ABSTRACT

Hospital performance evaluation is an important research topic in recent years. Various models have been used to compare hospitals as well as improve their efficiencies. DEA (Data Envelopment Analysis) is one of the models which has the advantage of dealing with multiple inputs and outputs. DEA efficiency scores are measured by optimizing the ratio of inputs and outputs by varying the weights of the variables.

However, there are some constraints in terms of the number of variables. If there are too many variables comparing to the hospitals need to be compared, the discrimination will be low and most hospitals will be regarded as efficient due to the uniqueness. Thus, there is a need to reduce the dimension of variables. This research compares the hospital efficiency performances in New York State with many variables, using DEA model, and combining with PCA (Principal Component Analysis) and ECM (Efficiency Contribution Measure) model. PCA is used to initially reduce the number of variables and make them uncorrelated, while ECM is the continuous step which selects the principal components which are crucial in measuring the hospital efficiency scores. This enables the hospitals to be evaluated with a high discrimination. Furthermore, the performances are evaluated by particular aspects of the hospitals such as the patients’ experience, and the timely and effective care. Finally, the scores are analyzed for different types of hospitals. The efficiency result could provide reference for both hospital managers and police makers for the aim of improving the hospitals in New York State.