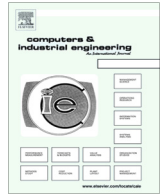




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Fuzzy goal programming for health-care organization

Safiye Turgay*, Harun Taşkın

Sakarya University, Turkey

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ABSTRACT

This paper presents fuzzy goal programming using with exponential membership function, which uses the modeling, and solving of health care system for optimal efficient management. The limited human resources and budget in a health-care organization are described with fuzzy conditions for determine the future strategies for unknown situations. In this study, the exponential membership function is preferred dynamic situation in next period. The study aims to assign the resources for optimization with enable management to meet the fuzzy objective of minimizing the system costs while patients are satisfied. The fuzzy goals are identified and prioritized for the strategic planning and resource allocation. A fuzzy goal-programming model is illustrated using the data provided by a health-care organization in Turkey-Sakarya private hospital.

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1. Introduction

The fuzzy goal-programming model is developed and used the health-care organization for strategic planning and allocation in limited human resources. Turkey's health care system consists of the public and private sector, which are facing to very competitive conditions reason of the patients' selection independence in these days. It is facing extreme pressures to do extremely well in an environment of rapidly changing expectations, exploding global resource needs, and increased financial demands, and patients' pressure that forces to managers to give to right decisions. Furthermore, today's health-care systems are complicated by multiple objectives, multiple evaluation criteria, and evaluated by multiple decision-makers within the system, while resources and budget are extremely limited (see Tables 1 and 2).

As the health-care systems react to severe financial pressures, too much emphasis will be often placed on balancing the budget at the expense of the goals of the systems. The critical issue in the management of a health-care system is not just financial efficiency. The operational policy must be based on the compromised agreements of the diverse groups within the health-care system. Therefore, a systematic analysis and evaluation for effective resource allocation in a system are essential to provide competitive advantages for future survival and actions for the goal achievement. In this paper, a fuzzy goal-programming model is developed

based on the data obtained from a private health-care organization in the Sakarya region of the Turkey. The model is analyzed and interpreted. This fuzzy goal-programming model can facilitate planning, decision-making, and managerial control by providing health-care management information. Fuzzy goal programming with exponential membership formulation for optimal resource allocation of private healthcare organization is presented.

The paper organized as follows. Section 2 presents a description of the fuzzy goal programming with exponential membership function. The main features of the proposed model construction are explained in Section 3. In next section represents the real life application and Section 5 covers the conclusion.

2. Fuzzy goal programming

Goal programming is important method for multi-objective decision making approaches in practical decision making in real life. In a standard GP formulation, goals and constraints are defined precisely but sometimes the system aim and conditions include some vague and undetermined situations. In particular, expressing the decision maker's unclear target levels for the goals mathematically and the need to optimize all goals at the same needs to complicated calculations. The fuzzy approach for goal programming tries to solve this kind of unclear difficulties.

This study includes one than more goals to optimize the resource allocation. Goal programming preferred due to realize two or more aim in the system. It is a kind of the multi criteria decision making problem which includes the crisp and vague values.

First time fuzzy set defined mathematically by Zadeh (1965) with the assigning to each possible element in the universe of

* Corresponding author at: Department of Information Management Systems, Sakarya University, Turkey. Tel.: +90 538 825 7732.

E-mail addresses: safiyeturgay@yahoo.com (S. Turgay), tashkin@sakarya.edu.tr (H. Taşkın).