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Partnering in offshore drilling projects

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Abstract

Purpose – The purpose of this paper is to evaluate to which extent partnering practices observed in earlier research focussing on the construction industry are applied in offshore development drilling projects.

Design/methodology/approach – The paper reviews earlier research on project partnering and the relationship-based procurement (RBP) taxonomy. The taxonomy is then empirically applied to describe partnering practices in an incentive-based drilling project in Norway.

Findings – Many elements of project partnering observed earlier in construction projects were found to characterize offshore development drilling projects. However, as assessed using the RBP framework, the authors found that partnering elements in observed context rated consistently lower than elements previously reported in the construction industry, indicating a lower maturity of partnering practices in the studied context.

Practical implications – The present study provides a multi-dimensional and systematic description of partnering practices in offshore drilling projects. Project owners can utilize this information to identify partnering elements requiring particular emphasis when initiating and managing drilling projects. Based on the findings, such elements include transparency and open-book auditing, integrated risk mitigation and insurance practices and establishment of authentic leadership. The findings further imply that partnering models cannot be directly applied across industry boundaries but must be tailored to fit the salient characteristics of each context.

Originality/value – The paper systematically describes to which extent specific partnering elements of the RBP taxonomy are applied in offshore drilling projects.

Keywords: Offshore drilling, Project partnering, Relation-based procurement taxonomy

Paper type: Case study

1. Introduction

Two decades ago, a Norwegian industry coalition strongly recommended partnering in offshore projects (NORSOK, 1996) following the UK-based cost reduction in the new era initiative in 1992. Close collaboration between project partners, for example through information sharing and joint planning, was assumed to improve both project quality and productivity. A successful BP alliance project (Knott, 1996) demonstrated the benefits of partnering in the offshore oil and gas industries (Pryke, 2009). Halman and Braks (1999) highlighted conditions for realizing a win-win situation for all parties in a project alliance. Earlier studies show that only limited first-order collaboration, as defined by Walker and Lloyd-Walker (2015), has taken place on the Norwegian Continental Shelf (NCS) with integrated teams, supply chain integrations, rig management consortiums (Ribesen et al., 2011) and incentive contracts (Osmundsen, 2013). Despite these valuable insights, the research problem derives from a limited understanding of the extent to which different elements of project partnering are implemented in the offshore industry. A deeper understanding of the current state of partnering in the oil and gas industry could help us to identify problem areas in partnering and function as a roadmap for further developing project practices. Accordingly, the relationship-based procurement (RBP) taxonomy might address this problem as there seems to be no earlier documented application of a partnering taxonomy model in any offshore drilling project.

The research question for this paper is:

RQ1. What is the current state of partnering practices in offshore development drilling projects assessed using the RBP taxonomy framework?

In the following, we will explore this research question by reviewing the published literature and applying the RBP taxonomy to a case project to investigate the current state of partnering practices in such projects

2. Literature review

The literature review process included selection of keywords and search strings, identifying databases relevant to our research area, applying the search, and extracting relevant findings from the literature. Keywords and search strings were project partnering, project collaboration, offshore, drilling, oil and gas. Databases used included Scopus, Google Scholar and Web of Science. This paper consistently uses the term "partnering" which sometimes overlaps with other closely related terms such as project partnering, RBP, collaborative networks, strategic partnering and project alliances.

2.1 Defining partnering

Definitions of partnering have evolved over time and vary by industry and geography (Latham, 1994; Crowley and Karim, 1995; Construction Industry Institute (CII), 1996; Construction Excellence, 2009; Rowlinson et al., 2002). Still, there is no unified view of the concept of partnering relationships in the construction industry (Bygballe et al., 2010). The European Construction Institute's (1997, p. 13) definition of partnering reads: "Partnering is a managerial approach used by two or more organisations to achieve specific business objectives by maximising the effectiveness of each participant´s resources. The approach is based on mutual objectives, an agreed method of problem resolution and an active search for continuous measurable improvements".

Other widely used definitions just indicate what partnering is; "a long-term commitment […] for the purposes of achieving specific business objectives" (CII, 1996) or "a managerial approach to facilitate team working across contractual boundaries" (Construction Task Force, 1998). The "project partnering" concept is closely linked to "project alliancing", and the two concepts share many of the same key elements: contractual elements such as formal contract and gain-share/pain-share, soft elements such as trust, long-term commitment, a win-win philosophy, cooperation and communication as well as adequate resources and top management support (Yeung et al., 2007a). However, this paper does not set out to study project alliancing any further, as the goal of project alliancing found through a comprehensive review of the literature on the topic (Yeung et al., 2007a; Nyström, 2005; Hampson et al., 2001; Walker et al., 2002; Love and Gunasekaran, 1999; Nicholson, 1996; Hampson and Kwok, 1997; Gerybadze, 1995) was found to be sustainable development (Yeung et al., 2007a), which is not the main goal of our case project.

The RBP framework is a viable attempt at providing an improved understanding of what partnering is, as explained in the next section.

2.2 Development of partnering taxonomy

A taxonomy is a system for naming and organizing elements, especially plants and animals, into groups that share similar qualities (Cambridge Dictionary). The use of taxonomies has expanded over the years to comprise the practice of classifying things (Collins Dictionary), in this context the classification of partnering projects by their characteristics or properties.

Larson (1997), Morwood et al. (2008) and Chen et al. (2012) are among those who have measured achieved goals of partnering, all indicating a need for better classification and quantification of the extent of partnering applied in a project. According to Hong et al. (2012), researches published in several leading construction-related journals between 1989 and 2009 tended to focus on partnering conceptual models, reviews of partnering development and application, potential benefits of and barriers to implementation, critical success factors and partnering performance measurement and evaluation together with use of partnering across the construction supply chain (Hong et al., 2012).

Yeung et al. (2007b) provided an early quantification of partnering. The partnering performance index (PPI) introduced relationship-oriented objective and subjective quantifiable measurements. Furthermore, Wu and Udeaja (2008) contributed with measurement design of collaborative working, whereas Lau and Rowlinson (2010) measured trust and intentions.

Based on the philosopher Ludvig Wittgenstein's family-resemblance concept, Nyström (2005) determined a commonly attributed set of characteristics of partnerships. Walker and Lloyd-Walker (2015) developed the RBP framework while referring to Nyström. The RBP taxonomy model uses a five-point Likert scale to provide a quantified snapshot of elements in this partnering typology. The snapshot can visualize the planned, implemented or completed partnering project.

The RBP taxonomy is an approach to analysing and visualizing partnering case study data. It provides guidance on measuring the elements between low and high intensity, and covers three main components: platform foundational facilities, behavioural factors and processes, routines and means. These components have been further broken down into the 16 elements listed below (Walker and Lloyd-Walker, 2015).

Platform foundational facilities supply the basic elements for any form of collaboration including:

(1) Motivation and context to collaborate define and affect the potential degree of collaboration. The sub-elements include the value creation, emergency response capability, resource availability, relational rationale and risk-handling capability expected through entering the partnering project.

(2) A joint governance structure defines how common-platform governance characteristics will be incorporated into the project procurement form. This includes governance processes, structure and best-value strategy through key results and key performance indicators.

(3) Integrated risk mitigation strategy defines how common assumptions are incorporated into the project procurement form and how parties will deal with risk. This includes risk sharing conversations, risk mitigation actions and system integration for handling of risk, uncertainty and ambiguity.

(4) A joint communication strategy defines how project participants interact and communicate with each other and how the project procurement form affects that. This includes common processes and systems and an integrated communication platform.

(5) Substantial co-location including hierarchical integration mechanisms and physical co-location.

Behavioural factors drive normative practice elements including:

(6) The degree of an authentic leadership style defines how the project leadership team and individuals, as participant team leaders, interact and communicate with each other in terms of deploying their various sources of power and influence in a way that is perceived as authentic. Subthemes include reflectiveness, pragmatism, resilience, wisdom, spirit and authenticity.

(7) A balance between trust and control defines how the project leadership team balances representing and protecting the interests of the project owner with those of other genuinely relevant stakeholders, while relying on the integrity, benevolence and ability of all project team parties to “do the right thing” in terms of project performance. Subthemes include autonomy, forms of trust, safe workplace cultures and trust relationship building.

(8) A commitment to be innovative represents the duality of project participants being willing and able to be innovative, including commitment to continuous improvement, testing, prototyping and experimenting.

(9) A common best-for-project mindset relates to the focus being placed on value generated in delivering the project compared with objectives of delivering what was explicitly requested or demanded. Subthemes include alignment of common goals, performance levels, drive for excellence, value reporting and recruiting support.

(10) A no-blame culture relates to the focus being placed on creating and maintaining a culture with supporting mechanisms aimed at eliminating the attribution of blame. Subthemes include first the rationale for a no-blame culture and second the mechanisms that support the creation and maintenance of a no-blame culture.

Processes, routines and means reinforce behaviours are supported by the platform facilities elements including:

(11) Consensus decision making between teams relates to the extent of total agreement on a decision made at the strategic and project executive level. Subthemes include participants’ cultural drivers of the decision-making process in addition to enablers and inhibitors of consensus decision making.

(12) Incentive arrangements relate to the processes, routines and behavioural and normative practices that facilitate and enable incentives to encourage excellence in performance. This includes

the incentive mechanism itself and the manner in which any tension between innovation and incentivization is managed.

(13) A focus on learning and continuous improvement pertains to the processes, routines and means that facilitate and enable learning and continuous improvement. Subthemes comprise participants' capability for adapting to new ideas, being open and enthusiastic about learning new things, and new approaches to their work. The second subtheme relates to the process of lessons-learned absorption and transfer within and between teams, whereas the third concerns the culture of skills and learning development. The fourth subtheme refers to inherent tensions between innovation and incentivization procedures.

(14) Pragmatic learning in action is the active gathering of value from collaboration with the strategic aim of learning and gaining competitive advantage through opportunities to learn and adapt. Subthemes include action learning, coaching and mentoring.

(15) Transparency and open-book processes refer to project participants allowing themselves to be audited and fully open to scrutiny.

(16) Mutual dependence and accountability refer to collaboration in projects requiring participants not only to recognize their interdependency but also to respond honestly when communicating. Subthemes comprise characteristics of mutual dependency in addition to initiatives enhancing and inhibiting mutual dependency.

With the five-point Likert scale, each element of the RBP taxonomy has a neutral mid-point. Also, all elements have equal weight, although platform elements are more fundamental than those relating to behaviour and process.

As the most advanced and recently developed tool available (Ibrahim et al., 2015; Memon and Rowlinson, 2015), the RBP framework has earlier been applied once in a construction industry case study (Walker and Rahmani, 2015). The case study presented in this paper is the first to make use of the RBP framework in the oil and gas sector.

2.3 Partnering in drilling projects

Partnering was adapted by oil and gas operators and service companies in the late 1980s as a means of increasing efficiency and quality, reducing costs, accessing resources, aligning interests or facing untried challenges (Bresnen and Marshall, 2000; Scott, 2001; Robson, 2004; Lahdenperä, 2012; Garcia et al., 2014; Barlow et al., 1997). "One obstacle to the more rapid spread of project alliancing is probably the upstream community's lack of familiarity with the commercial models and contractual basis for partnering" (Robson, 2004, p. 5). On the other hand, and based on 39 out of 56 papers published by the Society of Petroleum Engineers between 1990 and 2004, Robson (2004) concluded that the operator might typically achieve a performance improvement of 20 per cent or more using partnering compared to the traditional approach. This might take the form of extra production, less cost, less time or increased efficiency. Nearly all operators reported benefits from aligning their key contractors' project goals with those of the operators, citing quality of communication as a particular benefit.

The motivation for partnering in the oil and gas industry has evolved over time and with market conditions. During the 2000-2004 period, "The operator would be motivated by the need for expertise and/or reduced costs. The project scope would comprise engineering, programming, and executing well construction and include project management of some third-party companies. The commercial terms for this alliance would include bonus and malus with the major service company liable for all contractors' performance as well as project technical risks" (Robson, 2004, p. 4). In nearly a quarter of the partnerships observed between 2000 and 2004, reservoir engineering services, the core competence of the oil companies, formed part of the work scope. Robson saw a clear trend where partnering participants increasingly involved elements of both risk and reward, also for project technical risks (see also Reiley, 1994) within their control or influence. As Crabtree et al. (1997) identified lack of inter-firm trust as a hindrance to collaboration, Green (2003) addressed the importance of measuring goodwill trust in an alliance to promote operational effectiveness.

In Norway, the Ministry of Petroleum and Energy (2003) promoted incentive contracts between oil companies and contractors. However, only a few semi-partnering projects have been implemented on the NCS during the last 12 years (Osmundsen et al., 2010; Ribesen et al., 2011). On the contractual side, partnering has not been implemented on the NCS, according to Kaasen (2013). With this backdrop in mind, we proceed to explaining the research methodology applied in this paper.

3. Methodology

The research strategy of this study is a single, qualitative, descriptive (Yin, 1989) and intrinsic case study with inductive research design based on Yin (1994). The research philosophy is pragmatism in both ontology and epistemology (Saunders et al., 2009), and the case study research strategy was selected to provide an analysis of the processes of partnering in an offshore drilling project and hence contribute to building the RBP taxonomy theory (Cassell and Symon, 2004). The case was selected as an outstanding NCS drilling project with good access to information suitable for demonstrating theory and for answering RQ1 formulated in the introduction.

3.1 Validity

As the research matured, RQ1 matured to become more explicit, in accordance with Eisenhardt (1989). The paper is based on literature research on partnering in construction and offshore drilling projects. Qualitative data were retrieved from plans, reports and interviews, including reports and verifications by independent regulatory authorities. Using flexible and opportunistic data collection methods, there has been an overlap between collection and analysis of data.

The interviews contained an introduction explaining the aim for producing a paper on the case without reference to the RBP framework. The opening question was: "What was your evaluation of the project?", which was followed up by questions seeking to have informants elaborate on the case project compared to ordinary NCS drilling projects, also without directly referring to any RBP element. Additionally, informants were asked for comments on how future drilling projects could learn from this case project. In the dialogues, the informants were informed of the research purpose and were asked to elaborate on their experience with the case, with follow-up questions.

After information gathering, relevant notes and report quotes for each element of the RBP framework were extracted, followed by identification of RBP elements missing in the data. The analysis was interpretative, non-statistical and qualitative with the aim of illustrating the case by applying the informants' reflections to the RBP taxonomy.

This case study approach builds strongly on the NCS context and organizational structure; hence the findings have limited wider significance (Cassell and Symon, 2004).

The first author of this paper participated as chief financial officer (CFO) from 2002 to 2005 in Pertra, project owner of the case study presented. The position as CFO provided first-hand access to inside information and working relationships with stakeholders. With more than ten years having elapsed since project execution, a distance to the project and stakeholders has evolved, allowing for critical assessment of the case. The first author acknowledges the probability of bias; however, the insights provided by membership in the management team from formation to sale of the company are vital for the rich case study provided. Trust that had been developed due to previous team membership might have elicited information which would not have been given to an unfamiliar researcher in a one-off interview (Cassell and Symon, 2004).

In addition to the first author, the informants contributed during data collection from the case project are shown in item 1-15 in Table I.

Table 1: Sources of information

No.	Stakeholder	Informant's position / citation	Source	Contribution of empirical data
1	Pertra	VP Drilling	Semi-structured interview and comments on draft results	Detailed project evaluation
2	Pertra	HSE Director	Semi-structured interview and comments on draft results	Ditto
3	Petoro	Technical Director	Semi-structured interview, by phone	Retrospective perception of the Varg Vest project from licence partner and industry
4	Talisman Energy	Drilling Engineer	Opportunistic dialogue by phone and e-mail correspondence	Licence and well documents. Industry's retrospective perception of the Varg Vest project.
5	Insurance broker	Pertra insurance policy accountable	Semi-structured interview	Detailed facts on Pertra's Varg Vest drilling insurance scheme and mutual risk sharing's effect on NCS drilling insurance.
6	Halliburton	Contract Manager	Semi-structured interview, by phone, and comments on draft results	Detailed project evaluation
7	Halliburton	Vice President – Business Development	E-mail correspondence	Halliburton's evaluation of the project in general

8	Maersk Drilling	Vice President – Drilling Operations	E-mail correspondence	Maersk's evaluation of the project in general
9	Maersk Drilling	Former VP – Operations	Semi-structured interview and comments on draft results	Detailed project evaluation
10	Drilling efficiency consultancy	Managing Director	E-mail correspondence, Excel sheet comparing Pertra wells	Detailed technical evaluation of Varg Vest wells as compared to other Pertra wells.
11	DPT	Project Manager	Opportunistic dialogue, no comments after review of draft results	Detailed project evaluation
12	Det norske oljeselskap	Drilling Manager	Semi-structured interview	Detailed project evaluation (indirect experience) and comparison with other more recent drilling projects.
13	Det norske oljeselskap	Managing Director	Opportunistic dialogue	Headline evaluation of the project and comparison with partnering elements in other more recent drilling projects.
14	Statoil	Project Director	Opportunistic dialogue	General comments on partnering experiences on the NCS
15	Oil consultant	Project Director	Comments on procurement strategy	Ditto
16	Norwegian Petroleum Directorate (NPD)	(Norwegian Petroleum Directorate, 2003)	Rig intake audit report	Authorities' evaluation of rig intake process, hereunder participants' roles, responsibilities, safety and consequences of incentive schemes, including catastrophe scenarios.
17	Production Licence 038		Well Programme 15/12-A-6 A	Project organization, offshore organization, responsibilities, handling of conflicts in plans, procedures and regulations in non-conformance situations, operational instructions, list of contractors, risk matrix,

				contingency plan and technical details. 71 pages
18	Production Licence 038		Well Programme 15/12-A-12 A	Ditto. 65 pages
19	Production Licence 038		Final Well Report 15/12-A-6 A	Section A: Geophysics, geology and reservoir evaluation, wellsite samples and log data. Section B: Drilling and well operations; list of contractors, operations organization chart, operation summary, HSE summary, drilling problems and recommendations (including communication and collaboration issues). 204 pages
20	Production Licence 038		Final Well Report 15/12-A-12 A	Ditto. 145 pages
21	Production Licence 038		Drilling Contract	Complete contract on deliveries, daily rate compensation, incentive terms, insurance, and conditions precedent.
22	Pertra	Available from brreg.no	Annual reports 2002 – 2004	Profit and loss statements, balance sheets, Board of Directors' annual report
23	Production Licence 038 (PL038)	(Ministry of Petroleum and Energy, 1974)	Joint Operating Agreement	Governance (voting rules), liabilities, authorizations, operator's duties, partner's duties, economy, insurance within licence, and other joint venture regulations

3.2 On reliability

Information was gathered from all directly involved stakeholders, in addition to independent third parties such as the drilling efficiency consultancy and the NPD. Informants have provided evaluations and verifications – seven through semi-structured interviews, three in e-mail correspondence and four in an opportunistic dialogue. Notes including the date, place and duration of the focussed dialogues and semi-structured interviews were taken. However, interviews were not recorded to ensure that sensitive and business-critical issues relating to the focal project could be openly discussed.

The reliability was initially questionable because the RBP taxonomy ratings were set by the first author only. This was however mitigated as draft case context and results were sent to key informants for commenting and validation.

The case project itself is described in the next section, which commences with outlining the context of the project.

4. Case study

4.1 The context of NCS drilling projects and offshore drilling project characteristics

Petroleum activities are subject to Norway's Petroleum Act and are specified in regulations and guidelines. The petroleum regulations are risk-based and emphasize principles for reducing health, safety and environmental (HSE) risk, hence also how risks may be shared. The responsible party pursuant to these regulations is the operator and others participating in operations. The responsible party must ensure compliance with the requirements, largely formulated as performance-based (functional) requirements through characteristics or qualities that an activity must possess. The guidelines to the regulations provide recommended solutions for fulfilling the specific requirements. These usually take the form of recognized norms or industry standards. When a recommended solution is applied, the requirement can be regarded as met. Should an alternative solution be chosen, it must be possible to document that the requirement has been fulfilled as well as or better than with the recommended option. This influences the ability for innovation in a partnering project. All action should be thoroughly planned and evaluated, and any pragmatic change of plans due to learning in action is a limited option with respect to regulations (the Petroleum Safety Authority Norway).

NCS development drilling projects averaged NOK44 billion per year in 2010-2014, peaking in 2013 at NOK55 billion (Statistics Norway, 2015). During 2010-2014, 712 development wells were completed at an average cost of NOK309 million per wellbore. These include initial drillings, side-tracks and multi-lateral wells (Norwegian Petroleum Directorate, 2015).

NCS production well costs for fixed installations have quadrupled in ten years whereas well costs for mobile installations have tripled over the same time period. In the past 20 years, the duration of routine operations has doubled and drilling efficiency is key to future value creation (Petoro, 2014).

Norwegian average daily production as at January 2016 is about two million barrels of liquid (oil, natural gas liquids and condensate). This is about 2.1 per cent of total world's production. Total daily NCS production of gas for sale as at July 2015 is 0.36 billion Sm3 or 10 per cent more than the liquids when measured in oil equivalents. According to Eurogas. org, the 2015 NCS production of 117 billion Sm3 gas for sale was about 27 per cent of European 2015e gas consumption of 441 billion Sm3 gas. Statoil accounts for 30 per cent of NCS petroleum production (sources: NPD.no, DNB.no, Eurogas.org and Statoil.com).

Offshore development projects are capital-intensive, using advanced technologies with great technological complexity and many interdependencies. Managerial complexity increases with as many as 25-50 participants, including the drilling rig owner, drilling service companies, supply vessel operators, helicopter services and others on the supply side. Normally, two to six concessionaires (oil companies with an awarded or acquired concession to produce petroleum) are represented by one operator on the client side in addition to authorities and other external stakeholders. Operations may involve multiple locations and several time zones. Thus, offshore drilling projects are global and complex (Yusuf et al., 2012; Badiru and Osisanya, 2013).

NCS concessions are organized as joint ventures including at least two oil companies. This practice is supported by Beshears (2013), who measured that a corporate alliance combining its information and expertise was relatively more profitable than solo firm leases in the Gulf of Mexico drilling operations. The concessions adhere to EU regulations on procurement, including invitation to tender or competitive dialogue procedures (Arrowsmith and Treumer, 2012).

The concessionaires submit a drilling plan to the authorities as a basis for approval. An impact assessment report is submitted to all those who may be affected by the project to provide them an opportunity to put forward their views. Hence, the authorities have a coordinating role towards stakeholders external to the drilling project (NPD).

Operators are compensated by the partners for their work in the licence. Partners, however, normally cover their own expenses for fulfilling their obligation to verify the operator's compliance.

4.2 Case context

The Varg Field is located in Production Licence 038 (PL038) in the Norwegian North Sea. Pertra, as one of the newcomers on the NCS, acquired a 70 per cent operated working interest in the field at a cash consideration of USD1 with state-owned Petoro as partner in the production licence. The Varg field was doomed for shutdown already approved by the authorities. The field had low priority from the sellers, receiving little attention and resources as production declined.

Plug and abandonment liabilities of approx. USD30 million followed the acquisition. Thus, Pertra was highly motivated to prolong the field life by postponing production shutdown. New high-end seismic data were acquired (Reksnes et al., 2002), providing a significantly improved illumination of the reservoir. A new interpretation of data was performed and matured into a new understanding of field properties. Pertra, PGS Production and PGS Reservoir, all core participants, were all wholly owned subsidiaries of PGS ASA, which had filed for Chapter 11 (US procedure for protection of creditors) in mid-2003.

During 2003 and 2004, Pertra managed six development well operations, all with drilling rigs provided by Maersk, a drilling rig owner and operator. Two wells in the Varg Vest compartment were drilled in an incentive-based partnering project proving 40 million barrels of oil reserves and extending the field life to July 2016. By early 2005, Pertra had been sold to Talisman Energy. The collaborative advantage developed was not utilized in new projects. The Varg Vest production accounted for the majority of the company value of USD175 million.

The objective of the case project was to extend the producing life of Varg. The goals were to:

- prove hydrocarbons in the Varg Vest segment (well 1);
- complete well 1 as an oil producer;
- drill and complete well 2 as an oil producer; and
- maximize the Varg oil production.

The goals included both exploration risk and a goal to maximize total production. This was the first occurrence of a production tariff incentive between an oil company and drilling service contactors.

4.3 Participants of the Varg Vest project

PL038 was operated by Pertra with state-owned Petoro as the licence partner. All licence decisions required a unanimous vote. Pertra invoiced the licence for all services provided. Petoro covered their own expenses for monitoring licence activities unless specifically approved by the licence management committee.

Pertra was a new operator on the NCS with only five employees by year-end 2003. PGS Production provided a floating production, storage and off-loading vessel (FPSO) on the Varg Field on contract with PL038. The compensation was a tariff per barrel produced. Pertra's effort to postpone field shutdown helped PGS Production to avoid stacking of the FPSO. PGS Production also provided procurement and accounting services in addition to emergency response facilities and other operational services. PGS Reservoir provided geology and geophysical services, including reservoir and production analysis.

Drilling Production Technology (DPT) functioned as Pertra's drilling department. In operational mode Pertra employed 25 full-time employees in total, directly and indirectly, none of whom were working offshore.

Maersk Drilling provided the operated drilling rig including rig positioning, anchoring and casing running services. Services provided by Halliburton comprised a full range of drilling services, services provided by sub-contractors included.

Halliburton, Maersk and PGS production shared pain and gain with the production licence. The NPD granted a drilling permit after application from the production licence and coordinated information to and comments from external stakeholders. In addition, the NPD performed an audit of the rig intake process with semi-structured interviews of representatives from Pertra, Halliburton and Maersk management.

The project lasted approximately nine months and the tariff period another nine months. Both wells were completed on time. The project had no lost-time, reported or acute emission incidents (final well reports). Based on insights from this case project, the next chapter seeks to discuss the project in light of the RBP taxonomy.

5. Results

5.1 Evaluations based on the RBP taxonomy framework

This section provides an analysis of the case project using the RBP taxonomy. For each taxonomy element, we first list a brief explanation of each element and the suggested translation into a five-point Likert scale (both in italics) directly cited from Walker and Lloyd-Walker (2015). These are followed by insights from the case project and a quantitative rating of the extent to which the element was implemented in the case project.

Platform foundational facilities, RBP taxonomy element 1 – motivation and context of the circumstances.

This element defines circumstances that affect the potential degree of possible collaboration. Low levels – relate to a hostile collaboration environment.

High levels – relate to project participants accepting the logic of a clear advantage of adopting a focus on a supportive and collaborative approach to delivering benefits that align with participants' values.

The ambition of Pertra was to work more efficiently than the well-established major oil companies. Based on an outsourcing strategy, Pertra had five employees and only one director serving as the drilling department. Drilling planning was outsourced to the newly established Drilling Production Technology (DPT), and framework agreements secured resources from sister companies PGS production and PGS reservoir.

Pertra succeeded in generating sufficient revenue to fund two new wells at budget cost. However, the board of directors approved cash commitment for one well only as a precaution against possible cost overruns. Pertra management wanted to drill two wells to mitigate risks of failure due to technical or reservoir malfunction. The partnering approach was key to ordering two wells rather than one.

The other participants had varying motivation for the partnering approach. A top management member of Halliburton, the drilling and well services provider, had earlier promoted partnering (Gazi et al., 1995). The Pertra wells provided an opportunity to demonstrate their capabilities and the benefits of partnering. Maersk, however, was more reluctant about the partnering approach. "As I recall, we saw the contracting approach to be a deal enabler. If we were to conclude this contract and secure the work for the Mærsk Giant then it would have to be on the described terms" (Informant 9). During the project, the rig company only partly adapted the traditional relationship to a shared collaborative culture without regard to organizational boundaries. The drilling management consultant, DPT, was motivated to demonstrate their ability to serve as an outsourced drilling department for smaller oil companies.

A project such as this, where service companies to a limited degree shared reservoir risks with the oil company, represented an entirely new arrangement on the NCS (Osmundsen et al., 2010). Participants were unfamiliar with the arrangement, and considerable effort was invested in evaluating contractual scenarios.

Element 1 rating: 3.5

Platform foundational facilities, RBP taxonomy element 2 – joint governance structure.

The unified way that each project delivery team party legitimizes its actions through rules, standards and norms, values and coordination mechanisms such as organizational routines, and how committees, liaison and hierarchy represent a unified or complementary way of interacting.

Low – relates to a laissez-faire approach where each participating project team has established its own individual stand-alone project governance standards. Little coherence in alignment of the whole project delivery organizational processes and structure with few explicit expectations about what success looks like and how to define and measure it.

High – relates to an effectively structured, uniform, integrated and consistent set of performance standards that apply across and within the project delivery teams. All participant organizations share a common understanding of how to organize for success and what constitutes valuable project output and outcome success.

Pursuant to the authorities' regulations Pertra, as the licence operator, was fully responsible for the project. Together with partner Petoro, Pertra had the power and authority to make final decisions. The Pertra management system manual and drilling procedure constituted the basis for the project.

Halliburton, Maersk and DPT were encouraged to influence decisions, but held no formal leverage in the project. The NPD observed that DPT functioned as a drilling department for Pertra as the contracts entered into by and between Pertra and Maersk and by and between Pertra and Halliburton were managed by DPT. Distribution of responsibility was perceived somewhat differently by the parties, with Pertra on one side and DPT, Maersk and Halliburton on the other side (Norwegian Petroleum Directorate, 2003). Maersk and Halliburton were somewhat more uncertain about what authority they had and sought to have decisions approved by Pertra, despite the fact that DPT had in principle been granted unlimited authority to make decisions on behalf of Pertra. In any emergency situation, however, there was no doubt expressed by Maersk and DPT as to their unlimited authority (Norwegian Petroleum Directorate, 2003).

“Responsibility and authority shall be unambiguously defined and coordinated at all times” (Petroleum Safety Authority Norway, 2014). This is the reasoning behind the hierarchical project and offshore organizations (Well Programmes).

The central participant organizations shared an understanding of how to organize for success and what constitutes valuable project output and outcome success. Several team-building sessions established this understanding, and joint governance structures were not formalized.

Element 2 rating: 3

Platform foundational facilities, RBP taxonomy element 3 – integrated risk mitigation strategy.

The way strategy is organized for all parties to be part of the client’s risk management system. This impacts explicit understanding of how to collaboratively manage risk and uncertainty and gain advantage from a project-wide insurance policy.

Low – an immature and confused individual firm-specific risk management approach and poorly defined systemic approaches to deal with uncertainty and ambiguity.

High – consistent and integrated risk assessment processes being identified, assessed and mitigated against a project-wide, systems-wide impact for the project or network.

In the drilling plans, one risk matrix for the whole project was submitted for consent by the HSE authorities. The risk matrix was a result of a collaborative process and covered technical risks only. In addition, each participant organization had a matrix of economic risks, and each party had its own insurance policy; a project-wide insurance policy was never discussed as an option.

Element 3 rating: 2

Platform foundational facilities, RBP taxonomy element 4 – joint communication strategy.

System integrated processes and extent of common information communication technology (ICT) groupware use including building information modelling (BIM). (Here translated to Drilling Information Modelling as a process involving the generation and management of digital representations of physical and functional characteristics of a well.)

Low – poor quality staff interaction, use of firm-specific rather than project-wide processes and ICT systems and weak cross-team mechanisms for gaining mutual understanding.

High – well integrated processes that are well understood by all participants and advanced communication technologies being used that seamlessly connect all project parties.

In this project, standard communication technologies were used. Because the project only lasted some nine months, project-specific e-mail addresses were not required. Project personnel initially preferred communication by phone or e-mail. Video meeting facilities were available and occasionally made use of Projectplace.com, which in its early days offered basic project management tools for sharing of documents, was introduced during the project (Informant 1).

During drilling, live data were transmitted to Pertra, PGS reservoir and DPT. In case of an emergency situation, in principle all participant organizations had access to the same information. Systems integration was aligned to allow transfer of information and interoperability, drilling information modelling included. Team integration relied on team-building kick-offs, personal relationships and standards of professionalism (Informant 1).

An effort was made to make electronic communication work as "it took a hardworking and experienced IT person (from PGS production) with many useful contacts in many places about eight days to make the phone and data communication networks functional" (Final Well Report).

"The organisation of Pertra, the rig contractor and the drilling services contractor are very coordinated and the interviews revealed few divergences" (Norwegian Petroleum Directorate, 2003).

Element 4 rating: 3

Platform foundational facilities, RBP taxonomy element 5 – substantial co-location.

The extent that project teams are within easy physical reach of each other. This facilitates ad hoc encounters to improve building relationships and facilitating common understanding.

Low – firm-specific policy determining that disparate teams are physically located in dispersed locations. A large visibility gap exists between project leaders and those at the "coal face".

High – project-wide policy that attempts to maximize participant co-location on-site where feasible including the Project Owner Representative with high interaction between project leadership groups and the project management and physical delivery team members.

The project was managed from six to seven locations over five time zones. There was no substantial co-location other than during team-building and project meetings. This lack of co-location was not perceived as constituting a hindrance for communication in the project (Informant 11). The low power distance and flat organization of Pertra did not compensate for the lack of substantial co-location.

Element 5 rating: 2

Behavioural factors; RBP taxonomy element 6 – authentic leadership.

Possessing ethically principled values and consistency of action with espoused rhetoric. This applies across the project delivery team at every level not only for the project lead person(s) but also for the supporting design and supply chain team leaders. Typically, authentic leadership comprises reflectiveness, pragmatism, appreciativeness, resilience, wisdom, spirit and authenticity.

Low – espoused principled values are not demonstrated in action, manifested through a gap between the rhetoric and the reality of leading teams.

High – demonstrate consistency in espoused and enacted values that are genuinely principled.

Pertra's top management was directly involved in the project with full consistency between rhetoric and reality of leading teams.

The project attracted a high level of top management attention in all involved organizations, and this attention made the client believe in receiving the best team and equipment from incentivized contractors. However, incidents involving service personnel with limited experience were reported in a final well report: “All service hands should have a minimum of 5 years of experience. A trainee should go together with a senior hand to gain experience”. These minor incidents involved service personnel from companies not included in the incentive scheme.

“The interviews revealed positive feedback from all involved parties that this was efficient, good management focus and clear ownerships to elements in the rig intake process on both sides” (Norwegian Petroleum Directorate, 2003).

Although this project was a partnering project during the planning phase, all doubt pertaining to authority was set aside during the operational phase: “All activities shall be conducted according to Pertra’s requirements and guidelines. Non-conformance with Pertra and NPD’s requirements shall be handled according to Pertra’s non-conformance procedure. Non-conformance with Customer’s requirements shall be agreed upon and approved by the Customer in writing. In case of conflicts between this program and the Pertra’s Requirements, this program shall prevail when requirements are listed as approved non-conformances” (Well Programme).

Element 6 rating: 3

Behavioural factors; RBP taxonomy element 7 – trust control balance.

Representing and protecting the interests of project leaders with that of other genuinely relevant stakeholders while relying on the integrity, benevolence and ability of all project team parties to “do the right thing”.

Low – extreme naivety by participants about trusting others implicitly or alternatively by exhibiting high levels of suspicion and/or unreasonable demands for formal and informal control and monitoring that implies a cynical attitude towards trust of others.

High – innate sensibility to juggle transparency and accountability demands with the need for trust with necessary due diligence. It also demonstrates a professional understanding of the nature of project participant accountability constraints and opportunities for resolving and possible helping resolve institutional paradoxes so that accountability is consistent with accepted responsibility.

Trust on a personal level was established prior to the project (Informants 1 and 6). In addition, as top management was directly involved, there was an understanding that any unforeseen problems could be resolved (Informant 6). However, standard litigation clauses applied (Drilling contract and Informant 6).

Element 7 rating: 3

Behavioural factors; RBP taxonomy element 8 – commitment to be innovative.

Being within a structured mechanism that enables and empowers people to be innovative. Facilitating a project team participants’ capacity for learning, reflection, creativity being ambidextrous and the organization’s core values of supporting and rewarding questioning the status quo.

Low – inadequate or incomplete linkage of motivation, ability and facilitation for innovation within the context of the procurement form.

High – vision, objectives and desire to be innovative with well-considered instruments to measure and demonstrate innovation, motivation through rewards and incentives and demonstrated high levels of existing absorptive capacity for innovation.

The project allowed Halliburton to test and demonstrate new technology although no new inventions were patented (Bybee, 2004).

As Halliburton had a significant tariff payment at risk, Pertra permitted the use of a new directional drilling tool. There were only three available tools of this kind world-wide. Big oil companies with huge projects found it extraordinary that Pertra, as a minor newcomer, had access to such a tool (Informant 14).

New well completion technology with oriented perforations as a sand-control method (Tronvoll et al., 2004) was also perceived as an advantage made available due to the incentive payment (Informant 1).

Element 8 rating: 5

Behavioural factors; RBP taxonomy element 9 – common best-for-project mindset and culture.

Focus on value generated in delivering the project compared with objectives of delivering what was explicitly requested or demanded being directed at a positive and successful project outcome rather than individual teams being winners or losers.

Low – higher level of priority for individual benefit realization at the potential expense of other project team members and the project owner.

High – a genuine attitude that "we all sink-or-swim together" and a focus on maximizing value to the project or network. Contractual arrangements will reinforce pooled gain or pain based on performance measured by Key Result Areas and Key Performance Indicators.

This procurement strategy, new on the NCS, provided a long-awaited opportunity for the oil service companies to demonstrate their full competence and capability. This was the main driver for a best-for-project focus that was stronger than in traditional projects (Informant 6).

Additional resources and new technology were made available (Informant 2). Participant organizations accepted the incentive payment structure and paved the way for two wells rather than one.

Element 9 rating: 3.5

Behavioural factors; RBP taxonomy element 10 – no-blame culture.

Teams welcome being accountable for problems as they arise rather than shirking or shifting responsibility to others who may be vulnerable to being blamed for potential failure. Discussing problems in an unprejudiced way and being open to alternative perspectives to see issues from multiple perspectives.

Low – a project participant's high propensity to shift blame from themselves to others. These problems may be attributable to them for unforeseen, unanticipated or unwanted events that impact adversely upon project delivery. A low no-blame culture is also palpable by a tendency to avoid acknowledging potential problem situations in the hope that blame can be attributed to others.

High – a culture of open discussion of problems, unforeseen, unanticipated or unwanted events that may impact adversely upon project delivery. It is may also be manifested by the project owner taking ownership of risk elements that other participants are unable to bear rather than force them to accept accountability for such risks.

There was a mindset that every participant contributed their best efforts to the project. However, contractually standard litigation and responsibility clauses applied. Project risks were allocated adequately, where each participant was capable of taking on their proportion of the risk. In a catastrophe scenario, PL038 held the full responsibility and insurance coverage for third-party liabilities, re-drilling and clean-up.

In practice, no-blame initiatives were not formally implemented. Informant 1, however, expressed the attitude that one should not find the culprit, but rather identify the solution and how to prevent a recurrence. "This is an attitude one cannot write down in a procedure, but will gradually be perceived as real by the participants in the project through it being demonstrated every time you have trouble" (Informant 1).

RBP Element 10 rating: 4

Processes; RBP taxonomy element 11 – consensus decision making.

The extent to which there is total agreement on a decision made at the project strategic and project operational executive level. This requires extensive time for discussion, exploration and testing mental models and this may be contrasted with the interests of speedy decisions and action to counter crises.

Low – highly hierarchical project team leaders' leadership style where power and influence determine how decisions are made and where the expected response is that decisions are implemented without question or complaint with a tendency for a domination of top-down directives being issued as edicts.

High – highly egalitarian and collaborative project team leadership style. Issues and problems requiring a decision develop out of inclusive knowledge sharing and discussion of perspectives, expected intended and unintended consequences and implications of decisions. High levels of feedback, good or bad, are sought.

The service companies had an influence over the location and completion of the wells. "This was a very important element to facilitate good results and gave participants confidence to say what they thought and it was fun to work for Pertra" (Informant 1). See also element 2 on governance structure above.

Element 11 rating: 3

Processes; RBP taxonomy element 12 – incentive arrangements.

The structure of a pain sharing-gain sharing agreement, how the process was instigated and how it operated to create an incentive to excel.

Low – little emphasis placed upon encouraging parties to place potential profit and gain-pain in a risk-reward arrangement subject to a whole-of-project outcome performance. KRAs and KPIs are absent or rudimentary.

High – much emphasis placed upon encouraging parties to agree to place potential profit and gain-pain in a risk- reward arrangement that is subject to a whole-of-project outcome performance. Key

Result Areas and Key Performance Areas are well developed, provide stretch and challenge and are sophisticated in their understanding of the project context.

“The rig contract includes strong incentives to deliver good quality wells, and at the same time good safety and progress. The payment structure was very different from other drilling contracts on the NCS” (Norwegian Petroleum Directorate, 2003).

The main compensation elements constituted a lump-sum at start-up of operations, a very low daily rate and a tariff per produced barrel from the whole field from completion of the first well until year-end 2004 (Norwegian Petroleum Directorate, 2003). An audit revealed that this incentive did not have negative effects on safety and quality (Norwegian Petroleum Directorate, 2003).

Maersk and Halliburton got approximately 50 per cent of total compensation in the form of a tariff per barrel produced. The payment structure was strongly linked to Pertra’s objectives and shared with the contractors. “We also introduced incentives for DPT and Halliburton sharing pain and gain based on drilling downtime. This gave the participants a strong incentive to plan thoroughly, supply quality equipment and carry out the operation flawlessly” (Informant 1).

None of the involved parties foresaw any problems pertaining to the incentive structure (Norwegian Petroleum Directorate, 2003). The NPD advised the parties to systematically analyse consequences of the incentive mechanism in unexpected scenarios like accidents, bankruptcy, mergers, or if the Petroleum Safety Authority were to issue notification of order to one party.

DPT and PGS Reservoirs were not included in the tariff incentive structure and were compensated by lump sums and hourly rates, respectively. As they represented a core competence for the project, they would have liked to be included in the tariff incentive (Informant 11). DPT possessed the drilling competence whereas PGS Reservoir had the required reservoir competence. By including these in the incentive scheme, the partnering taxonomy rating would be increased to the full score.

Element 13 rating: 4

Processes; RBP taxonomy element 13 – focus on learning and continuous improvement.

Providing a compelling projects-as-learning value proposition and the practice of transforming learning opportunities into continuous improvement.

Low – actors within collaborative arrangements and a network delivering a project being blind to and failing to grasp the potential competitive advantage of applying presented learning opportunities.

High – actors within collaborative arrangements and a network delivering a project being alert and aware of opportunities for improvement and being successful in grasping competitive advantage through effectively harvesting lessons learned.

Continuous improvement is a core principle for NCS operations and is regulated in management system procedures. “The responsible party shall ensure that the management of health, safety and the environment comprises the activities, resources, processes and organization necessary to ensure prudent activities and continuous improvement” (Petroleum Safety Authority Norway, 2014).

Although there is little learning within the project timeline, a subsequent project may benefit from lessons learned from the previous project. The final well reports of the two wells list 74 problems that occurred, the causes, the solutions and recommendations for ensuing projects. Furthermore, drilling data were shared with other operators worldwide via the IHS Rushmore database.

These initiatives adhere predominantly to regulatory requirements rather than to principles pertaining to the partnering approach.

Element 12 rating: 3

Processes; RBP taxonomy element 14 – pragmatic learning-in-action.

Value through teams collaborating with the strategic aim to gain competitive advantage through collective opportunities to learn and adapt. Team leaders and members seeing the project as a learning experience with acceptance that both experimental success and failure require discussion and analysis. Often unexpected opportunities arise out of failed experiments through assumptions being re-framed that lead to promising benefits in other contexts.

Low – actors within a network delivering a project to fail to translate learning opportunities into actual benefits and competitive action. Failed experiments are punished.

High – actors within a network delivering a project capitalizing on learning opportunities to achieve competitive action. This can be also assessed by the weight that these actors place on the value of experimentation as a way to see issues and solutions in a new light. Failed experiments are valued for their intellectual stimulation in discovering, for example, a better understanding of cause-effect loops.

Offshore drilling projects do not allow for experiments and follow plans, or contingency plans, during operations. Experiments are permitted only when properly evaluated, planned and approved in accordance with procedures (Informant 1).

During the planning process, however, an experiment involved submitting a drilling application with a significantly reduced amount of documentation attached. The NPD responded positively on the to-the-point application without any excess documentation (Informant 1). Later, and on NPD's recommendation, the drilling plan was sent to another operator as an example to be followed.

Element 14 rating: 4

Processes; RBP taxonomy element 15 – transparency and open book processes, routines and practices.

Project participants agree to be audited and fully open to scrutiny. Actors within the project network would have confidence that they can trust those inspecting their books not to take advantage of that access and information.

People doing the audits, due diligence and inspections must be capable and effective enough to understand the implication of what they inspect. Total transparency and accountability is necessary where the project is undertaken on a cost-plus basis where the project owner is funding all direct, administrative and management costs. The extent of transparency and accountability is a trade-off between the PO playing a "hands-on" or "hands-off" role.

Low – intensely protects the security of organizations and individuals to gain access to information about cost structures or the basis of project plans. It seeks to hide both good and bad news but this often results in mistrust that undermines collaboration and opportunities for constructive change.

High – presents opportunities for generating trust by clients and other parties that may access that information. It is a confronting notion that many organizations cannot face. It requires the project owner's authorized probity auditors to have free access to their financial books. Thus, confidence in ethical and legal business conduct is necessary to accept this challenge.

A joint and several liability in the licence agreement reduced financial risks with state-owned and solid Petoro as partner. This right for suppliers, entailing getting payment from Petoro in case of an insolvency situation in Pertra, practically eliminated the need for suppliers to review Pertra's financial capacity.

Halliburton and Maersk had access to inspect Pertra's financial capacity, as Pertra trusted that the information provided would not be abused. The economics of the field were uncomplicated, with leased production facilities. Although the oil price to be achieved was not hedged at the time, the financial capacity depended on production volume and hence a technical evaluation of reservoir properties.

For Pertra, however, there was no open book for evaluation of Maersk and Halliburton's profit gained from this project as compared to other similar projects. Pertra evaluated the suppliers' prices merely on the basis of experience from other similar wells and perception of the market situation.

Element 15 rating: 2

Processes; RBP taxonomy element 16 – mutual dependence and accountability.

Collaboration in projects requires participants to not only recognize their inter-dependency but to also honestly respond to a sink-or-swim-together workplace culture. Governance systems support and enhance or alternatively they may inhibit individual team responsibility and accountability approaches to cross-team collaboration.

Low – an inability or lack of desire to acknowledge the potential value of team inter-dependence and accountability. Participants follow individualistic paths, possibly at the expense of others, and/or do not support a sink-or-swim-together workplace culture or they actively undermine that culture.

High – an ability and keen desire to acknowledge team inter-dependence and accountability in ways that build inter-team trust and commitment through actively enhancing a sink-or-swim-together workplace culture and to actively counter any actions that may inhibit this culture.

All project participants possessed compatible competencies and would not have been able to deliver the project without the contributions of the others. Information and collaboration were required from and among all parties in order to ensure that both project and each participant succeed. Hence, high team interdependence emerged as a consequence of the specialized participants. Moreover, the project was perceived as being a reference project, resulting in a culture characterized by a general swim-together attitude.

Element 16 rating: 4

Visualization. To visualize the partnering approach applied, the RBP taxonomy was slightly modified. Walker and Lloyd-Walker employed a spider diagram with one colour legend for each case. In this case, we utilized a spider diagram visualizing the score of each element in the three categories; platform, behaviour and process. In Figure 1, colours have been applied to highlight the platform, behaviour and process elements for comparison with the project partnering taxonomy, as indicated by Walker and Lloyd-Walker (2015). In the case reviewed in this paper, no individual ratings exceed the earlier findings of Walker and Lloyd-Walker (2015), indicating that partnering practices may be less mature in the observed context than in the Australian construction sector studied by Walker and Lloyd-Walker.

The Platform Foundational Facilities marked in red show lower ratings as compared to Walker and Lloyd-Walker (2015) pertaining to the motivation, integrated risk mitigation, joint communication and co-location elements. In comparison with Walker and Lloyd-Walker (2015), the observed project goals were somewhat less aligned.

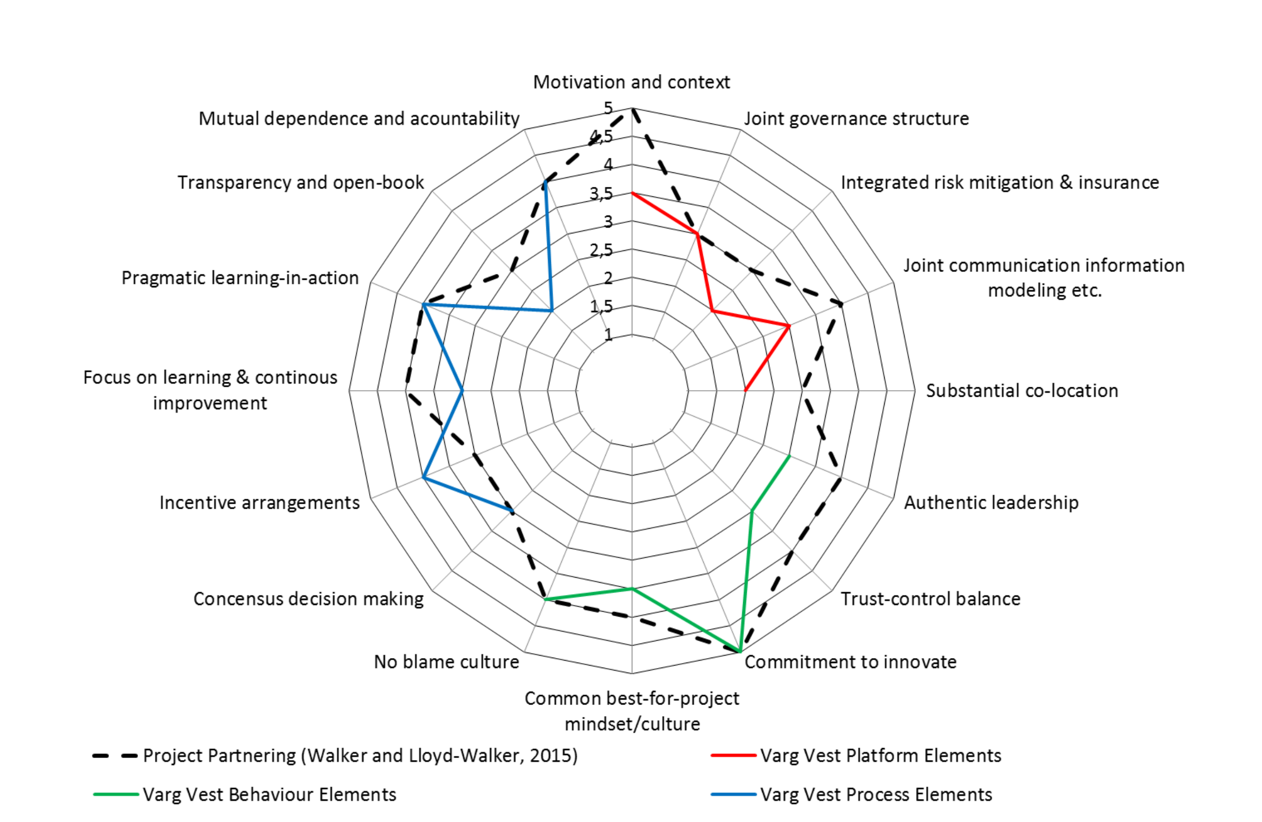

Figure 1: RBP taxonomy for visualization of the offshore drilling case project.

In addition, a lack of project-wide insurance arrangements was registered. Forcing the actors to co-locate may have facilitated internal project communication, although this was not emphasized by our informants.

Behavioural factors (green) are also consistently lower than Walker and Lloyd-Walker's findings (2015). In particular, we observed fairly low values in the authentic leadership, trust-control balance and no-blame culture. The commitment-to-innovate element is on level with a partnering project as indicated by Walker and Lloyd-Walker (2015).

The processes (blue) visualize a rating on alliancing level of incentive arrangements, albeit a very low rating for the transparency and open-book element. All other elements follow the indications of a partnering project as suggested by Walker and Lloyd-Walker (2015).

As a whole, and even though our empirical investigation is limited to a single case, our observations imply that the maturity level of project partnering is lower, and clearly lower than project alliancing, in NCS drilling projects than in Australian construction projects. In particular, it appears that NCS drilling projects have ample room for development in platform and behavioural elements.

6. Discussion and conclusions

Whereas earlier studies (see e.g. Barlow, 2000; Robson, 2004; Green, 2003) have discussed partnering practices in the offshore industry, the present study, relying on the RBP framework, provides a multi-dimensional and systematic description of partnering practices in offshore drilling. As such, the findings of this study provide a holistic overview of the maturity of partnering practices in the observed context. In addition to elements where partnering practices were quite developed such as the use of incentive arrangements and a high commitment to innovate (Reiley, 1994, Garcia et al., 2014), the present study also revealed elements where approaches were perceived as being less partnering-oriented. Examples of such elements include lack of transparency and open-book auditing, lack of integrated risk mitigation and risk insurance practices, and lack of authentic leadership. Identification of the elements may be particularly valuable for further development of partnering practices in the industry studied.

While the development of the RBP framework is predominantly based on research carried out in the construction industry (Walker and Lloyd-Walker, 2015), we observed that the taxonomy can also be applied to improve understanding, implementation and measurement of partnering in the oil and gas industry. The framework adds more detail to partnering as previously recognized in oil and gas (Kemp and Stephen, 1998; Halman and Braks, 1999; Scott, 2001; Bresnen and Marshall, 2000; Robson, 2004). The RBP framework provides an improved classification of each particular partnering case. Through rating of the partnering elements, a more meaningful measurement of the outcome of each level of partnering evolves. This may in turn be conducive to opening the door for implementation of RBP taxonomy in other industries to reveal industry-specific characteristics in project partnering. Understanding these characteristics would contribute towards an increased understanding of how partnering approaches should be tailored to meet the specific features of each industry.

While the application of the RBP taxonomy to an offshore drilling project was mostly a straightforward process, we also encountered difficulties in collecting rich information for some of the 16 elements. Furthermore, some elements in the framework such as pragmatic learning in action, focus on learning and continuous improvement and commitment to innovate and joint governance structure, authentic leadership and consensus decision- making were found to be slightly overlapping although spread over platform, behaviour and process elements. Research literature on partnering in drilling projects has previously not quantified the level of partnering applied in a project, even when measuring the outcome of a partnering project (Gazi et al., 1995; Robson, 2004; Kalsaas, 2013). Further research and refining in this field may contribute further to the understanding of planning, implementation and evaluation of partnering. This case study alone does not provide sufficient documentation to modify the RBP framework for special use in offshore drilling projects. However, one potential avenue for further development of the framework would be the systematic identification and removal of overlap between the 16 elements.

The possibilities for partnering were found to be partially context-dependent as well, since the NCS regulations (Petroleum Safety Authority Norway, 2015) influence how and to which extent risks may be shared and who is the responsible party obliged to ensure compliance with regulations. All action should be thoroughly planned and evaluated, and any pragmatic change of plans due to learning in action is not an option with regard to regulations. The regulations also demand focus on learning and continuous improvement. However, joint governance structure or consensus decision-making leading to any doubt of ultimate responsibility is not in accordance with regulations. Finally, the structure between concessionaires within the production licence (Ministry of Petroleum and Energy, 1974) and service companies limits the possibility for a project-wide insurance and the accompanying high ambition for integrated risk mitigation. A systematic study and understanding of these kinds of contextual factors could help academics and practitioners understand to which extent partnering practices that are applicable in a specific legislation and industry context are transferable to another context.

The case study documents lower ratings for partnering elements in drilling projects, visualized in Figure 1 as the difference between the case ratings and the project partnering ratings as provided by Walker and Lloyd-Walker (2015).

Partnering is an active search for continuous measurable improvements (Yeung et al., 2012) and a means to develop integrative dynamic capabilities to sustain competitive advantage (Garcia et al., 2014). RBP taxonomy operationalizes the qualitative description of partnering and makes it more tangible. Consequently, the RBP taxonomy is an important contribution to evaluating prerequisites, components and goals of partnering in accordance with Nyström (2005).

The RBP framework can characterize partnering practices in offshore development drilling projects. Furthermore, we observed that partnering elements in the offshore industry context were rated consistently lower than partnering elements in the construction industry observed by Walker and Lloyd-Walker (2015). The RBP taxonomy elements provide a tool for planning and evaluating drilling projects where the project manager can evaluate the effect of adjusting each element and compare this with other projects in a similar context.

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