The Performance of Domestic Logistics Industry Using Fuzzy Data Envelopment Regression Analysis

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ABSTRACT

In the times that customers ask to decline lead time and production costs, logistics has become the core competence of modern industry. In order to promote its competitiveness as well as to decrease cost, enterprises entrust parts of industry logistic to the logistic companies so that the competition among logistic industry gets tenser. Therefore, how to improve management with the most appropriate operating performance model and use resources effectively to promote its operating performance are the both essential topics of logistics industry nowadays. In retrospect to references, the way researchers used to evaluate results of logistics was traditional DEA. This research not only apply traditional DEA, developing a basic model of DEA based on fuzzy regression to measure efficiency among logistic companies from 2003 to 2006, and compare the different results between two models. Then, it also refers to the class analysis and Slack Variables Analysis by traditional DEA in addition to measure changes among every company with Malmquist productivity index. Results revealed that fuzzy DEA regression was able to analyze annual efficiency changes of every company. A single efficiency in the results of traditional DEA represented annual efficiency. Both of the models found that Yang Ming marine company did the best in overall efficiency, and marine companies were much better than the others. The reasons for operation inefficiency according to the traditional DEA efficiency analysis mostly resulted from inefficient scales. 56 percent of the companies were in the stage of scale return decrease by degree. Slack Variables analysis showed that inefficient companies invested surplus fixed assets and employees. The results of the research offer both logistics companies to change operation directions and scholars suggestions for future research.

Keywords : DEA ; logistics industry ; fuzzy regression ; operating performance

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