

A Fuzzy DEA/ Linear Programming Framework for Evaluation balanced portfolios of Government Sponsored R&D projects with interactions: A Case Study in Mellat Bank of Iran

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ABSTRACT

Making R&D portfolio decision is difficult, because long lead times of R&D and market and technology dynamics lead to unavailable and unreliable collected data for portfolio management. The objective of this research is to develop a fuzzy R&D portfolio selection model to hedge against the R&D uncertainty. We propose and demonstrate a methodology for the construction and analysis of efficient, effective and balanced portfolios of R&D projects with interactions in fuzzy environment. This article further extend "Constructing and evaluating balanced portfolios of R&D projects with interactions", Harel Eilat, European Journal of Operational Research 172 (2006) 1018–1039,[1] in fuzzy environment and integrate it with strategic planning. In this article we also find the best possible portfolios of R&D projects in different main areas of investment with help of a purposed fuzzy linear programming that not only find the best portfolios but also minimize the risk associated with R&D project. A fuzzy DEA model is used to evaluate the value of each R&D project and portfolio. The R&D portfolio selection problem is formulated as a fuzzy zero–one integer programming model that can handle both uncertain and flexible parameters to determine the optimal project portfolio. We conclude that the proposed approach can assist decision makers in selecting suitable R&D portfolios; the entire methodology is illustrated via an example in the context of a governmental agency charged with selecting technological projects. We present a Fuzzy DEA/ Linear Programming Framework for Evaluation balanced portfolios of Government Sponsored R&D projects with interactions and utilize crisp judgment matrix to evaluate subjective expert judgments made by the technical committee of the Industrial Technology Development Program in Iran

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