Mathematical Optimisation System to Support Oil & Gas Investment by Exporters of Developing economies.

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Abstract

Crude oil and natural gas export has significant contribution to export revenue of many producers of emerging economies, particularly producers of Sub-Saharan Africa due to lack of diversity in economic investments. Uncertainties in parameters of affecting key performance indicators of investment in oil and gas are major sources of shortfalls in value of oil and gas trade, and establishing a system to help quantify the uncertainty is an important task for the oil and gas industry. This study designed an optimization system to predict values of key influencing factors of oil and gas trade, such as price of the commodities and volume of to be exported to oversea counterparts. With a case study of the Nigerian oil and gas export investment, we demonstrate how the systems can be used to predict influencing factors and their impact on export revenue and production cost. By defining reliability as the likelihood that the optimisation system will fail to predict the influencing factors accurately. Result suggest that trade-off between economic benefit and cost can be realized if fluctuation in key influencing factors can be minimised. The outcome of this work would serve as a framework for policymakers to guide energy investments that will provide the best result for emerging economies and a pathway to viable future investment in energy

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