DEA모형을 이용한 종합병원의 효율성 측정과 영향요인

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<Abstract>

An Investigation of Factors Affecting Management Efficiency in Korean General Hospitals Using DEA Model

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The purpose of this study is to analyze the efficiency in management of general hospitals and investigate the major factors on efficiency. Specifically, the management of each general hospital is evaluated by using Data Envelopment Analysis (DEA) technique which is a nonparametric statistical method for measurement of efficiency. Then, the influencing factors are investigated through analyses of Decision-Tree Model and Tobit Regression.

The target hospitals were general hospitals in which bed sizes are between 200 and 500 among a total of 276 general hospitals. The main data of financial indicators were collected from 48 hospitals, and it was analyzed by using two statistical models. For Model I, three input and two output variables were used for efficiency evaluation. In

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particular, three input variables were the number of medical doctors, the number of paramedical personnel, and the bed size. And, two output variables were the numbers of inpatients and outpatients per year, adjusted by bed-size.

The results of DEA analysis showed that only seven out of 48 hospitals (15%) turned out to be efficient. The decision-tree analysis also showed that there were six significant influencing factors for Model I. Six factors for Model I were Bed Occupancy Rate, Cost per Adjusted Inpatient, New Visit Ratio of Outpatients, Retired Ratio, Net Profit to Gross Revenues, Net Profit to Total Assets.

In addition, the management efficiency of hospital is proved to increase as profit and patient-induced indicators increase and cost-related indicators decrease, by the Tobit regression model of independent variables derived from the decision-tree analysis.

This study may be contributable to the development of analytic methodology regarding the efficiency of hospital management in that it suggests the synthetic measures by utilizing DEA model instead of suggesting simple ratio-analyzing results.

*Key Words*: DEA, Efficiency, Decision-Tree Model, Tobit Regression.

I. 서 론

1980년 중반 이후부터병원규모가 대형화되고 민간 병원이 지속적으로 증가하면서 1990년대 이후부터 의료시장은 수요에 비해 공급이 초과되어 경쟁시장으로 바뀌면서 급격한 의료환경의 변화와 함께 병원의 경영난을 가중시켜왔다. 최근병원협회에 자료에 따르면, 2001년도로병원의 수가 전체 병원 941개 중에서 77개로 도산율이 8.1%에 이르고 있으며, 타업종에 비해 높은 부도율을 보이고 있는 데에서 병원의 경영위기의 심각함을 알 수 있다.

의료시장의 경쟁심화, 정부의 수가 통제, 의료시장의 개방화 등 외부적환경변화로 인하여 병원이 외부적위주의 경영보다는 내실있는 재무건전성을 유지하기 위한 노력을 하고 있으며, 이에 따라 병원은 효율성에 기초한 의사결정을 하지 않으면 시장경쟁에 의해 성장과 존속을