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Collaboration dynamics in Capital Projects: an example from the Canadian Tar Sands industry

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Summary

In the Canadian oil industry, many large scale projects, termed Capital Projects, are undertaken to produce from oil sands. However, megaprojects are notorious for their cost overruns and schedule slippages. This study describes the key success factors and challenges in megaproject collaboration through an ethnographic approach. In total, 17 in-depth interviews with project managers at seven major oil companies and contractors were recorded. The results show that the main challenge relates to the interaction between the oil companies and the contractors. There is a general hesitation to introduce new, innovative technologies. In addition, external contingencies such as the state of the economy, public acceptance, and specifically for the Canadian oil sands, climatic conditions have a significant impact on the collaboration dynamics. This strengthens the argument that a change in the relationship between the oil industry and contractors creates more effective megaprojects. Partnership-types of collaboration with shared risks may generate a more sustainable relationship resulting in more robust, resilient, innovative and in particular, on-target projects. Considering these factors, megaprojects can be realized with more efficiency.



Introduction

Canada has the third largest oil reserve in the world. These reserves consist mostly of bitumen rich sands (figure 1) and termed oil sands. The bitumen is either extracted by open pit mining or by a steam assisted gravity drainage (SAGD) technique. These unconventional manners of oil extraction are generally far more expensive compared to conventional types of extraction. In the past decades, with increasing energy demand and consequently, rising oil prices, it became economical to produce these reserves. The production from oil sands requires large scale projects also known as megaprojects. Often, these megaprojects struggle to meet their goals (Flyvbjerg et al., 2002; Jergeas 2008). This study describes the key success factors and challenges in megaprojects through an ethnographic approach (Abbink et al., 2012).



Figure 1
Map of Alberta, Canada with the major oil sands occurrences
(Modified after Einstein, 2012)



Methodology

This is an ethnographic study based on qualitative data. In total, 17 interviews were recorded at seven different international operating organizations, each being either an oil company or a contractor. The interview data has been made anonymous. Within the realm of ethnography, an interpretivistic approach is maintained to construe the data from the interviews and site visits. "For interpretivists, it is essential to see humans as actors in the social world rather than as simply reacting as objects in the natural world." (O'Reilly, 2005). The actors in this research are the interviewed project managers. To understand the critical factors in megaproject collaboration, this methods allows interpretation of the social world and the behavior, actions and perceptions of the actors.

Megaprojects

A project can be defined as an organization with a set of common characteristics, namely (1) a unique task, (2), a temporal undertaking with a deadline, (3) containing performance specifications, and (4) including multiple complex activities (Packendorff, 1995, Van Marrewijk, 2005). The execution of a megaproject is characterized by multiple partnerships in the public and /or private sectors (Van Marrewijk and Veenswijk, 2006). Megaprojects are reckoned to be a very popular tool to build or renew infrastructural structures. However, they are also notorious for cost and schedule overruns (Flyvbjerg et al. 2002; Jergeas 2008). The oil industry is well known for megaprojects. Like other industries, it struggles with cost and schedule overruns as discussed by Jergeas (2008) and Soderbergh et al. (2007).



Collaboration in megaprojects

The collaborative setting is often mentioned as critical to a project's success (Cicmil and Hodgson 2006). In a megaproject, many organizations are involved that obviously have their differences. These differences are entrenched in aspects like agendas, historical contexts, beliefs and values, making the collaboration cross-cultural (Van Marrewijk 2005). The risk of fragmentation, power struggles and/or loss of trust in a megaproject is substantial (Van Marrewijk et al 2008). This is mostly driven by the vast quantity of participating organizations, temporality of the project and by not being familiar with the collaborative setting. Finding a universal model to improve the success of a megaproject is an over- simplistic and unrealistic approach (Engwall 2002; Packendorff 1995). Projects are dynamic and influenced by aspects like the project's external context and by the history of the participating organizations (Engwall 2002; Packendorff 1995). External factors such as a changing economic climate may contribute further. This study has focused on the dynamics that project managers, active in megaprojects in the Canadian oil industry, perceive as significant to the project's success.



Results

The oil companies that participated in this research shared a general organizational layout to manage their (mega)projects (figure 2). Since no oil company can realize a megaproject by themselves, contractors are hired who, in turn, may hire other (sub-) contractors or suppliers.

In this study, it appeared that project managers are very keen on the alignment of involved organizations and institutional departments both inside and outside their company. In the process of bringing in line the goals and expectations, fragmentation and late scope changes are addressed. In addition, projects with a weak business case can be terminated with ease. This reflects a strongly conservative approach. Another related observation was the low application of new technologies in these megaprojects. Less than 10% of all technologies are new. Technological innovations are only tried on small projects, budgeted 60 million or less, as ambiguities and risks are considered too high in the large scale, large investment projects.

Apart from internal project factors, the interviewed project managers all pointed out three important factors of influence to the project. These influences are all external and may be considered as contingencies.

The first and main contingency is the state of the economy. This has a major impact on the crude oil price, linked to the rate of return on the project and the ability to find adequate manpower. Due to a previous period of economic boom, the position of the contractors was very comfortable due to the work offers they received. Contractors could afford to be selective on the projects and the risk they wanted to share. Oil companies sensed an imbalance of ownership within the project team. A complacent and untrustworthy attitude posed by the contractors, as described by the oil companies, generates a high risk of fragmentation in the project team. Oil companies are seeking ways to control the contractors' dedication to the project. Looking at the messages filtered from the interviews, it appears that a more controlled contractor tends to be less committed as they do not feel trusted by the project owner. Harmony between oil companies and the contractors appears difficult to manage. However, this is necessary to optimize their benefits.

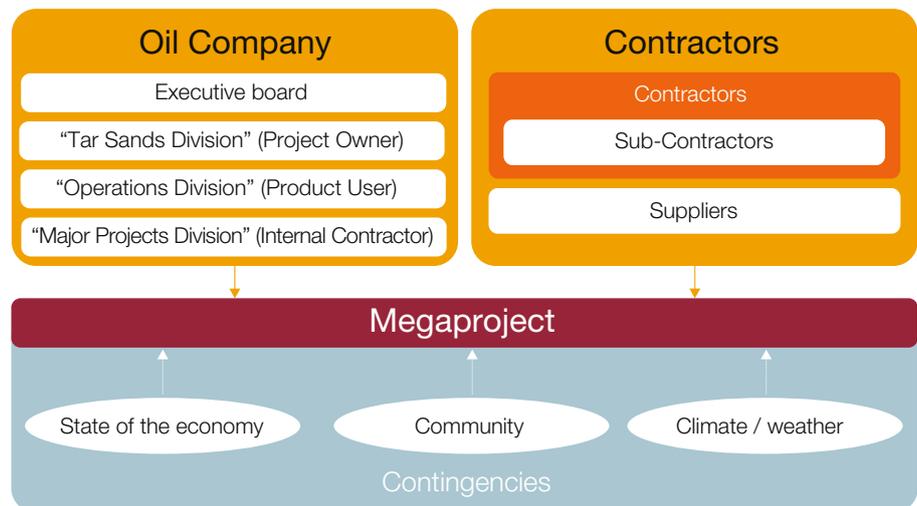


Figure 2

Schematic lay-out of a megaproject with its factors of influence in the Canadian Oil industry.



The second contingency is public acceptance. Society and local communities, directly or indirectly affected by megaprojects, are known for their environmental protectionism. Communities can, rightly or wrongly, shape the general view towards a project or the industry as a whole.

The last of the three contingencies is specific to the Canadian oil industry and relates to climatic conditions. The climate in Canada generates a relatively small window of operation as only the hard, frozen soil makes the transport of heavy equipment by road possible. If this window is missed, the project will experience significant delays.

Conclusions and recommendations

This research looked at the planning and execution of megaprojects in the Canadian oil sands, with the following conclusions:

Industry party project concerns are relatively well captured by project management tools.

The main issues that surfaced in this research relate to the interaction between the oil companies and the contractors. Oil companies are eagerly trying to find a balance between control on one side and contractor commitment on the other side.

To maximize the results, more innovative technologies should be introduced during the execution of a megaproject. However, since these projects span over multiple years, new technologies are seen as a considerable risk factor.

The main external contingencies are the state of the economy, public acceptance and climatic conditions. These impact the planning and execution of megaprojects, and therefore influence the relationship between the oil company and contractor.

All elements in the results of this study argue that a change in the relationship between the oil industry and contractors creates more effective megaprojects. A partnership can generate a more sustainable relationship and lowers the effects of the economy in the collaboration (Bresnen and Marshall, 1999). Partnerships are relatively difficult to establish, as a certain organizational mentality must be prevalent. For example, the oil companies discussed their experience of the tendency of the contractor to become complacent in a partnership. Therefore, this organizational mentality should include the ability to trust another organization and doing business through a process of negotiation with a win-win outcome.

A key advantage in a partnership is risk sharing. A solid interorganizational relation may justify accepting higher risks. The ability to take higher risks can also contribute to less conservatism towards new technologies.



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