

A Project Screening System for Energy Enterprise Based on Dempster-Shafer Theory

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Abstract : Natural gas (NG) is an energy resource in a few countries, and most NG producers do business in politically unstable countries. In addition, as 90% of the LNG market is controlled by a small number of international oil companies (IOCs) and national oil companies (NOCs), entry of latecomers into the market is extremely limited. To meet these challenges, project viability needs to be assessed based on limited information from a project screening perspective. However, the early stages of the project have the following difficulties: (1) What are the factors to consider? (2) How many professionals do you need to decide? (3) How to make the best decision with limited information? To address this problem, this study proposes a model for evaluating LNG project viability based on the Dempster-Shafer theory (DST). A total of 11 indicators for analyzing the gas field, reflecting the characteristics of the LNG industry, and 23 indicators for analyzing the market environment, were identified. The proposed model also evaluates the LNG project based on the survey and provides uncertainty of the results based on DST as well as quantified results. Thus, the proposed model is expected to be able to support the decision-making process of the gas field project using quantitative results as a systematic framework, and it was developed as a stand-alone system to improve its usefulness in practice. Consequently, the amount of information and the mathematical approach are expected to improve the quality and opportunity of decision making for LNG projects for enterprises.

Keywords : project screen, energy enterprise, decision support system, Dempster-Shafer theory

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