

Exploring Decision Support and Strategic Project Management in the Oil and Gas Sector

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This article attempts to increase understanding of best practice in decision-making in strategic project management, as applied to the upstream oil and gas sector. It describes what is meant by strategic project management in that context, outlines the wide range of techniques that can be applied to managing strategic projects, and explores the elements (or dimensions) of the strategic project management process, and the appropriateness of techniques in facilitating strategic project management. It seeks to improve managerial understanding of strategic project management, by proposing a set of multidisciplinary elements framed by the balanced scorecard's (BSC) rationale, and investigating the extent to which techniques address the proposed set of elements.

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Introduction

It is widely accepted that the business environment is changeable, uncertain and complex (Partington, 2000). Major changes have occurred as a result of the growth of industrialised economies, the advent of privatisation programmes and deregulation trends, the reinforcement of shareholder power and the development of new information technologies (Oyon and Mooraj, 1999).

In this context, strategic projects are essential, novel

and long-term investments. They are required when a firm wants to achieve, sustain and renew its long-term objectives and prosperity. 'Strategic projects are the vehicles through which a sound vision gets implemented and realised' (Schoemaker, 1992). Strategic projects represent the core of corporate growth, change and wealth creation. They are major investments, often involving high uncertainty, they comprise intangible benefits and promise attractive long-term financial outcomes (Buckley, 1998). Strategic projects also motivate the creation, acquisition and development of competencies (Foss, 1997) and comprise a collection of diverse options (Amram and Kulatilaka, 1999).

Strategic project management consists of two main stages: evaluation and control (Amram and Kulatilaka, 1999). Evaluation involves framing (i.e. drawing up a strategic project after its inception), planning and valuing a strategic project; evaluation ends with the authorisation of the project. Control comprises the management, review and redesign of a strategic project through to its completion. Strategic projects are considered to be managed successfully if they are successfully completed, are financially successful and are successful for strategic (i.e. non-financial) reasons.

This article aims to move towards best practice concerning decision-making in strategic project management, as applied to the upstream oil and gas sector, i.e. the research, exploration and production of crude oil and natural gas. It will explore the concept of strategic project management, the elements (or dimensions of the process) involved in the strategic project

management process, and the role of techniques in facilitating strategic project management.

In this article, elements are classified into three categories — *context* elements and *content* elements that describe the strategic project management process, and *outputs* that describe the results of the process. Elements are placed within the four perspectives proposed by the Balanced Scorecard (financial, external environment, internal business, and learning and innovation). In addition, techniques applied to managing strategic projects are separated, for simplification, into evaluation and control techniques.

This article begins with a description of the techniques applied to managing strategic projects. The research methodology for the study is then introduced, before describing the results of the interviews under a number of headings (defining strategy and strategic projects; evaluating and controlling strategic projects; elements for evaluation and control; and a balanced set of elements). Techniques and elements involved in strategic project management are then matched. The last section presents the conclusions and future research directions.

Techniques for Strategic Project Management

There is a wide range of techniques available for managing strategic projects. Prior to introducing these techniques, the term 'technique' needs clarification. Technique is a generic term, and involves models and methods (Chapman, 1997). Techniques are applied by decision-makers in managing an individual project or a portfolio of projects to help them 'deal with the complexities of the project process' (Dawson, 2000). Under the organisational knowledge framework, techniques are defined as individual, explicit knowledge (Cook and Brown, 1999).

Here, techniques are divided into traditional and recently-developed techniques. Traditional techniques include accounting and financial measures (return on investment, net income, payback period, internal rate of return, net present value — NPV, cost-benefit analysis, leveraged NPV and human resource accounting), sensitivity analysis, techniques that incorporate uncertainty (risk-adjusted NPV, decision-tree analysis, risk analysis, forecasting, scenario analysis, contingency analysis and simulation), and techniques that deal with some degree of mathematical complexity (optimisation, capital and manpower rationing, cost management, scheduling and progress measurement). Managers are also being exposed to recently-developed techniques to support project management, including real options (Bowman and Moskowitz, 1998) (sometimes integrated with utility functions (Kasanen, 1994) and

game theory (Smit and Ankum, 1993)), economic value added (Stewart, 1994), balanced scorecard — BSC (Kaplan and Norton, 1992) and intellectual capital (Bontis *et al.*, 1999). As the balanced scorecard will be used as an analytical framework in later sections of this paper, it will be introduced further at that point.

On the one hand, the appropriateness of techniques to address the elements involved in strategic project management would seem to be limited (Mooraj *et al.*, 1999). Most elements involved in strategic project management are multidisciplinary and not always quantifiable (Becker, 1983). Techniques tend to focus on aspects that are easily quantified.

On the other hand, as firms adopt recently-developed techniques for managing their businesses, managers are forced to develop a practical understanding of each technique (Brewer *et al.*, 1999). However, for a number of reasons such techniques are often not implemented. First, managers resist adopting new procedures. Second, recently-developed techniques are often complex (Slater *et al.*, 1998). Third, there is no scientific evidence of a positive cost-benefit analysis arising from their application (Oyon and Mooraj, 1999).

There is a gap between what managers want from recently-developed techniques and what these techniques are designed to offer (Amram and Kulatilaka, 1999). Managers recognise the limitations of quantitative analysis, use techniques such as NPV as a mere 'organisational ritual' (Slater *et al.*, 1998), and add their judgement and intuition (Ward and Grundy, 1996).

As the gap widens, techniques are excluded, and managers make subjective decisions (Amram and Kulatilaka, 1999), sometimes as 'an excuse for retreat into untested intuition or 'acts of faith'' (Ward and Grundy, 1996). As a result, managers tend to associate a project's success with their superior ability and a project's failure with bad luck (McGrath, 1999).

Research Methodology

Strategic project management is a complex, value-creating process to assure long-term corporate success, and hence there is a need for techniques to act as value creation facilitators. It is therefore important to understand the strategic project management process, define the elements involved in it, and identify the role of techniques in facilitating such a process.

In order to explore these issues, nine semi-structured face-to-face recorded interviews were carried out with a diverse group of managers holding top and medium positions in a single company in the upstream oil and gas sector. The upstream oil and

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