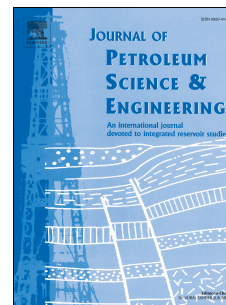


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# An Intelligent Algorithm for Determination and Optimization of Productivity Factors in Upstream Oil Projects

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## Abstract

This paper presents a unique intelligent algorithm to identify and optimize factors affecting the productivity of upstream oil projects. Oil industry is the most important economic sector in the world and upstream projects play an important role in this industry. The proposed algorithm is composed of analysis of variance (ANOVA), data envelopment analysis (DEA), artificial neural network (ANN), adaptive network based fuzzy inference system (ANFIS), conventional regression (CR), and fuzzy regression (FR). In addition, each stage of the algorithm is equipped with verification and validation mechanism. First, a standard questionnaire containing productivity factors is designed and completed by experts of actual upstream oil projects. Then, DEA is used to identify the weights of all influential factors. The relationships between the influential factors and each of the criteria of productivity are then evaluated by ANN, ANFIS, CR and FR through relative error. Finally, ANFIS is selected as the preferred methods for optimization of the actual case of this study according to mean absolute error (MAE). Health, safety and environment (HSE), economic and management are determined as the most influential factors through sensitivity analysis. This is the first study that presents an intelligent algorithm

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