow policy-makers to explore and evaluate the numerous new transport technology options already available or on the point of entering the market.

Navigate Utopia draws on practical experience derived from previous case studies in Europe, giving guidance on how these can best be applied to specific urban situations and providing tools to understand what the effects
might be. It considers also the wide range of new and improved propulsion systems currently coming on stream and draws together findings from a wide range of disciplines to address the complex issue of how to ensure successful market entry of new transport technologies.

INTRODUCTION

Within the research community applying multi-criteria approaches to decision support systems (DSS) there is extensive debate on issues of theory. These range from comparing the respective merits of the predominantly “Anglo-Saxon” multi-criteria decision making (MCDM) and the essentially “European” multi-criteria decision aid (MCDA) (Roy, 1985) to such matters as the possibilities of incorporating behavioural research findings (Stewart, 2000) and the consequences of ignoring ethical and normative concerns (Henig, 2001; Rauschmayer, 2001). In this chapter we try to bring this often rarefied debate into the realm of practical decision enhancement by stressing the importance of intense customer interaction during the decision support system (DSS) construction phase.

To achieve this we focus on a particular software product called Navigate UTOPIA. This is a decision support tool, incorporating an MCDA, developed as part of the European Commission’s UTOPIA project. (UTOPIA = Urban Transport: Options for Propulsion systems and Instruments for Analysis.)

Although most of what follows relates to the problems of urban transport policy it is not transport per se which concerns us in this chapter. The focus is more general and concentrated on the benefits of intense interaction with potential DSS users, particularly when these include stakeholders with limited technical training.

As it happens transport decisions are particularly well suited to a multi-criteria approach (Bana e Costa, Nunes de Silva, & Vansnick, 2001; Brustow & Nellthorp, 2000; Modesti & Sciomachen, 1998; e.g., Roy & Hugonnard, 1982; Tsamboulas & Mikroudis, 2000) given their complexity, their interaction with a whole series of economic, ecological, social and political subsystems and the large number of stakeholders involved. Getting urban transport “right” is a challenging task for decision makers, given the number of policy areas affected, the large range of stakeholders and the high political sensitivity of almost any option adopted (including “do nothing”). Ultimately any decision must rest with the skills and informed judgement of the decision maker or decision college. It remains difficult.

This is also the type of decision where competing techniques, notably cost-benefit analysis, have been shown to be not only impractical but also liable to exacerbate the problems (Munda, Ni, jkamp, & Rietveld, 1994). In urban transport decisions it is critically important that ownership of the decision remains with the multiple stakeholders. Moreover hostility of many of these actors to any prescriptive or black box approach strongly favours MCDA (Paruccini, 1992). For these reasons this is a project which yields practical guidelines and new avenues for further research.
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