

Abstract

The aim of this work has been to analyse the efficiency of a particular business sector, this is, the textile sector in the Alcoià and zone. In this analysis we have specifically taken into account two problems always present, and very different in nature, one from the other. On one hand, the data handled can be imprecise and, therefore, affect the outcome of any study of efficiency. On the other hand, our goal is to organise companies (Decision-Making Units) according to their efficiency scores.

We have applied the Data Envelopment Analysis, a non parametric methodology, for the study of the efficiency of those textile companies, a zone located very close to us. However, since we believe that there is some uncertainty or a possible error in the measurement of some data (input and output), we have dealt the limitation of certainty with the treatment as fuzzy data, method that does not require you to know or apply assumptions about probability distribution of these data, which incidentally, might not be feasible under certain assumptions of uncertainty.

Our goal is not just to measure the efficiency, we also intend to provide more information rather than the separation between efficient companies and not efficient. To do this we develop and apply models of super-efficiency-fuzzy and cross-efficiency-fuzzy, which allow us better differentiate and give a certain order among the firms, taking into account the implicit uncertainty.

With this work, we have conducted a comprehensive study of the efficiency under uncertainty. The results obtained by applying the different methods are similar but, in addition, these methods provide more information about the studied units than the one provided with the single index of efficiency. These methods can be applicable to other types of companies, providing new information that can help in the manager's decision-making.