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PROCUREMENT STRATEGIES FOR THE OIL AND GAS INDUSTRY: CURRENT ISSUES AND PROBLEMS

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ABSTRACT

The new century brings significant challenges to the oil and gas industry, as it seeks to maintain high levels of investment against a background of volatile oil and gas prices. Despite the numerous constraining issues and problems the industry has to deal with, exploration and production technologies have continued to improve in leaps and bounds with more land and seabeds being explored for their valued commodity. However, there appears to have been little development to move away from traditional approaches into a more innovative procurement strategies in the oil and gas industry. This is perhaps because there are relatively few major players, that is project initiators (clients/owners) and implementers (contractors), in the oil and gas sector. Furthermore, clients/owners have been found to have a wide variety of method for selecting contractors.

In light of the rising oil and gas prices and operational costs, the oil and gas industry is being challenged on the issues of cost, safety, the environment, technology, resourcing, competitiveness and procurement. Procurement lessons learnt from other industries have also been tested but with mixed outcomes. However, procurement issues and problems in the oil and gas industry are not so pronounced as in other industries due to the small number of players and the need to maintain good image, reputation and goodwill amongst themselves. This paper presents a review of current literature on the subject within the industry.

1. Introduction

The oil and gas industry has always made a major impact to the world and UK's national and local economies. According to the UKOOA (2003) Report, the UK economy alone has benefited from £190 billion (2002) in taxes since extraction began in the mid-1960's. Less productive and smaller oilfields are also being given a new breath of life through innovative technological plant and equipment, and more economic management approaches such as joint venture exploration with shared risks. However, there has been insufficient development away from traditional approaches in procurement, with most of the procurement systems being mere carbon copies from other industries. According to Pedwell *et al.* (1998), this is probably due to the fact that there are relatively few players, that is project initiators (clients/owners) and implementers (contractors) in the industry. Furthermore, clients/owners have been found to have a wide variety of method for selecting contractors.

The oil and gas industry must also be looked upon as an individual and complex industry in its own right. Direct application of lessons learnt in other industries, such as construction, may not be appropriate, as the two industries differ in many aspects relating to both the construction, operation and maintain phases. For example, under the operation stage, the main goal for the oil and gas industry is production with high return whereas in construction the use of the finished asset to produce goods or provide a service is the key goal. According to Wright (1996), other characteristics associated with the oil and gas sector include high capital investment, high level of uncertainty/risk due to its exploratory nature, high technology/heavy engineering, large scale/magnitude, large number of engineering disciplines and specialists from exploration to first oil and from production to decommission and spasmodic delivery/supply schedule.

2. Industry challenges on procurement

Throughout the review of relevant articles and papers, it was obvious that a gap exists in the literature whereby little was found, mentioned or deliberated on regarding procurement aspects of the oil and gas industry. Out of approximately 200 articles found, only about 40 articles were closely related to procurement. This does not necessarily mean that there are no problems but may be a result of the commercial sensitivity associated with disclosing and sharing problems among what constitutes only a few players within a very specialized industry. Also, such disclosures could have a negative impact on image, reputation and goodwill within a high-return industry.

Changes are beginning to take place within large corporations, for example Halliburton recently announced that it will no longer pursue the traditional Engineering, Procurement, Installation and Commissioning (EPIC) contracts, as there was "the growing imbalance in the risk and reward available on these offshore EPIC projects" (Halliburton 2003). Partnering, alliancing and joint ventures have also had their fair share of problems. Creating trust, unclear roles and responsibilities and alignment to common goals in this high-risk industry are

some of the problems faced by these types of procurement arrangements (McHaffie *et al.* 1993). Short and long-term relationships within partnering arrangements have to be dealt with accordingly to avoid pitfalls and any untoward relationship that could be costly.

The UKOOA (2003) Report stated that further research on the area is required more now than ever before. This is because of considerable changes in the oil and gas scenario throughout the world today with clients and contractors looking more for a win-win situation in their procurement arrangements. With the high cost of exploration and production today, the profit margins for clients are decreasing. Selecting the right contractor with the right price can be a time consuming and risky business. The volatility of the current oil and gas prices have added to the need to reconsider clients' cost control procedures, in particular procurement strategies. The recent development of marginal fields with tight budgets and high risks has resulted in traditional procurement approaches becoming unsuitable leading to the introduction of partnering/alliancing/joint ventures. The decline in production output of matured oil and gas fields in the United Kingdom has increased market prices for oil and gas as well as operational costs. This has also created the need for further exploration and production with poor combination of higher costs and increased risk.

3. Aims statement and objectives

The aim of the main research is to improved procurement strategies for the oil and gas industry. However, the objectives of the paper are to:

- identify problems/issues that the oil and gas industry may have with current procurement strategies;
- study the magnitude and importance of the problems/issues to the industry and prioritise accordingly;
- conduct current literature search on procurement to identify previous research in the area and the gaps that needs to be filled; and
- develop the most appropriate research methodology in order to address the problems/issues highlighted;

This paper focuses on the first three objectives as stated above. This has been achieved through a literature search and review which will form an important foundation to further work. The main research programme started in April 2003 and is expected to be completed in 2006.

4. Problem identification

Within the literature reviewed most common problems/issues within the oil and gas industry currently were associated with EPIC contract failures and partnering/alliancing ventures turning sour. The high cost associated with the sustainable development of marginal oil and gas fields has becoming an increasingly important issue among operators and contractors alike (Ehret, 1992). This is a direct result of the depleting oil and gas production in the

United Kingdom's Continental Shelf (UKCS) and the rising operating and maintenance costs of installations in matured and marginal field. The **C**ost **R**eduction **I**n the **N**ew **E**ra (CRINE) (Westbrook 1994) and PILOT initiatives by the Department of Trade and Industry (DTI) were introduced as a means of reducing if not overcoming these challenges.

5. Scope of main research

The main research will cover procurement problems/issues faced by clients/owners and contractors in the oil and gas industry throughout the world as experienced within the regions of UK, US and the South China Sea, predominantly Malaysia. The research will take account of the different types of oil and gas activities such as: offshore/deepwater in the UK; onshore/dry land in the US; and offshore/shallow water in Malaysia. Malaysia has been chosen because it also represents a country with potential growth in the South China Sea region. This will also create an opportunity to explore cross-regional learning from different levels of cultural, technological, geographical and political perspective. The scope of the main research will also extent its coverage towards cross-sector learning, with the construction industry chosen as the point of reference and source of information.

6. Outline of main research methodology

In order to achieve the objectives of the main research, the information will be gathered through primary and secondary data. The source for primary data collection will comprise the following groups, which include oil and gas operators – *BP, Exxon, Esso, Shell, Petronas(Malaysia)* etc., statutory and regulating authorities/bodies and oil and gas contractors.

Primary data will be collected from the above groups in order to prioritise the problems and help to develop solutions through interviews, survey questionnaires and case studies.

Secondary data will be gathered through literature in order to identify problems, previous research and gaps from libraries – books, databases, journals, newsletters etc., professional societies/bodies, international forum/conference/seminar papers and the Internet.

7. Current literature issues in the oil and gas industry

Many regional issues have surfaced from articles read to date, these include: Iraq with no central authority and trying to mend and picking up the broken pipes from the effects of war MSNBC News (2003); the Russians are in hot pursuit claiming their promised oil share during the pre-war era (Neftegaz RU 2003); Venezuela's oil and gas industry collapse with workers on strike and political pressure as reported by Coronel (2003); China's emergence as the new global

player in the oil and gas industry with joint ventures investment with major contractors (Clifford 2001); and the UKOOA (2003) Report on UK oil and gas industry agreeing to improve on capital and operational efficiency. Other key issues that have emerged include:

- increased cooperation rather than competition among oil and gas contractors (Stabell and Sheehan, 2001; McHaffie *et al*. 1993);
- effective supply chain management offering great scope for increased efficiency and improvements in client/supplier relationships (UKOOA 2003);
- partnering/alliancing/joint value enhancement in today's market environment (Wood, 2003; Manning, 2003; Bruce and Shermer, 1993);
- environmental issues and costs to be addressed by the industry (Gao, 1994; Westbrook, 1994);
- cost effectiveness with regards to technological factors (Adams, 1992);
- Engineering, Procurement, Installation and Commissioning (EPIC) procurement system failures and why some major contractors are shying away from it (Halliburton, 2003; Stevenson *et al*, 2003);
- contract risk management (IQPC, 2003; Stell, 2002);
- standardisation/best practices (Fowler *et al*, 2003); and
- industry initiatives in leading and delivering changes (Todd *et al*, 2003)

8. Procurement problems

Not many issues on procurement problems seem to appear in the papers or articles but that does not mean everything is plain sailing. Already at least one major oil and gas contractor, Halliburton, (Halliburton 2003) has decided that "it will no longer pursue EPIC contracts for the oil and gas industry where it is required to make lump sum, fixed price commitments" but "will continue its active participation and leadership in the offshore engineering and construction market through cost reimbursable arrangements". This is due to "the growing imbalance in the risk and reward available on these offshore EPIC projects". Another issue that was discussed and deliberated at length was the integration of supply chains and critical chain concepts in EPIC contracts in order to enhance some of its flaws and weaknesses (Yeo and Ning 2002). According to Stevenson *et al* (2003), in order for a supply chain management system to work, integration is needed instead of fabrication. The usual conventional versus EPIC contracts is also becoming a key issue. Among the problems encountered in EPIC contracts, apart from the above, is that the contractor shoulders the risk when there is a variation order. Variation orders are common in the oil and gas industry because there are many uncertainties associated with the exploration and production of oil. Yeo and Ning (2002) also added that among the challenges faced by EPIC projects are the interdependence of activities, phase overlaps, work fragmentation, complex organisational structure and uncertainty in accurate prediction of desired outcomes.

Partnering and alliancing have also had their fair share of problems. Creating trust, unclear roles and responsibilities and alignment to common goals are some

of the problems faced by this type of procurement arrangement. Poor definition during conceptual stage of the project between parties can also lead to volatility in the execution and outcomes.

Deployment of an inappropriate contracting strategies and failure to reflect geographical, political and cultural influences according to Stevenson *et al* (2003) are evident in current contract and commercial models in the oil and gas industry. This is sadly the common features of disastrous projects, which is the joint responsibility of clients and contractors.

9. Procurement strategies

In order to overcome some of the existing problems and offer potential solution, a few innovative approaches to procurement have been put forward by the players in the industry, these include:

- cooperation rather than competition among contractors and suppliers (Wright, 1996; Stabell and Sheehan, 2001; McHaffie, *et al*. 1993; and Adam, 1992);
- effective supply chain management to increase efficiency and improvements in clients/supplier relationship (Yeo and Ning, 2002; Stabell and Sheehan, 2001; Stevenson *et al*, 2003);
- partnering/alliancing/joint value enhancement to be looked at in accordance to today's market environment (Chan, *et al*. 2003; Brunsman, *et al*. 1998; Bruce and Shermer, 1993);
- cost effectiveness with regards to operational management (Wright, 1996);
- effective incentive schemes for contractors and supplier (Richmond-Coggan, 2001);
- leasing (Wright, 1996); and
- contract to produce (Wright, 1996).

There is also a need for innovative procurement strategies in the oil and gas industry, as cited by Dittrick (1999) in a survey of integrated oil and gas companies in the US. It stated that project procurement process in the oil and gas industry is a capital-intensive industry. As 90-95 per cent of project costs are paid to contractors and suppliers, to ensure project success, it is critical that procurement strategies should incorporate and integrate with the capital project procurement process from start to finish. It must also submit to total system of cost and evaluation throughout the procurement process such as Whole Life Cycle costing. Some form of standardization programme and specification reviews must also be included. A strategic outsourcing, such as in supply chain management, must be in place. Finally, a management and incentive programme for all key contractors and suppliers must exist in order to secure the commitment of contractors and suppliers to the overall success of the project.

Wright (1996) stated that the adoption of these new procurement strategies by the key players in the UK North Sea has been instrumental in rejuvenating the industry by allowing cost-effective development of smaller and more marginal

oil and gas fields. The industry's initiatives such as PILOT and CRINE have also helped to create the appropriate environment for a more standardised and cost reduction contractual arrangements.

10. Conclusion

During the literature search, most of the papers found were either technological, economics or strategic planning based but also included aspects of procurement and contracts. Little appears to have been written on this 'softer issues' of procurement systems/strategies in an industry that generates billions of dollars per day in revenue. This could be due to the complexity and nature of the industry itself.

There appears to have been little development from the traditional to the latest approach in procurement where most of the procurement systems used appear to be mere carbon copies taken from other industries. Throughout the general reading of articles and papers, it was obvious that there was a gap in the literature whereby little was found, mentioned or rather the few numbers of research work that has been done on the procurement aspects of the industry. In order of priority, it has been established that cost cutting, cost reduction and risk management appeared quite frequently in recent articles, thus needs to be addressed first. Cooperation, competitiveness and organizational strategy are the keywords in most of the articles although no linked to procurement system/strategy are directly mentioned in the articles.

However, Wright (1996) has identified key trends and factors in procurement, particularly in the UK North Sea oil and gas industry, that need to be addressed accordingly which include the increased contractors' risk, market polarisation, cultural changes, oil company specialisation, project timescales, technology and product-oriented solutions.

During the recent Offshore Europe 2003 conference, Stevenson *et al* (2003) stresses that as far as procurement strategy is concerned, contractors should not confuse risk transferences with commercial integrity in their execution. They must be sensible in allocating risk within their capabilities and must also be able to become flexible to revert to reimbursable scopes where definition, local content or other variables dictate.

Finally, as Dittrick (1999) concluded: "*Procurement is looked upon as a progression point now because, as outsourcing and partnering continue to grow, procurement becomes a core competency of the organisation*".

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