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# Strategic Decision Making and Problem Solving Case Studies At Indonesian Petroleum and Exploration Companies

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## ABSTRACT

This study aims to analyze issues that become problems related to company performance and how the process of making strategic decisions on these problems, especially in the oil and natural gas sector companies. The research uses an Australian unit oil and gas company which currently has a project in Indonesia, specifically in Batam City. Methods of data collection were obtained through interviews and brainstorming with corporate leaders and project teams from the sample company. The root causes of the company's problems are analyzed through a SWOT analysis, then the problem risk analysis is sorted based on priority scale. The results of the analysis found that there are six main problems that are often found in companies and can affect corporate performance. The accuracy of project completion is a problem with the highest level of risk. Accidents and design engineering have a high risk, while human resource management, raw material supply, and alternative energy have a moderate risk.

**Keywords:** *Decision Making, Strategy, Problem Analysis, SWOT Analysis, Oil And Gas Company*

## INTRODUCTION

Oil and natural gas are the world's main sources of fuel and have become major industries in the energy market and have an influential role in the global economy (Santosa et al., 2020). As the oil and gas industry develops, regulatory pressures also increase. This is intended to mitigate risk, so that requirements related to company operations become more stringent (Wahjudi, 2019). Oil and gas companies also need to ensure that important documents that include information are available throughout the company and ensure compliance with regulations (Nugrahanti et al., 2020). The production and distribution of oil and gas includes processes and systems that are very complex, require large amounts of capital, and require up-to-date

technology. Thus, top management must pay close attention to all kinds of decisions taken regarding problems or issues that arise in the operational activities of oil and gas companies to avoid large losses that can arise and minimize risks.

There are several problems in the oil and gas industry that can affect the company's performance, so the decision-making process must be very concerned. One of the main problems in oil and gas companies is project delivery delays, where most of the reasons for project delays in oil and gas projects can be attributed to the typical characteristics of the project delivery method used to carry out the project (Prasetyo, 2021). Project delays can be caused by design errors, inappropriate communications or contracts, conflicts and

disagreements, and delays in decision making and approval. Controlling project costs and schedules is a major challenge in the oil and gas industry, so that when making decisions in the initial design phase of a project, it is necessary to develop a collaborative approach which is an important step for oil and gas projects to improve their schedules and costs. Project delays can result in inefficiencies in project implementation (Lavenia et al., 2022). In addition, the discrepancy in the agreed project time can also affect productivity and profitability (Asghar et al., 2020).

The next challenge for oil and gas companies is related to supply chain material management, namely how to produce these reserves and deliver the final product to consumers at the lowest possible cost (Sumanto & Sumarna, 2019). In the oil and gas industry, almost all critical operations are pre-planned, so that the entire process can be tailored to deliver high performance and revenue. For oil and gas companies, profit margins can be greatly increased if companies manage their purchasing funds throughout the supply chain (Baskaran et al., 2020). Then due to unique factors and local conditions of certain oil and gas industries, the main decision making that is important for stakeholders to follow and agree on is related to the selection criteria for suppliers by consensus (Kusrini, 2020). The complex and interdependent global supply chains of the gas and oil industry can result in uncertainty and vulnerability to risk. The risks in the supply chain include fluctuations in supply, demand, and prices (Oana Pinteau et al., 2021). A successful gas and oil industry supply chain includes maximizing production capacity, minimizing material procurement, and meeting demand. So that even though there are external factors that are out of control, problems can be helped to be solved easily through effective use of resources.

Another difficult challenge for oil and gas companies is *design engineering* and construction to the maintenance and operation of large and complex capital projects (Arum Haerani, 2021). In general, oil and gas project designs are complex and need to be developed through the project life cycle in stages. In construction and

engineering projects, work is fragmented among different organizations and design activities are highly interdependent (Hajizadeh, 2019). Therefore, the strategic decisions made must ensure intensive communication and coordination effectiveness so that the design can be achieved accurately (Namugenyi et al., 2019). This design stage must be given great attention, because the oil and gas industry includes the use of tools that have risks for their workers, so that with the right design it can be an opportunity to avoid malfunctions and eliminate or minimize hazards that may occur (Tsangas et al., 2019).

The existence of management errors, one of which is in making decisions, can cause very serious impacts such as accidents (Cayir Ervural et al., 2018). Thus, the growing development of the oil and gas industry which has many releases of hazardous chemicals must focus on safety in the work process (Almutairi et al., 2022). There are many incidents of accidents caused by small mistakes that lead to major disasters. One of them was the explosion at the BP America refinery in Texas which left 180 people injured and 15 dead (Gharachorloo et al., 2021). Failure in the oil and gas industry is of course very detrimental because it has major consequences, both in terms of the environment, economically, to even more severe conditions causing accidents that harm humans (Azubuike et al., 2018).

Management also needs to know what factors can affect organizational performance, so they can determine the right steps in making decisions. Adequate organizational performance can guarantee the sustainability of the organization in market competition (Li et al., 2020b). One of these factors is the need for proper utilization of Human Resources (HR) within the organization in order to achieve high performance standards. The oil and gas industry sector has very *significant management issues*, this is because this industry tries to manage progress with high domain specialization and an insufficient supply of HR talent (Li et al., 2020a). The challenges of oil and gas companies not being able to meet HR needs result in poor completion of tasks and assignments,

additional workloads, increased fatigue, high stress intensity, and decreased company ability to meet set goals. Thus, decision makers must determine the right number and quality of human resources in order to improve company performance and productivity (Arioglu, 2020).

Another challenge found in gas and oil companies is *biosecurity*. Energy sector companies such as gas and oil companies need to have good *biosecurity management*. *Biosecurity* can be defined as a mechanism to establish and maintain security and control of pathogenic microorganisms, toxins and relevant resources. Biosecurity is also intended to prevent accidental access, loss, theft, misuse, diversion or release (Moskalenko, 2018). Thus, planning and management related to biosecurity in the oil and gas sector need to be properly prepared and implemented by decision makers (Koshesh & Jafari, 2019).

To further analyze the strategic decision-making process in the oil and gas industry, the authors use data and information from an oil company that has operated internationally, one of which is in Indonesia and currently has a project in Batam City (MI Khan, 2018). The author finds that the six problems described previously are problems that are generally found in this company and can affect company performance (Solangi et al., 2019). Furthermore, this paper will explain further about how the decision-making process related to these six problems starts from the priority scale of each problem, the root cause, and the tools used in solving the problem (Trivellas et al., 2019).

## RESEARCH METHODS

There is also this type of research is a literature study. Zed in Kartiningsih's research (2020) said that the literature study method is a series of activities related to methods of collecting library data, reading and taking notes, and managing research materials. Kartiningsih added that a literature study is carried out by every researcher with the main objective of finding a foothold/foundation to obtain and build a theoretical basis, frame of mind, and determine provisional conjectures or also known as research hypotheses (Al-Haidous

et al., 2021). So that researchers can group, allocate organize, and use a variety of literature in their fields. While the population in this study are people working at the Indonesian Petroleum & Exploration Company.

## RESULTS AND DISCUSSION

### Company Profile (Indonesia Petroleum & Exploration)

The working area is on the edge of the West Timor Sea and our field of operation consists of two gas condensate reservoirs: an upper reservoir (Brewster) and a lower reservoir (Plover). With the water depth over the course varying from around 240m to 270m. The offshore development comprises a Central Processing Facility (CPF) and a Floating Production Storage and Offloading Facility (FPSO) with several satellite Drilling Centers (DCs) consisting of manifolds and subsea wells tied back to the CPF. The CPF is an offshore processing facility permanently moored to the seabed, approximately 110m wide and 150m long, supported by four columns and pontoons that form a square ring.

### Problem Identification

In this case the project leader formulates the problems that exist in a project where in general these problems can arise due to several things including: the existence of gaps or gaps between reality, the point of departure, with the goals to be achieved or the standards to be achieved, the existence obstacles and difficulties to bridge the gap and there is a possibility of solving the problem if the formulation is correct.

The formulation of the problem is related to the point of view because several processes must be ensured to present a good formulation in identifying all the relevant elements, what elements are missing, and what elements need to be added. The company's problem formulation begins with reviewing existing facts, both through lessons learned from previous projects, benchmarks and profiles of business partners. From the problem identification mapping, the company divides into 4 parts of project planning, project

preparation, project implementation and project handover (SA Khan et al., 2022).

**Problem Analysis**

In a condition when an organization will make a decision, then the thing that needs to be the main consideration is whether the decision taken can be an effective decision, where it is hoped that the decision taken can have a direct and

positive impact on the interests of the organization. These effective decision-making techniques will assist organizations in making the best decisions regarding the availability of relevant information. There are many decision-making techniques that have been presented, but in this discussion our company uses the SWOT approach as below.

**Table 1. SWOT analysis**

	<i>Positive Attributes</i>	<i>Negative Attributes</i>
<i>Internal factors, Current Traits</i>	<p><b>STRENGTHS:</b></p> <ul style="list-style-type: none"> <li>• The company has a sizeable budget and resources</li> <li>• A very established industry that still has the required workforce and skills</li> <li>• Strong political support for its operation</li> </ul>	<p><b>WEAKNESSES:</b></p> <ul style="list-style-type: none"> <li>• Need to include technology and innovation as part of a long-term growth strategy and ensure business models and processes reflect this</li> <li>• Company portfolio in the long term</li> <li>• The competition positions itself well and creates a significant image</li> </ul>
<i>External Environment, Future scenarios</i>	<p><b>OPPORTUNITIES:</b></p> <ul style="list-style-type: none"> <li>• Industry and renewable energy sectors as future revenue streams</li> <li>• Potential to become a market leader in many alternative fuel and energy markets</li> <li>• Have the ability to partner with certain partners</li> </ul>	<p><b>THREATS:</b></p> <ul style="list-style-type: none"> <li>• Economy and market share saturation</li> <li>• Environmental issues, not formalizing responsibility and other environmental hazards</li> <li>• competition from the emergence of alternative energy</li> <li>• Global, regional and local regulatory environments</li> </ul>

Source: Processed data (2023).

From the SWOT table above, we can also divide it into 2 (two) aspects, namely internal aspects and external aspects taken from the description of strengths, weaknesses, opportunities and threats.

**Root Cause Analysis**

Through the results of the SWOT analysis, it can be found that there are 6

common problems that are often encountered in this company, along with the root causes. Even though the SWOT analysis found that the oil and gas industry was well known and trusted by investors, there were times when oil and gas company projects experienced funding and budget difficulties from investors.

**Table 2. Root Problems**

<b>No.</b>	<b>Problems</b>	<b>The Root of the Problem</b>
1	Timely Project Completion	Insufficient project budget and resources Inadequate expertise or quantity of human resources Error in predicting the required project time and project failure There are projects that are not well supported by the government
2	Human Resources Management	Recruited human resources are less competent Lack of training and development of human resources related to the areas of expertise of each workforce
3	Accident	There are human resources who do not comply with work safety procedures properly Lack of knowledge and education regarding work procedures,

		work environment and resources used
		Safety culture that has not been consistently implemented in operational project activities
4	Finding Alternative Energy	Limited amount of energy that can be processed or energy costs are increasingly expensive
		The emergence of new companies with alternative energy that competes in the market
5	Raw Material Supply Management	Difficulty obtaining supplies of raw materials from suppliers at affordable prices and of appropriate quality
6	Environmental Regulations and Programs	The emergence of environmental problems generated by the oil and gas industry
		There are certain global, regional and local regulations from the government

Source: Processed data (2023)

**Risk Analysis**

Risk can be interpreted as a form of circumstances that will occur with decisions taken based on various considerations at this time. To make it happen, decision makers must understand the problem

comprehensively and realistically in accordance with the conditions encountered in the field. Table. The results of this mapping will henceforth be the basis for determining priorities.

**Table 3. Consequence Categories**

Financial (Financial)	Safety and Health (Health & safety)	Environment (Environment)	Reputation (Reputation)	Culture & Social Heritage (Cultural & Social Heritage)	Law (Legal)
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Source: Processed data (2023).

In the table above, the company emphasizes the main impact which is the basis for measuring the consequences of a risk strategy that will be analyzed. Henceforth, the company determines and

describes the magnitude of the risk and assesses the significance of the company's tolerance using the company's risk level matrix.

**Table 4 Risk Level Matrix**



Source: processed data (2023).

**Priority Scale Strategy**

This way of solving should always strive for alternatives and their consequences, both positive and negative. Decision making by the leadership, in relation to selecting alternative problem solutions, will involve all parties involved in

the project ( Bardach & Patashnik, 2019) . From the risk assessment that has been carried out, the company determines the priority scale in carrying out policies based on a high risk to low risk scale as presented in Table.

**Table 5 Strategy Matrix**

STRENGTHS	Budget and resources	STRENGTHS- OPPORTUNITIES Strategies	Completion of Projects on Time	Critical Risk
	Well-established workforce and skills		Human Resources Management	Moderate Risk
	Strong political support			
WEAKNESSES	Need to incorporate technology and innovation	WEAKNESSES- OPPORTUNITIES Strategies	Zero Accident	High Risk
	Company portfolio in the long term			
	Competition significant			
OPPORTUNITIES	Industry and Renewable Energy Sector	STRENGTHS-TRUSTS Strategies	Finding Alternative Energy	Moderate Risk
	Potential to become a market leader		Raw Material Supply Management	Moderate Risk
	Partner with a specific partner			
THREATS:	Market share saturation	WEAKNESSES- TRUSTS Strategies	Environmental Regulations and Programs	High Risk
	Environmental issues			
	The emergence of alternative energy			
	Global, regional and local regulations			

From several strategies that were decided and determined together, the company prepared strategic action steps that were implemented based on a predetermined risk level (*Critical to Low Risk*). This can be seen in table following

Source: Processed data (2023).

**Table 6 Corporate Strategy Actions**

No.	Strategies	action	Due Date
1	Timely Project Completion	<ul style="list-style-type: none"> <li>Building work contracts with business partners who have a record of timely project completion that focuses on the Oil and Gas industry</li> <li>Prepare and ensure work contracts bind colleagues to complete projects on time</li> </ul>	1 month
2	Human Resources Management	<ul style="list-style-type: none"> <li>Enter into employment contracts with labor supply agencies that focus on providing labor in the oil and gas industry</li> </ul>	3 months
3	Zero Accident	<ul style="list-style-type: none"> <li>Prepare all documents relating to work safety starting from policies, work contracts to business partners, company procedures and projects.</li> <li>Ensuring it is running and reviewed regularly.</li> </ul>	2 months
4	Finding Alternative Energy	<ul style="list-style-type: none"> <li>Benchmarking companies that have started transitioning to alternative energy</li> <li>Collaborating with several international research institutes and universities</li> </ul>	3 months
5	Raw Material Supply Management	<ul style="list-style-type: none"> <li>Issuing long-term work contracts to ensure the supply of project raw materials to guarantee the availability of companies that have been business partners for at least 10 years</li> </ul>	3 months
6	Environmental Regulations and Programs	<ul style="list-style-type: none"> <li>Collaborating with several international law institutions and universities to build environmental programs based on environmental regulations</li> </ul>	2 months

Source: Processed data (2023).

From the activity plan report above, the company must be able to meet the achievement targets in accordance with the work plan (Agarwal et al., 2016). It is hoped that by carrying out this work strategy, the company can achieve a level of *Operational Excellence* (Meza et al., 2022). As the end of this process, the company also conducts a review ( *Management Review* ) of what has

been planned to find out that the strategic policies adopted are running effectively and efficiently on a regular basis (annually) (Anita et al., 2023).

**CONCLUSION**

From the results of the discussion above which refers to one of the oil & gas companies in Indonesia (Indonesia



Petroleum & Exploration ), the authors conclude that based on the problems above, the process of making strategic decisions in solving the challenges a company or organization faces will have a big impact for the companies and organizations involved. The process used in the case above is the SWOT approach and risk analysis. With the use of this analysis, the company benefits from making the right decision because there is relevant data both from the internal side (strengths and weaknesses) and from the external side (opportunities and threats that exist) (Ranganathan et al., 2018).

### Suggestion

This study took samples from companies with businesses engaged in the oil and gas mining industry. Due to these limitations, the authors suggest further research exploration with other types of business fields with the aim of providing additional insight regarding the application of strategic decision making and its solutions. Meanwhile, the advice that the author can give to companies in the oil and gas sector is to stay focused on developing a company strategy by considering what are the company's strengths, weaknesses, threats, and opportunities so that the company's performance grows even better. Companies also need to understand what aspects are critical issues that must be followed up within the company, with the aim of reducing possible losses.

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