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RISK MANAGEMENT IN CONTRACTING FOR BROWNFIELD AND GAS OPERATIONS

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Abstract: Numerous circumstances, including the oil and gas industry's dynamic nature, compel businesses to sign contracts like engineering, procurement, and construction (EPC) contracts. Any delay or lack of skill in these contracts could be disastrous. In order to prevent straying from the project timeline or budget and to maximize business value, a perfect contract strategy is crucial. Contract strategy is, unsurprisingly, the top priority for oil and gas companies. As a result, the purpose of this study is to examine contracting tactics used in brownfield and gas projects. Numerous research that addressed the topic have been studied, and a number of strategic contracts have been identified and the advantages and disadvantages of each method have been clarified.

Keywords: Contracting Strategies, Oil and Gas industry, Project Complexity, Project Scope, Project Risk, Project Timeline, Project Stakeholders, Project Management.

1. INTRODUCTION

For owner companies investing significant sums of money in brownfield and gas projects, having the appropriate contract strategies in place is essential. These organizations frequently contract out the engineering and construction work to contractor companies, but one of the most challenging aspects of project management is choosing the best contractor and negotiating the conditions of huge projects. Major projects can be delayed by months or even years due to contracting errors, which are sadly all too prevalent and result in costs that are millions of dollars more than anticipated (Merrow, 3015).

Objective of the Study

This paper is going to examine the best mechanisms of selecting contracting strategies of brownfield and gas projects.

Industry of Brownfield and Gas Projects

A project in the petrochemical, gas, and refining industries typically belongs to one of the two upstream or downstream sectors. The upstream sector deals with extracting crude oil and gas from natural resources, such as through the discovery of new oil and gas deposits or the construction of facilities for their extraction. On the other hand, the downstream sector deals with the refinement of petroleum crude oil and the purification of unprocessed natural gas obtained from the upstream sector, using oil refineries, petrochemical plants, and gas processing to produce goods that are ready for distribution via pipelines and pumping systems (EKT, 2015; NI-Business, 2015).

Industry of Brownfields

Brownfields are areas of land that have been abandoned because of serious and actual contamination, and then their reconstruction is hampered by financial and social issues. They are mostly located in metropolitan centers, periurban areas, and rural areas that were once strongly industrialized, and they are typically recognized as struggling urban areas. According to the National Round Table on the Environment and the Economy, "brownfields" in Canada are defined as vacant, unoccupied, or underutilized commercial or industrial structures. They have great development potential even when they do or might do contain environmental toxins as a result of prior use. However, according to the National Brownfield Association, there could be more than a million brownfield sites in the US alone. Contamination may cause real estate worth up to $2 trillion to be undervalued. This clarifies how important the land is to the support system for life as well as how valuable it is as a resource in economic systems (Zheng & Masrabaye, 2023).

Contracting Strategies

Contract strategy is the process of choosing the organizational and legal frameworks needed to carry out a given project. In order to optimize the chance of accomplishing project goals, the options for managing design and construction must be thoroughly evaluated while developing the contract strategy. The range of these contracts is enormous, ranging from a straightforward purchase of a common item to multimillion-pound deals (Bower, 2003). The top-level strategy for delivering a significant capital asset in an uncertain environment is, by definition, the contracting strategy. Deviations from "the plan" are expected; the strategy should account for both possible modifications that can be controlled and minimized as well as the possibility of unanticipated changes that cannot be controlled and only call for adaptation. The strategy should be constructed in a way that allows for quick recognition of changes and responsive planning that evaluates "manage" or "adapt" alternatives right away. The recovery from going "off plan" will happen faster if you stay "on strategy". The Construction Owners Association of Alberta ("COAA" (2018)) gave its blessing to the consensus development process that resulted in the creation of this Best Practice guideline (the "guideline").

The Importance of Contracting Strategy

The attainment of project effectiveness depends on having a contracting strategy that comprises including the end-user in various project phases and helps reaching a correct alignment between project and product objectives. Therefore, choosing an appropriate contracting strategy not only aids in resolving potential conflicts between project stakeholders during project planning and implementation, but it also makes it easier to achieve product success as defined by the achievement of longterm project objectives (Schramm, Meißner, & Weidinger, 2010).

Contracting Strategy Objectives

Implementing a suitable contracting strategy for a project has as its main goal raising the likelihood of project success. The Contracting Strategy Best Practice's goals include those listed by Al Dhaheri, M. (2016:

- The planned and implemented contract strategy or strategies support the project and business goals of the owner.
- Key project scope, risk, and working environment issues are taken into account.
- The appropriate project stakeholders are involved in the development, comprehension, and support of the project contract strategy.
- The project and contract risk are clearly and appropriately allocated to Contractors and Owners.
- Contract claims and/or disputes are minimized or avoided.
- The project scope roles and responsibilities, communication channels, and decision-making are clearly defined (this supported by well written, comprehensive contracts and scopes of work aligned to the contract strategy)

Types of Contracting Strategies

The cost-reimbursable contracts come in a variety of forms, including cost-plus percentage of cost, cost-plus fixed fee, costplus incentive fee, and contracts with a set maximum price. The simplest method to comprehend the various kinds of construction contracts, in accordance with Carty (1995), is to look at them from the standpoint of the risk associated with them. According to him, the spectrum of risk from the perspective of a contractor ranges from a fixed-price contract at one end to a non-risk cost reimbursable contract at the other.

According to Moazzami, D ehghan, & Ruwanpura, 2011), the following key categories best describe the different forms of contracts:

- Lump Sum (LS) or Fixed Price (FP).
- Engineering, Procurement and Construction (EPC).
- Engineering Procurement and Construction (EPC) with Long Lead Items (LLIS).

Lump Sum (LS) or Fixed Price (FP) Contract:

A clearly defined scope of work that covers all requirements for project execution is necessary for lump sum or fixed pricing contracts. A lump sum contract requires the contractor to do the entire project work for a set amount and to take on the majority of the project's risks and responsibilities. The key benefit of this strategy is that it allows for the knowledge of the project's final time and cost requirements (Mozzami, et al., 2011).

Advantages of Lump Sum (LS) or Fixed Price (FP) Contract:

What distinguishes this type of contract is that (Schramm, and Meibner, 2010):

- The contractor is obligated by the contract to do the work.
- The price of the contract is fixed and does not alter.

Disadvantages of Lump Sum (LS) or Fixed Price (FP) Contract:

Perhaps the most important difficulties that the owner may face during the implementation of the project (Schramm, and Meibner, 2010).

- Difficulty making modifications to the project. If the owner wishes to make any modification, he submits a written request to the contractor, who in turn submits the price offer for the variation order submitted by the owner, and the price of the variation order is usually very high, and the reason is due to the difficulty of the owner’s direction to other contractors to carry out the required change works.
- One of the disadvantages of this type of contract is the owner's need to provide an engineering supervision staff with high experience to ensure the quality of the work that takes place, and this would raise the cost of the project, and that need increases when choosing the lowest-priced bid.
- The contractor bears the bulk of the risks, while the owner bears a very small part of these risks. Therefore, we note the high prices of construction contracts that follow the lump-sum contract method.

Engineering, Procurement and Construction (EPC)

Construction, engineering, and procurement contracts are taken into consideration EPC is the most popular type of contract utilized by the private sector to carry out construction work on significant and intricate infrastructure projects. A singlepoint contract that includes engineering, procurement, and construction tasks is granted as part of an Engineering, Procurement, and Construction (EPC) contract. They are sometimes referred to as turnkey construction contracts because the investor (contractor) is required to deliver a finished facility to the government or developers who simply need to flip a switch to begin using the facility. This agreement is distinguished by its application to contracts used in all industries, particularly water and energy infrastructure projects. Customers, contractors (investors), lenders, and governments are the parties to this agreement. The following topics form the core of this contract's aspects of obligations (Schramm, and Meibner, 2010):

- Comply with requirements.

- Stay below budget cost projections.
- Follow the chosen program.
- Pay contract pricing with terms of payment guaranteed for both parties.
- Guarantees (failures following delivery) Liquidated damages (penalties for failure to perform) Establish who will be responsible for carrying out the project and what terms of the investor's (contractor's) contract.

Advantages of Engineering, Procurement and Construction (EPC):

- The EPC contractor continues to be the single point of contact for the performance of the works, communication, and coordination.
- A definite contract price, performance, and completion date guarantee.
- A distinct separation of duties and liabilities.

Disadvantages of Engineering, Procurement and Construction (EPC):

It must be taken into account that the system of this contract is used in dealing with the implementation of projects that are more sophisticated and accurate than other types of construction contracts, in addition to that it is an EPC contract designed to meet the requirements of lenders regarding the enforceability of contracts, and therefore some clauses of the contract are repeatedly the source of disputes between the owner and the contractor (Habibi,et al., 2019).

Therefore, attention must be paid by the parties to the contract management on both sides, to understand and plan well for the terms of the contract, especially the clauses related to bearing responsibility and covering unexpected costs, and this is a precondition for the success of executing a contract of this kind (Zhang, & Zhang, 2011).

This has led many developing and emerging countries to amend their local laws to be able to deal with the requirements and obligations of this type of contract, given that the introduction of "foreign funding" into the local legal system as a source of financing infrastructure projects is an important change in the philosophy of the local legislator (Schramm, and Meibner, 2010).

- Contract price may be excessively high because the EPC contractor is taking on the majority of the risk.
- A delay in schedule caused by the initial engineering phase and the relatively long EPC contract term.

Engineering Procurement and Construction (EPC) with Long Lead Items (LLIS)

Before the EPC contract is granted, the owner purchases materials and equipment with lengthy lead times under the umbrella of Engineering Procurement and Construction (EPC) with Long Lead Items (LLIS). Long lead items are materials or pieces of equipment that cannot be ordered or produced within the required or available time limit between the award of the EPC contract and the need for these things on the job site (van der Horst, 2013).

Therefore, it becomes clear that an EPC contractor, who is to be given a contract at a later stage, cannot obtain these components in time once the delivery times are determined. An EPC with LLIs contract technique may be selected in such a scenario. The pre-EPC-contract phase's contractual organization and the overall project timetable are the key ways that the EPC with LLIS setup differs from a standard EPC method (Schramm and Meibner, 2010).

Advantages of Engineering Procurement and Construction (EPC) with Long Lead Items (LLIS): • Slightly accelerated project schedules

Disadvantages of Engineering Procurement and Construction (EPC) with Long Lead Items (LLIS):

The idea of splitting responsibilities and transferring disciplines and activities to specialized contractors is indicated by this strategy (Schramm, and Meibner, 2010), and the disadvantages are:

- The owner bears the risk of the purchase and the choice of the vendors.
- There is also the possibility that the goods won't be used in the manner intended for the project.

- Higher coordination, communication, and contract management efforts are made, and there are more interfaces.

Contracting Strategies and Project Complexity

There is widespread agreement that complexity is important to the project management process for a number of reasons (Mateo, Jet al., 2019):

- It affects project planning, coordination, and control;
- It prevents significant projects from clearly defining their aims and objectives;
- It may have an impact on the qualifications for management employees in terms of experience and the choice of a suitable project organization type;
- It can be taken into consideration when choosing an appropriate project management arrangement;
- It may have an impact on various project outcomes, including time, cost, quality, and safety.

The disparities in decision-making and goal achievement that appear to be related to complexity make it crucial for project managers to understand project complexity and how it might be handled. Concern over the idea of project complexity has grown as projects have grown more complicated, and it has been discovered that using typical tools and approaches created for basic projects is ineffective for large projects. Organizational project failure is clearly influenced by complexity; however, it is unclear to what extent this is true. In order to better effectively comprehend the risks associated with project management complexity, distinct facets of a project's complexity can be identified and described. Identifying and characterizing the different aspects of project complexity in order to understand more efficiently the stakes of project management complexity can be of great support in assisting the global project management community (Mateo, Jet al., 2019).

The usual tools and approaches created for ordinary projects have been proved to be ineffective for complicated projects, which require an exceptional level of management. Complex project management is a specialized field that calls for a certain set of skills and an in-depth knowledge of the project and its surroundings. It is not only important for project managers to pay attention to the demands of an increasingly complex environment or to develop the right strategies to deal with the new challenges, but they also need to be willing to change their leadership style if they want to execute projects successfully in a context of increased complexity.

Decision-making in dynamic, unpredictable circumstances that are constantly changing, evolving at random, and are challenging to predict is a skill required of project managers. New approaches to planning, scheduling, executing, and controlling projects, as well as more integrated project management techniques, must be researched in order to meet this goal (San Cristóbal, et al., 2019).

Performance Contracting and Strategy Implementation

Performance contracts have been hailed as an efficient and promising way to boost the efficiency of public corporations and government agencies. A performance contract, in its most basic sense, is an agreement between a government and a public agency that specifies broad objectives for the agency, sets benchmarks for gauging performance, and offers rewards for hitting these benchmarks. Performance Contracts have been a huge success in a variety of nations, including France, Pakistan, South Korea, Malaysia, India, and Kenya. This has prompted a lot of interest in this strategy globally.

Governments must increasingly find new ways to accomplish their goals while using fewer resources. A paradigm for producing desired behavior in the conflict between devolved management structures is provided by performance contracting. Performance contracts are seen by employers as a beneficial tool for expressing more precise definitions of objectives and enabling new management monitoring and control methods while removing day-to-day concerns. Since it is quite obvious that contracting out can result in efficiency advantages while

maintaining or improving service quality standards, the OECD (1997) asserts that the use of contracting in government services is growing (Nderi, H. W. (2013).

Kobia and Mohamed (2006) state that the following improvements in performance were anticipated as a result of the performance contracting deployment.

- Less reliance on money from the Exchequer.
- More openness about how operations and resources are used.
- Greater responsibility for outcomes.
- Associating rewards with quantifiable performance.
- Lessened confusion brought on by many aims.
- An accurate division of responsibility for taking action.
- An increase in the relationship between planning and execution.
- Forming a true and honest opinion of the performance.
- More freedom, the development of supportive statutory and regulatory framework.

Implementing strategies involves doing what has to be done internally to put them in place and ensure that the desired results are attained within the desired timeframe.

2. CONCLUSION

The complexity of oil and gas projects is currently rising, as are their varying sizes and increased international engagement. In terms of timely completion, prices, quality, and revenue, it is therefore challenging to satisfy the project's objectives and challenges. The manner in which a project contract is awarded and the nature of the contracting procedure are crucial for the future of the project and its success. In essence, contracts are instruments for dividing up work, obligations, and risks. The idea that the party who controls risk should also bear the risk is fundamental to contracts. The contracting strategy must take into account the following factors: desired risk allocation, responsibility splitting, interfaces, market conditions, distribution of works and services, and time restraints. The essential factor that decides how well a project will be is the choice of the contracting approach. Therefore, it is crucial to be aware of and familiar with the distinctive qualities of potential approaches.

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