

# Operator Influence in Building and Maintaining Robust Safety Culture in Drilling Operations I

Clare McPherson

Mark Griffin  
School of Psychology

## Abstract

*In the oil and gas industry, contracting of specialised functions to external companies (e.g. drilling and maintenance) is very common. For example, on one drill-site there will be employees from the operating company, rig contracting company, and service provider companies. It is important that a positive safety culture is present regardless of the number of companies present on a rig. The operating company is interested in its influence on the safety culture of its drilling operations. The “Fitness-to-operate” model (Griffin et al., 2014) was designed to measure the safety capability of an organisation via three measurable capitals; human, social, and organisational. A semi-structured interview schedule was developed to gain an understanding of the enabling capitals. A total of 13 interviews were conducted with rig contractors and service provider employees. Multiple themes emerged from a preliminary analysis of the interviews, such as communication, leadership commitment, and following rules and procedures. Further interviews and analysis will determine the influence the operating company has on the safety culture of its drilling operations.*

## 1. Introduction

The level of risk in the offshore petroleum industry has declined over but major events continue to occur with devastating consequences (Kongsvik et al., 2012). In this high-risk industry where significant hazards are present, operating companies and their regulators pay considerable attention to safety assessment. In recent years there has been a growing awareness of the need to consider organisational, managerial and human factors in addition to technical failures as significant factors in major events (Weick et al., 1999).

Safety culture describes the values, beliefs and attitudes which are shared within the social context of an organisation (Guldenmund, 2000). Safety culture has acquired a significant place in literature and there is an agreement that organisations who promote a positive safety culture are taking a proactive stance towards safety. A variety of quantitative and qualitative data collection tools are readily available for use in determining the level of safety culture in an organisation. However, there is surprisingly little research on the potential influence of an operating company on a contractor’s safety culture. This is of particular concern considering the importance of the relationship between operators and contractors in high-risk industries. It is therefore valuable to learn more about the link between an operating company and safety culture of a rig.

The purpose of the present study is to explore the operating company’s influence on the safety culture in its drilling operations. In order to understand the operator influence on safety culture, the interaction between a number of factors was investigated. These factors include the culture of the operating company, including its human, social, and organisational capitals

and their influence on the business partners (i.e. the rig contractor and service companies). *Human capital*, refers to the knowledge, skills, and abilities of individuals within a particular organisation (Youndt and Snell, 2004). It includes technical qualifications, competencies, experience, and understanding of process safety risks, together with a range of personal and interpersonal qualities that promote safety capability. *Social capital* refers to the knowledge embedded in and available through relational networks among employees (Youndt and Snell 2004). The final capital, *organisational capital*, describes the knowledge captured in organisational processes, systems, and structures (Subramaniam and Youndt, 2005).

These three forms of enabling capital have been combined into a model introduced by Griffin et al. (2014) as the “Fitness-to-operate” (FTO) model. This model was developed in conjunction with the National Offshore Petroleum and Environmental Management Authority (NOPSEMA). It is suggested in this model that the three capitals are the observable characteristics of an organisation’s safety capability. The safety capability is defined as “the capability to maintain the safety of complex systems operating in uncertain and interdependent environments.” Therefore, the FTO of an organisation (Figure 1) is “demonstrating appropriate organisational, social and human capital to manage safety in uncertain and interdependent environments”.

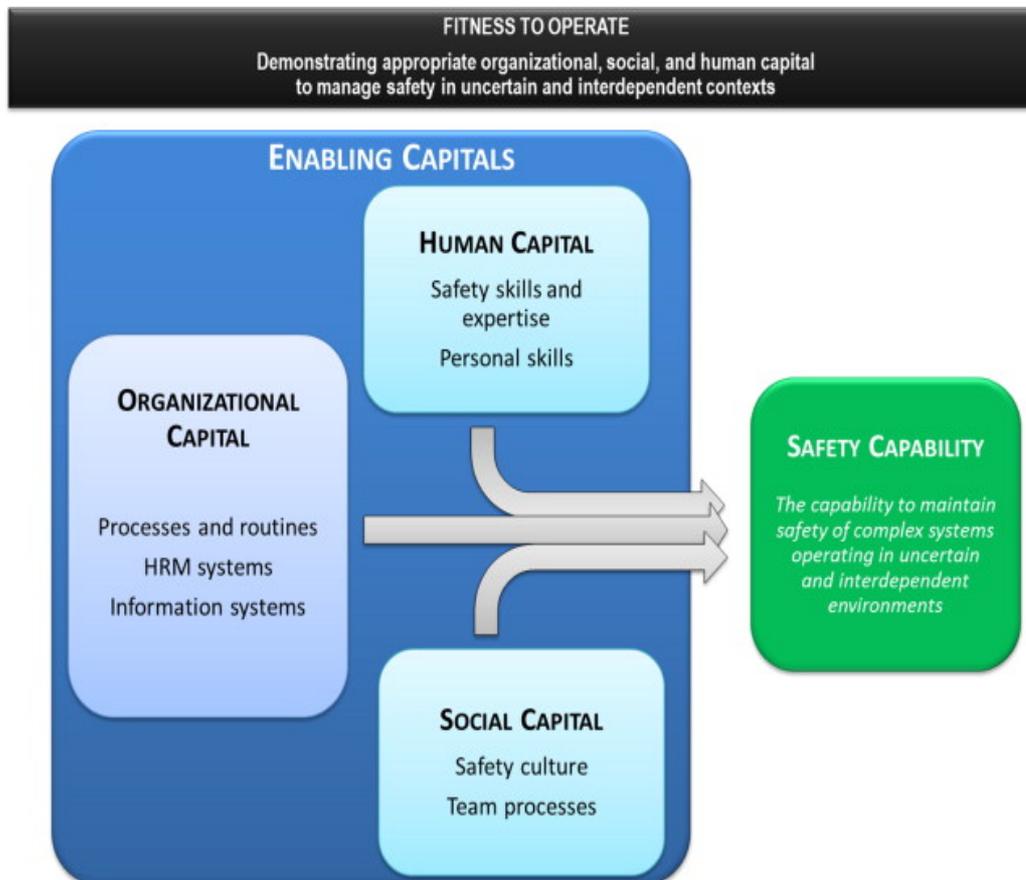
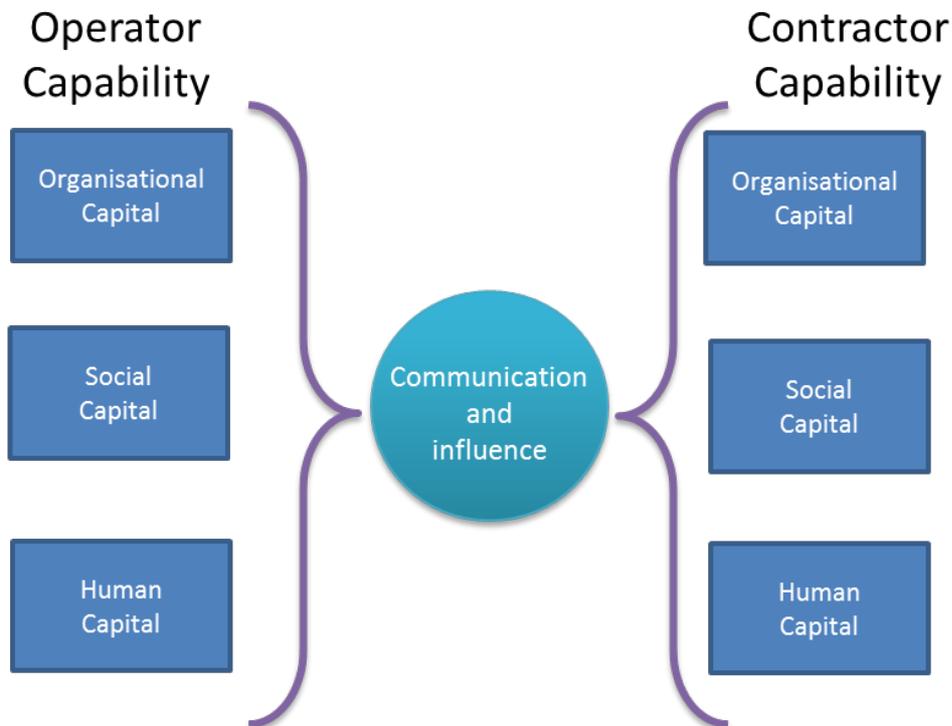


Figure 1 The Fitness to Operate (FTO) Model

This framework helps to conceptualise a wide variety of processes and practices that combine to build safety capability. The three capitals identify observable and measurable content and as such are used in the following study to measure if the operating company has an impact on the safety culture of its drilling operations.

To investigate the link between operators and contractors, the above framework was used to explore linkages as depicted in Figure 2.



**Figure 2** Potential linkages between company capabilities

## 2. Method

An exploratory approach was considered most appropriate for this study to investigate the safety culture perceptions of contractors. Semi-structured interviews were conducted with the purpose of gaining a deeper understanding of the operating company's influence on safety culture. The research respondents interviewed in this study were selected by means of purposive sampling (Patton, 2002). The aim was to interview employees with a variety of professional backgrounds and experience. A total of 12 employees (6 rig contractors, 6 service providers) participated in the study. The operating company's Drill Site Manager was also interviewed.

### 2.1 Semi-structured interviews

The face-to-face, semi-structured interviews consisted of predefined open-ended questions and topics. The order of questions and topics were modified when appropriate and questions were added, deleted, probed, modified and so on during each interview in order to elicit relevant and informative answers from each individual respondent (Cargan, 2007). The interviews were conducted on one drilling site, using an interview protocol that was developed from the FTO model (Griffin et al. 2014). The interview protocol ensured that all three capitals were addressed. The interviews ranged from 20 and 60 minutes. The interviews were not tape-recorded to maintain privacy and confidentiality. A second researcher made a written summary of the interviewee's key responses on a laptop.

## **2.2 Data analysis**

The interviews are in the process of being analysed thematically. The FTO model will be referred to in the latter stages of the analysis, to help make sense of the themes emerging from the interviews. This will help in questioning the themes in the context of the FTO model, and provide a better understanding of relationships among the concepts of the model. Interview statements will be allocated to initial themes that will be revised and elaborated as each interview is coded. This iterative process will produce a final set of themes.

## **3. Research findings and recommendations**

At the time of writing, there are still more interviews to be conducted. However, initial analysis of the current interviews has produced a number of common themes the interviewees spoke about in relation to the three capitals of the FTO model.

### **3.1 Human capital**

Human capital refers to the skills, knowledge, and motivation of individuals to enact behaviours such as speaking up about safety concerns.

In terms of technical skills and expertise that are important for working safely, many interviewees spoke about having task-specific technical skills and competence, as well as having valid tickets and certificates. In addition, practical experience and common sense were also identified as essential elements of working safely.

When asked about the operating company's influence on the technical skills of the rig contractors and service providers, a range of responses were received. Most interviewees identified their own company as the primary source of their technical skills.

A number of interpersonal skills were frequently mentioned as being conducive to working safely, particularly communication skills such as confidence in speaking up and being a good listener. Interpersonal skills that helped to build a positive team environment were important, including patience, respect, and having a sense of humour.

When asked about the operating company's influence on the interpersonal skills, a positive answer was provided by the majority of interviewees. A programme that utilises Plan, Brief, Execute and Debrief (PBED) that focuses on critical leadership skills, and a personality diversity indicator programme (both programs provided by the operating company) were mentioned frequently as having a positive impact on employees interpersonal skills.

### **3.2 Social capital**

Social capital refers to the capacities embedded in social relationships such as the safety culture and team processes.

In terms of safety culture, interviewees responded with a focus on the practical side of safety culture, with many using action-oriented definitions and descriptions, such as "Everybody looking out for each other" and "Going home safely". Whilst values, beliefs and attitudes were mentioned by several interviewees, most emphasis was placed on the actions,

behaviours and practices of people in the organisation. This was evidenced by responses that related to how things were done in the organisation and that safety culture is something created by the organisational members through their behaviours and actions. In particular, interviewees commented on how safety standards are reinforced by both their management and the operating company's management.

Communication was also identified as an essential part of a safety culture. Respondents identified factors such as: "No fear of stopping the job and no criticisms of that", "Being able to speak up and not being told you're an idiot", and "Being able to speak about issues relating to safety". The various forms of communication from the operating company were also mentioned, with slogans and visual communication tools such as posters being frequently cited as evidence of safety culture on site. The communication of leaders was also reflected in this theme, with their ability to effectively communicate the organisation's vision, values, expectations and standards around safety seen as critical for positive safety culture

When asked about teamwork and safety, the word "family" was commonly used. There were also some responses about a wide range of personalities and the difficulties of managing individual differences. Most interviewees mentioned that a personality diversity indicator programme run by the operating company had allowed them to see that people are different, and that different communication methods are required to get the safety message across to different people.

An important theme that emerged concerned leadership commitment. Emphasis was placed on leaders demonstrating their commitment, in particular through high visibility on the rig, and through personalised actions and stories about safety. However some interviewees cautioned about commitment being genuine. Without a practical focus then there was a risk demonstrations for safety commitment would not seem sincere.

### **3.2 Organisational capital**

Organisational capital refers to systems and procedures that are implemented to ensure safety. An important theme to emerge in this area concerned incident reporting and investigation processes. Interviewees reported that a rigorous and high profile approach by the operator was important. Learning from these incidents and communicating that learning down the line also appeared to be important factors. A further theme to emerge was that the requirement for good documentation was seen as necessary, but could also be perceived as bureaucratic and time-consuming.

## **4. Conclusions and Future Work**

At the time of writing, analysis of themes is ongoing and further interviews will be conducted before the final report. Therefore, the current results are based on a subset of the final range of interviewees.

The project provides insights into the key factors that contribute to safety culture in drilling operations. These results will help identify areas that might be developed and strengthened as well as strategies for other businesses for developing contractor relationships.

## 5. Acknowledgements

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## 6. References

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