Chapter 16
Resources in Parks and Police Management Applying Decision Utility to Solve Problems With Limited Resources

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ABSTRACT

This is the first research article that attempts to relate public service to managing an organization and explains systems with realistic yet simplistic examples. This article is the first of its kind to relate public service to managing organizations that relate public service such as parks and police. It measures and implements maximin value functions. A maximin value function applies when the criteria are totally non-substitutable: a decrease in a critical criterion cannot be compensated for by an increase in another criterion. This article illustrates situations where a maximin value function is an appropriate model, develops a method to measure a decision maker's maximin value function, and demonstrates how a maximin value function can be used in applications such as park and police systems. The measurement technique is easy to understand and most decision makers can complete the process in a short period of time. For quantitative scheduling techniques found in journals, their wider use in applications has been declining due to a variety of obstacles. This article will first list a number of these obstacles and then suggest ways to overcome them. Parks and Police departments are government agencies that both have limited and competing resources. In these circumstances, it is an ideal situation to share the resources as much as possible. In this article, examples are shown of where the limited resources

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may occur in both agencies, and how the manager may overcome these problems by sharing the resources. Examples of affective and just sharing of resources are given for both parks and police departments. In Parks Management, affective trade-offs are shown among trim mowing, tractor mowing, garbage collection and ball-field dragging. In Police departments affective trade-offs are shown among foot patrol, car patrol, detective analysis and office work.

INTRODUCTION

Let us begin with a situation encountered in 1972 by a researcher in devising a computerized quantitative production scheduling system for a tire production plant. The schedule produced by the system was constrained by the machines available, the sequencing of the machines for each type of job, the flow of materials, the demand of make to order jobs, the demand of make to stock jobs, the job due dates, and the personnel available. The corporate MIS department commissioned the system which was designed to be updated on their update computer more than once a week. After the system was completed, the MIS department said the system was a success because it demonstrated to the company that the computer could be used to schedule production which was the entire purpose of the project. After much thought, there were many reasons for the non-implementation. (1) Job control: the production schedulers did not want the MIS department to take control. Basically, they did not want someone else doing even part of their job. (2) Efficient schedule: the production schedulers felt that a computer program could never produce a schedule as efficient as their own and the company had the potential to lose money. (3) Short term priority changes: the computer schedule could not respond to short term changes in the priorities such as marketing or corporate headquarters requesting that a particular customer receive top priority today. (4) Tradeoffs: Production schedulers did not agree with the suggested schedule and more importantly did not know how the computer schedule that made the myriad of tradeoffs necessary to produce a schedule. For example, a production schedule must tradeoff decreasing total setup time versus increasing the chance that some due dates will not be met. In addition, if all due dates cannot be met, the computer schedule internally chooses which jobs are late and the production schedulers may not agree with the tradeoffs used to make that choice. (5) Preference and knowledge input: the computer schedule did not reflect the preferences and knowledge of the production schedulers or any other department such as marketing. (6) Using the computer schedule as a tool: most production schedulers don't understand or even want to understand how the quantitative scheduling algorithm determines the computer schedule. Therefore, any real or perceived problem with the computer schedule is cited as proof that