A HYBRID APPROACH BASED ON FUZZY DEA AND BSC TO MEASURE THE EFFICIENCY OF SUPPLY CHAIN; REAL CASE OF INDUSTRY

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ABSTRACT

Performance evaluation plays an important role in determining faults and difficulties of any supply chain as well as attempting to increase capabilities and improve activities. Data envelopment analysis (DEA), as a non-parametric method, has been one of the most important and significant management tools for measuring output or efficiency. In fact, in a real evaluation problem input and output data of entities evaluated often fluctuate. These fluctuating data can be represented as linguistic variables characterized by fuzzy numbers for reflecting a kind of general feeling or experience of experts. Based on the fundamental CCR model, a fuzzy DEA model is proposed to deal with the efficiency evaluation problem with the given fuzzy input and output data. . In this paper, we propose a method to utilize balanced score card (BSC) as a tool for designing performance evaluation indices of an supply chain. The integrated BSC-FDEA has been applied as an empirical case for Iranian dairy industry supply chains and the results are analyzed.

KEYWORDS: Data envelopment analysis (DEA); Balanced scorecard; Performance Evaluation; Fuzzy DEA; Fuzzy linear programming