The Study of Construct Key Success Factors for the Taiwanese Hospitals of Location Selection by Using the Fuzzy AHP and Sensitivity Analysis

Chin-Tsai Lin  
Yuanpei University, R. O. C.

Cheng-Ru Wu  
Yuanpei University, R. O. C.

Huang-Chu Chen  
Yuanpei University , R. O. C.

Abstract
Implementation of the National Health Insurance scheme in Taiwan since 1995 has intensified competition in the local medical sector. Given elevated living standards island wide, Taiwanese residents have become more health conscious and attach increasing importance to quality healthcare, explaining the heightened consumer demand in the quality and scope of medical services. Additionally, the medical service sector has improved its organizational structure and encouraged hospitals to establish management practices that would increase their competitiveness. In such an intensely competitive environment, selecting the optimal location of hospitals to be established is priority of concern. Therefore, this work presents an AHP-based evaluation model for fuzzy prioritization, where the comparison judgments of a decision maker are represented as fuzzy triangular numbers. A novel fuzzy prioritization method, which derives crisp priorities (criteria weights and scores of alternatives) from consistent and inconsistent fuzzy comparison matrices, is also proposed. Sensitivity analysis is performed in detailed by varying the objective factor decision weight, the priority weight of subjective factors and the gain factors. Adopted herein is the renowned diamond model introduced in Porter's The Competitive Advantage of Nations (1990) that influences how competitive advantages, especially with respect to developing and evaluating the objectives of optimal location selection, are related in order to devise a standardized operational procedure. Besides a literature review and interviews with experts, this study also adopts the modified Delphi method, the fuzzy analytic hierarchy process (FAHP) and the sensitivity analysis to develop an evaluation method for selecting the optimal location of a regional hospital in Taiwan to determine its effectiveness. The proposed evaluation criterion provides a valuable reference for hospital administrators and academics in establishing a standardized means of selecting the optimal location for new medical care facilities.

Keywords: Competitive Advantage, Optimal Location Selection, Diamond Model, Modified Delphi Method, Fuzzy Analytic Hierarchy Process, Sensitivity Analysis.