

APPLICATION OF DATA ENVELOPMENT ANALYSIS A CASE STUDY ON EVALUATION OF SYNTHETIC EFFICIENCY FOR EACH DEPARTMENT AT A NA

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ABSTRACT

The focus of modern education is primarily on the promotion of school management efficiency and the pursuit of performance excellence. The efficiency of school management has traditionally been evaluated in terms of the functions of input and output, or based on the specific ratio of single input and output. All of these, however, have failed to effectively evaluate the overall performance of an industrial vocational high school, which usually consists of different departments, each with certain characteristics variables. DEA (Data Envelopment Analysis) enables us to overcome all the uncertainties involved in the relationships of functions, without predetermining the production function. This approach, with economic theoretical basis, specifically tailored to non-profit organizations, is employed to compare and analyze the discrepancy between the goals and the results attained. In the process, multiple-dimensional input-output relationships are adopted. This study is to evaluate the overall performance and efficiency of school management, for different departments of an industrial vocational high school. By DEA (Data Envelopment Analysis), an adequate model of evaluation for each department can be obtained. The essential part of the study is to clarify the basic concept of performance evaluation, through extensive literature review on educational evaluations, along with DEA approach. To ensure the data accuracy, the items of input and output are carefully assessed and selected. The models of evaluation are then determined and tested, by using Lindo computations and empirical DEA analysis. Based on the collected data, the study then proceeds with efficiency analysis, slack variable analysis, and reference set analysis. The research findings demonstrate that, during the academic years 1998-2000, Department of Electronic and Mechanical Engineering are rated the best in management performance and efficiency, followed by Mech-electrical (3rd), then Architecture (4th) and Machinery Pattern (5th). Comparatively, the less efficient departments can make remarkable progresses in the management if they adopt CCR and BCC models as guidelines for their resource distribution. The research also provides valuable suggestions for industrial vocational high schools, both in short-term and long-term plans of future development. Individual department can benefit a great deal in the self-evaluation and management performance as well.

Keywords : DEA (Data Envelopment Analysis) ; Efficiency analysis ; Slack variable analysis

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