

Abstract

The machine tool plays an important role in not only machinery industry but also the whole manufacturing industry. Most of goods around us are made by the machine tool. The core technologies hold by experienced employees depends on training to pass down. Therefore, training is an essential process in machine tool factories. In traditional DEA, all inputs and outputs need to be numeric data. But in reality, there are many key variables are hard to be measured in numeric. After Likert scale being invented, the scholars widely use the scale to evaluate these key variables. However, there is criticism of the equity in Likert scale. Fuzzy DEA corrects this disadvantage of Likert scale with fuzzy theory. As a result, this study evaluates the training efficiency of 85 Taiwanese machine tool manufacturers in 2007 with fuzzy DEA and compares the result between fuzzy DEA and the method of Likert scale.

Some important conclusions are shown as follow:

1. Most of the inefficient DMUs are active about training.
2. Although some DMUs are bad in scale efficiency, they are fair in pure technical efficiency. It explains that these DMUs just input at decrease return to scale (DRTS) level.
3. Generally, there is waste of training in this industry. The empirical result tells us they can obtain certain effects with little input. If they want to break through some bottle neck of training effects, they have to input tremendous resources.
4. As a whole, there is no difference between the result of fuzzy DEA and the method of Likert scale. However, there is better discrimination of efficient DMUs in fuzzy DEA.

Keywords: machine tool, training, fuzzy DEA