

Presenting a hybrid DEA method to SIR for Performance Evaluation

Maryam Tabasi, Hasan Haleh, Ramin Mostmand

M.Sc. Student of Industrial and Mechanical Engineering,
Islamic Azad University, Qazvin branch,
Qazvin, Iran

Tabasi_m@yahoo.com

Assistant Professor of Industrial and Mechanical Engineering,
Islamic Azad University, Qazvin branch,
Qazvin, Iran

hhaleh@Qiau.ac.ir

M.Sc. Student of Management, Science and Research branch,
Islamic Azad University, Save branch,
Save, Iran

Mostmand_Ramin @yahoo.com

Abstract—DEA (Data Envelopment Analysis) is a model for ranking Decision Making Units, which uses some inputs and outputs. If the number of inputs or outputs versus the number of DMUs is great, DEA can not rank truly. In this paper we first decrease them by SIR (Superiority and Inferiority Ranking) method which is one of the Multiple Criteria Decision Making methods, and then we use DEA to rank the Decision Making Units. Part ۱ is introduction, part ۲ is literature review, in part ۳ we present the method, part ۴ is numerical Example and the last part is conclusion.

Keywords: Performance Evaluation, DEA, SIR, MCDM

1. INTRODUCTION

Performance evaluation is necessary for every organization. Comprehensive Performance evaluation can help the organization to compensate its faults and improve.

This aim has several methods such as analytic hierarchy process(AHP), analytic network process(ANP), Multiple Criteria Decision Making(MCDM), artificial neural network, ratio analysis, total production analysis, regression analysis, Delphi analysis, evaluation laboratory (DEMATEL), balanced score card (BSC), Data Envelopment Analysis (DEA), etc.

Each organization chooses its proper method to evaluate.

In this paper we do the performance evaluation with DEA which is a nonparametric method and measures the ratio of input and output among homogeneous decision-making Units. Also it can work when the problem deal with multiple inputs and multiple outputs.

Measuring performance sometimes accomplishes using a financial ratio combined with parametric or non-parametric analyses. Non-parametric analysis does not involve the use of a priori assumptions. So it avoids subjective weight assignments, that is why we use DEA in this paper.

DEA establishes a best practice group among a set of observed units and identifies the units that are inefficient.

A wide range of factors can influence performance evaluation.

Both financial and non-financial indices have strengths and weaknesses in terms of practical [Jian Guo, ۲۰۱۲].

Based on the literature review, corporate performance evaluation needs to take into account corporate types, regions, and economic circulations. To obtain a quick response, we usually can not guarantee data sufficiency and confirm the

Corresponding author:

tabasi_m@yahoo.com