

# **CHALLENGES ON PROCUREMENT IN THE OIL AND GAS INDUSTRY: DEVELOPING NEW STRATEGIES**

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## **ABSTRACT**

With the background of volatile oil and gas prices, marginal oilfields, extreme locations and new global business trends, the oil and gas industry is forced to seek better solution to overcome these challenges, among others, to look at new procurement strategies. Although some changes have taken place in the development of innovative procurement strategies in other sectors, more needs to be done to the oil and gas industry. This is perhaps because the oil and gas industry needs to be considered as an individual and complex industry in its own right. The other probable reason why there appears to have been little development away from the traditional approaches is because there are relatively few major players, that is project initiators (clients/owners) and implementers (drilling contractors etc.) in the oil and gas sector. Clients/owners have also been found to have a wide variety of method for selecting contractors.

The direct transfer of other industries' experiences on procurement may not be suitable, as they are different in nature and many other aspects of the business which could have given a different impact to the overall management of oil and gas field exploration and production. Procurement lessons learnt from other industries have also been tested but with mixed outcomes. This includes Partnering/Alliancing/Joint Ventures, Design and Build/Engineering, Procurement and Construction, and Performance-Based approaches. However, procurement issues and problems in the oil and gas industry is not so pronounced as in other sectors due to the small number of players and the need to maintain good image, reputation and goodwill amongst them. The overall aim of the research is to improve procurement strategies in the oil and gas industry. This paper will present a review of current literature on the subject within the industry.

**Keywords:** Contractor, Management, Oil and gas, Operator, Procurement, UK

## **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 tight delivery/supply and installation schedule.

### **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 have 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; Donnelly, 2003). 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 (Stevenson *et al* 2003).

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. Traditional contracting structure according to Scott (2001), frequently create misalignment between the individual contractors and has no incentive to work in a way that is most efficient for the project as a whole or to work proactively (by pooling skills, expertise and resources if appropriate). 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.

### **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 challenges that the oil and gas industry may have to face with current procurement strategies;
- study the magnitude and importance of the problems/issues to the industry and prioritise it 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.

### **Problems 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 **Cost Reduction In the New Era (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. Independent organisation such as **Leading Oil and Gas Industry Competitiveness (LOGIC)** were set up only to address specific contractual and supply chain issues and training.

### **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 major oil and gas exploration and production 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.

### **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 – *Shell, BP, ChevronTexaco, 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.

### **Current literature 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; Bento, 2003)

- partnering/alliancing/joint value enhancement in today's market environment (Wood, 2003; Manning, 2003; Bruce and Shermer, 1993; Donnelly, 2003);
- 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)

### **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 and whether the share of the rewards will commensurate to the risk they are taking can also lead to volatility in the execution and outcomes (Donnelly 2003). He also reiterated that some of the major companies have in the past shared risk with mixed results due to naive appreciation of the risks being taken and the gaps in understanding of the risk/reward model between parties.

The non-existence or rarely used Whole Life Costing (WLC) in procurement practices in the industry is another aspect that causes concern over the rising costs of material and plants during the production period that covers operational and maintenance costs.

Deployment of an inappropriate contracting strategies and failure to reflect the complex multi-cultural influences which include geographical, nature, safety, environment and political 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.

### **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 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; Bento, 2003);
- partnering/alliancing/joint value enhancement to be looked at in accordance to today's market environment (Chan, *et al.* 2003; Brunsmann, *et al.* 1998; Bruce and Shermer, 1993; Donnelly, 2003);
- cost effectiveness with regards to operational management (Wright, 1996);
- effective incentive schemes for contractors and supplier (Richmond-Coggan, 2001);
- leasing (Wright, 1996);
- contract to produce (Wright, 1996);
- whole life costing (Mohammad, M.F. 1996; Best, R. and de Valence, G, 1999); and
- incorporating multi-cultural complexities factors (Stevenson *et al.*, 2003)

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 Costing (WLC). 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.

## 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.

The challenges on procurement for the oil and gas industry appears to have been the 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 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 de Valence, (1997) cited in Best and de Valence, (1999) argued: "*...owners and clients are increasingly using a variety of alternative procurement methods aimed at reducing cost, achieving time schedules and milestones, shortening duration, reducing claims and improving constructability and innovation. The overall trend is toward versions of design-build and turnkey construction because of the advantages of a project delivery system that combines designers, builders and sometimes suppliers into a single entity, to solve the problems inherent with traditional low-bid procurement*".

Whether this will apply successfully in the oil and gas industry is remain to be seen.

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