

# Chapter 9

## How to Market OR/ MS Decision Support

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### ABSTRACT

*This research examines what to do to have decision makers more utilize OR/MS decision support. We investigate OR/MS decision support from a new viewpoint of service. Firstly, based on the fact that what is provided by OR/MS decision support is information to aid in decision making, we show that OR/MS decision support shares characteristics with service, hence can be considered as a kind of service. Next, we analyze OR/MS decision support from the viewpoint of what is necessary for service of high quality, and we clarify the issue of communication gaps. If we investigate preceding research in OR/MS (Operations Research/Management Science), it turns out that there is surely a problem with communication gap between decision makers and decision supporters. Finally, we show that it is effective to utilize problem specification, which is a decision-maker-friendly description of problems proposed by research groups including the author, as one approach to bridge the communication gap.*

### INTRODUCTION

Interest in the service science (Services Sciences, Management and Engineering: SSME) has been rising since the idea of service science was proposed at Almaden research institute of the U.S. IBM (Refer to Hidaka, 2006, for education and research activities of the service science in Japan and abroad). Behind this, there are the facts: the

share of the service industry in many developed nations accounts for 70% of GDP, and over recent years the profit from service-based businesses has been rising dramatically even in the manufacturing industry. These facts have required deeper understanding of service more than ever.

In many cases, service are mostly conducted by a seat-of-the-pants approach, and as a result low productivity of service has been pointed out. Contrarily, service science transforms service into an object for scientific analysis. In Hidaka (2006),

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one purpose of service science is stated as “to solve problems arising from the characteristics of services” (p.39).

In OR/MS, mathematical techniques are applied to decision maker’s problems. The activity of offering information for a decision maker’s problem by using such mathematical techniques (OR/MS decision support, hereafter) can be considered as a service. Taking advantage of rising interest in service science, it is meaningful to investigate OR/MS decision support from a new viewpoint of service.

Service quality has two dimensions: technical quality and functional quality (Grönroos, 1994; Parasuraman, Zeithaml, & Berry, 1985). Technical quality focuses on what is delivered (i.e. outcome). Functional quality focuses on how the service is delivered (i.e. process). In this research, we analyze OR/MS decision support not from the viewpoint of what kind of information is offered, but from the viewpoint of how the information is offered to decision makers (i.e. functional quality).

In this research, we will show (1) that OR/MS decision support is a kind of service addressable by service science, (2) that a communication gap exists between decision makers and decision supporters, and (3) that a new approach that utilizes problem specification is effective to bridge the communication gap.

This chapter consists of 6 sections. Section 2 is background. In Section 3, we analyze the characteristics of service and OR/MS decision support, and show that the activity to support decision making with mathematical techniques is a service. In Section 4, we analyze OR/MS decision support from the viewpoint of what are necessary for service of high quality, and clarify the issue of communication gap between decision makers and decision supporters. In Section 5, we show a case exemplifying the effectiveness of utilizing problem specification, which is a decision-maker-friendly description of problems, to improve the issue. Section 6 provides concluding remarks.

## BACKGROUND

Service science requires multidisciplinary approach that integrates elements of computer science, operations research, industrial engineering, business strategy, management sciences, social and cognitive sciences, legal sciences, and so on (Council on Competitiveness, 2004; IBM Research). OR/MS is commonly thought to play an important role in service science where service are scientifically analyzed. However, as Hidaka (2006) pointed out, service usually include many components that cannot be properly expressed as mathematical models and thus cannot be solved by OR/MS in isolation. It may be caused by human factor or social practice and regulation. For such problems, it is necessary for OR/MS to collaborate with other fields of research.

As mentioned above, OR/MS is in general regarded as one of the tools of service science. Compared with this, this research regards OR/MS (more properly, OR/MS decision support) as one of the objects of research in service science. There are some bodies of research that discuss the necessity of applying OR/MS to service or the expectation to such studies. However, there is little research that explicitly analyzes OR/MS as a service.

If we investigate some preceding research in OR/MS, we notice situations where OR/MS is not fully utilized. Little (2004) pointed out that “the big problem with management science models is that managers practically never use them” (p.1841). Little (2004) concluded that “a model that is to be used by a manager should be simple, robust, easy to control, adaptive, as complete as possible and easy to communicate with” (p.1841). This article was selected as one of the most influential in the first 50 years of *Management Science*. This indicates the importance of the problem that Little (2004) pointed out. Levasseur (2007) focused on how to promote the benefit of OR/MS more effectively to prospective customers. Levasseur (2007) pointed out that the approach in promoting OR/

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