

A Strategy of Local Content Enhancement in Petroleum and Natural Gas Industry

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Abstract

Oil and gas are a strategic natural resources, not only as a source of state revenue, supplier of fuel needs of domestic and industrial raw materials, but it is also expected to be able to create a chain effect for enhancing national capacity. Therefore we need a strategy to exploit the opportunities created by the oil and gas industry to support this effort. Analytical Hierarchy Process is used to get the weights of criteria and sub-criteria and then rank the performance improvement strategy against Local Content Achievement by using Technique for Order of Preference by Similarity to Ideal Solution. Structured interviews with experts in the field of Local Content in the upstream oil and gas business activities has been conducted. The result is twelve criteria relating to the success of the performance improvement of Local Content achievement in the upstream oil and gas business activities. There are sixteen strategies that affect and after the ranking of the most influential strategy is the role of government in setting the focus of scientific fields of applied sciences to the population and to develop human resources in accordance with the current needs of the global market in the medium and high skill level.

Keywords

Local Content Achievement, Upstream Oil and Gas Industry, AHP, TOPSIS

1. Introduction

As strategic natural resources, Petroleum and Natural Gas (PNG) play important role in national economy, as state income, domestic fuel demand, and industrial raw material. Therefore, the strategy is necessary to use the opportunity from the PNG Industry that capable to create chain effect for increasing national capacity and economic growth. One of the strategy is the state must enact local content policy, which will stimulate the development of manufacture and industry capacity. Local PNG Industry must be able to compete with foreign supplier company, so when the natural source is ran out the company still be able to exist.

Local content policy should capable to contribute maximally for elevating national economic growth. The development of local industry requires domestic resource, especially skilled labor. Local content is defined as value that acquired from procurement of good and service, including fee, profit, material, equipment, manufacture, sub-contractor and taxes in national economy (Warner, 2011). The local content has direct impact in creating local jobs and indirect impact to the supplier. The result can be seen from the amount of local supplier to meet the demand of good and service procurement.

1.1 A conceptual model for local content development

The conceptual model for local content development in petroleum industry is an amalgamation of all the important factors that affect the development of local content in the industry (Kazzazi & Nouri 2012). Figure 1 illustrates the conceptual model on how the developed factors interact to create value for the host petroleum sector. As it is shown in Figure 1, local content development is in the center and the four affecting factors have surrounded it. The hypothesized causal paths between each factor are depicted by arrows. Each of these causal paths is described later on in the paper. The variables included in the local policies factor were found to have direct impact on local infrastructure factor variables. Therefore, the link from local policies to local infrastructure was drawn in Fig. 1. Similarly, the literature provided some evidence that the following causal relationships also exist:

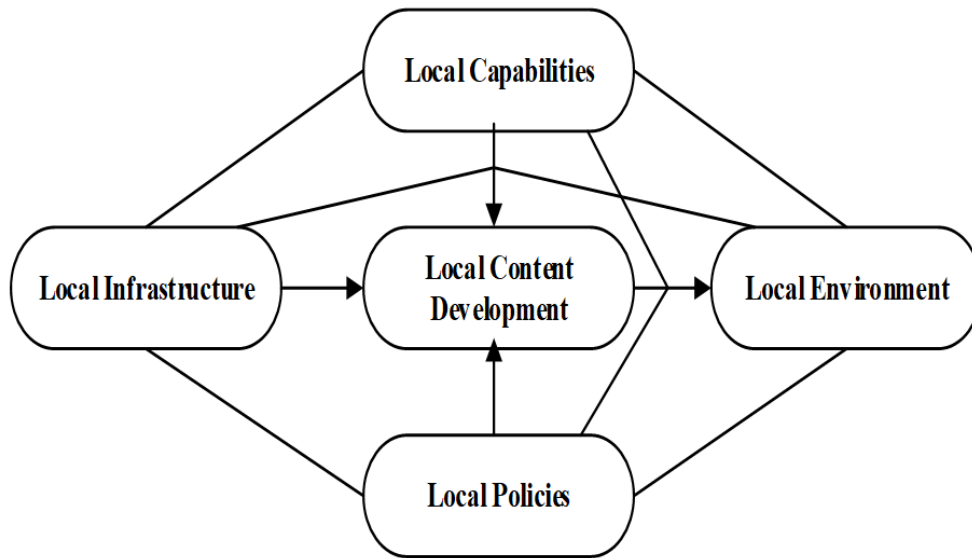


Figure 1. Conceptual model for local content development in petroleum industry

1.2 Local Content Policy

The government needs to enhance the skill of domestic human resource, the PNG business knowledge, the development of technology and capital market and also the creation of local ownership. The government should stipulate an agreement with local supplier to increase domestic purchase and to discuss subsidies. This cooperation will create the stable and secure economy condition. The growth and the improvement of local content have to be accounted and communicated to each company, to monitor the process, the government must enact a policy (Nwokeji 2007). The constitution such as Ministry of Industry is part of important role from the government policies.

1.3 Local Infrastructure

The establishment of technology transfer, good and service supply standard, social environment, petroleum and natural gas education are the main factors of local infrastructure. The support infrastructure is very important variable because of the impact to the local content. To be more competitive, the domestic supply sectors needs the procurement and the maintenance of the infrastructure. The dissemination of information is one of the substantial principal of the policy to help the development of local content in PNG Industry. (INSTOK 2003). Assembling the consortium of qualified and competent local supplier companies, creating a mechanism to cooperate with foreign companies, and supporting the enhancement plans of domestics capability are recommended stipulation and analysis (Klueh et al. 2009).

Productivity and business development will be further improved with the construction of public facilities such as roads, railways, air transportation, telecommunications, electricity and water supplies. Standard of this infrastructure can affect the profitability of investor consideration (INSTOK 2003).

1.4 Local Environment

Macroeconomic environment is one of the important variables in the conceptual model of local content, wherein the determinant factors of investment decisions are cost escalation, current exchange and interest rates in the country. The impact of some government policies on the environment affects the investment and business development. Environmental context is fundamental in every country that has a desire to build a business related to the PNG industry, competitiveness improvement would create a competitive business base. International companies that are leading the market is expected to remain close to participate in the domestic market to avoid the inefficiencies caused by the lack of choice in the purchase of goods and services to meet the local content (Heum et al. 2011).

1.5 Local Capability

Local Capability is the education, the improvement of skilled human resources, technology transfer, and R&D in manufacture and services in domestic companies. Industrial growth is the result of the demand from the capability interplay between established and emerging companies (Heum et al. 2011). Development of local content in the PNG sector should be based on the capabilities on the manufacture, fabrication and services. It means, the success of the strategy determined by the existence of domestic products and services that bring profit. There are many countries still maintain a weak industrial base and local content policy, by giving the preference price for local companies to do the measurement. Local content policy should promote and support foreign companies to cooperate with domestic companies, which is expected to boost and create a positive impact on local industry. Industrial infrastructure is needed to enhance the local ability and capability and also to narrow the technology gap between domestic companies and foreign companies (INSTOK 2003). In Ghana, the government and PNG industry support the training and the technical institution to build high skilled employment, in drilling and in supported services, such as catering, accommodation, groceries and others (Ministry of Energy of Republic of Ghana 2010). Internalizing technology is the potential source to compete and playing a big role to technology transfer. In the other hand, the developing countries which need to establish the technology capability, has limited ability to internalize technology transfer.

2. Methods

The methods of local content rating performance improvement, formed by two methods combination which are Analytic Hierarchy Process (AHP) and TOPSIS. The strategy of criteria rating models within AHP formed by implementing strategies towards some of assessment criteria and eventually generate decision hierarchy. Decision hierarchy carried out by questionnaire to the relevant expert under local content rating performance as a respondent. Selected respondent is based on associated to Local Content accomplishment stakeholders in oil & gas upstream industry and well experienced employee. Furthermore, TOPSIS is used to rank strategies that can be known which strategies that have the best and worst ratings among all sixteen of existing strategies. This study uses 5 expert respondents who have more than 15 years experience in the local content in oil and gas industry in Indonesia.

3. Result and Discussion

The weighting processes of each main criteria and sub-criteria obtained by comparing the level of interest among the main criteria and sub-criteria or pairwise comparisons. The result is show in Table 1 and Table 2 is present the result of relative proximity by TOPSIS.

Table 1. Weighting Result

No	Criteria	Sub Criteria	Score
1	Supporting Infrastructure		0.291
		Infrastructure improvement (roads, ports, terminal, telecommunication, electricity, etc.)	0.506
		Bank capital/local enterprises (BUMN/BUMD) in the national banking system	0.326
		Development of R&D institutions in the oil and gas sector	0.169
2	Industrial Capability		0.233
		Improved quality of domestic products and delivery times	0.431
		Reinforced with a good R&D	0.346
		Improving the quality and competence that currently available	0.223
3	Policy		0.291
		Socialization of Local Content calculation	0.466
		Rewards and punishments	0.376
		Roadmap achievement of Local Content in the upstream oil and gas activities	0.156
4	Environment (PSC)		0.185
		Increased use of domestic products	0.451
		Transfer of knowledge & technology	0.362
		Program requirements of local content	0.187

Table 2. Results of Relative Proximity with TOPSIS

No	Strategies	C	Rank
1	Governments take part to establishing scientific fields populations focusing in applied science and empowers HRD in accordance with the current needs of global market at medium and high skill level	0.189412305	1
2	Socialization of Local Content estimations mechanism is performed periodically over government towards PSC and goods&service supplier	0.189239642	2
3	Collaboration of University and Industry, so that College graduates really do have knowledge and expertise of Goods/Service as needed in Indonesia	0.189036039	3
4	Each of local manufacturers responsible to have a Product Technical certificates (SNI, API, ASTM). This specifications needed for industrial business license	0.188723888	4
5	Local Content Roadmap optimization – enhancing usage and monitoring over domestic product within oil&gas through featured products of oil&gas	0.188518032	5
6	Contractors and sub-contractors are required to have a program to maximize the use of local product for service activities carried out from the planning phase to implementation phase, including monitoring program using local products as a requirement specified in the contract	0.18599506	6
7	Give warning and punishment (through accessible area) to the suppliers of goods&service and PSC who refused to apply the optimization of domestic products usage	0.185809728	7
8	Contractors responsible to ensure full functionalities of subcontractors from the national/regions company to performed tasks and knowledge transfer towards these subcontractors	0.184499855	8

9	Developing a research collaboration between agencies / R&D institutions and universities along relevant stakeholders mastery of knowledge, technology transfers, the development of engineering technology as well as builds link and match patterns with the oil&gas industry to support oil&gas activities	0.181905636	9
10	Increased use of domestic products as an effort to improve the competitiveness and industry autonomy through increased capabilities and productivity of R&D	0.176890457	10
11	Awards and punishments against the contractors who stand out or instead less promoted the use of domestic products	0.176747206	11
12	Simplified loans to the state bank/enterprises (BUMN/BUMD) and quite low interest rates policies, good&service supplier only have to give warranty a Contract between supplier and PSC if they have a capital needed from BUMN/BUMD Bank	0.175961583	12
13	Clauses in procurement contract of oil and gas services which is require the use of domestic products in each of procurement of goods and services events	0.175788918	13
14	Regulation of government or related parties about the obligation over foreign company established in Indonesia to transfer knowledge and technology to the Indonesians workforce	0.17513936	14
15	Collaboration between R&D of EMR and PSC to improve product/equipment which is affordable to produced domestically (rig, wireline, etc.)	0.172459621	15
16	Acceleration in tender improvement of goods&services procurement in infrastructure	0.172440701	16

The above mentioned main criteria indicates that support infrastructure sufficiently require particular concern in order to improve Local Content performance, to stimulate a good investment climate, and good industrial capabilities also can reduce a reliance on imported products. Policies can fully encourage alignments to Increased Use of Domestic Production, and PSC as the executor of Memorandum of Understanding (MOU). As a result of this criteria calculation, the infrastructure improvement (roads, ports, terminal, telecommunication, electricity, etc.) sufficiently to be priorities over local content performance improvement. The synergy between relevant parties can bring about change with better infrastructure system, while the criteria for bank capital/local state enterprises in the national banking system it is meant as a reference bank, increasing role of the the national banking system, ease of access to funds. Similarly, the criteria for the development of R&D institutions in the oil and gas sector.

The results show that is improved quality of domestic products and delivery times. Optimizing the potential use of domestic products, the ability and capacity of the domestic industry. Reinforced with a good R&D and improving the quality and competence that currently available. In addition, lack of understanding towards mechanisms of Local Content calculations significantly. The tendency of a lack of understanding within Local Content policies result through socialization about the way of Local Content calculation. Rewards and punishments are considered fair for the implementation of achieved and not achieved local content outcomes. To support and develop innovation / technology and increase the use of domestic products in the upstream oil and gas activities, the Government has issued a decree of the Minister of Energy and Mineral Resources No. 15 of 2013 on the Use of Domestic Products In the Upstream Oil and Gas. Based on this rule, Local Content has set targets for the short, medium and long term. To achieve this target, the General Director of Oil and Gas is responsible for determining the roadmap achievement of Local Content in the upstream oil and gas activities.

As executors of the Cooperation Contract (PSC), is take into account of the increased use of domestic products, the capacity of the domestic industry as a crucial requirement in increasing local content, optimizing the transfer of knowledge and technology along with program requirements of Local Content can facilitate the procurement process for data on the use of domestic products, capability and capacity of the national industrial manufacture can be arranged in a complete and detailed records.

the hierarchy analysis result in assessment criteria and the weighting of each criterion has done an assessment of each strategy, become the input data for the calculation method of TOPSIS. The principle of TOPSIS method is to select the alternative that has the shortest distance from the positive ideal solution and the farthest distance from the negative ideal solution. The role of government in determining the focus of scientific fields populated into applied science and to develop human resources in accordance with the current needs of the global market in the medium level and high skill have relative closeness of the greatest among other things that make it a top rank strategy. The overflow of imported labor will dominate the field of medium-skilled and high-skilled in Indonesia, will potentially trigger social conflicts with local workers are only used in the low-skilled field.

One of the factors which is driving the growth of the Indonesian industry is the availability of excellent and productive human resources. With the availability of qualified labor, will support the development of Indonesia's economy and improve the nation's ability to compete in the field of knowledge-based industries. Therefore, the role of the government to determine the focus of scientific fields of applied sciences to the population and to develop human resources in accordance with the current needs of the global market in the medium and high skill levels are considered to represent the best strategy in a Local Content performance improvement in the upstream oil and gas activities.

4. Conclusion

This study concludes that the most influential alternative strategy in achieving local content in upstream oil and gas business activities is the role of the government in setting the focus of the scientific field of its population to applied science and building human resources according to the current needs of the global market at medium and high skill levels. Further studies should be implemented, especially to the proposals of the current strategy, the main constraints and possible changes in setting strategy for improving the performance of Local Content in the upstream oil and gas activities in Indonesia.

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Biographies

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