Novel Optimization Framework for Deciding a Target Company on a Merger of Petrochemical Companies in a Complex

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Mergers and Acquisitions (M&A) have been active in the petrochemical industry. However, the synergy created by the merger of petrochemical companies has rarely been studied, although it is the primary goal of a merger. This study deals with the merger of petrochemical companies located within one complex aiming at deciding optimal target company maximizing synergy. Synergy considered in this paper comes from the integration of the process network and the utility plant. A novel mathematical model with bi-level MILP is formulated that represents the operation of a process network and a utility plant to quantify the synergy of the merger. The proposed model is applied to one acquirer and five target companies in one complex. The results show that the selected target company achieves the synergy of $ 16 million with the investment of $ 0.17 million.

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