



Enterprise risk management in the Middle East oil industry

An empirical investigation across GCC countries

ERM in the
Middle East oil
industry

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Abstract

Purpose – The purpose of this paper is to appraise the current status of enterprise risk management (ERM) in the Gulf Co-operation Council (GCC) oil and gas entities to develop a practical, region-specific, and systematic action plan for the GCC oil and gas industry that can transform the existing ERM models to a mature and robust framework.

Design/methodology/approach – The paper reviews current relevant literature on Committee of Sponsoring Organization of the Treadway Commission ERM Framework; and enterprise wide risk framework within the precincts of the GCC oil and gas industry to identify the knowledge gaps which form the basis for the research questions. The paper then empirically investigates the GCC oil industry through six case studies, encompassing the six countries in the GCC (GCC comprising of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates). The case study has focused by exploring the ERM system *per se* through comparative case studies to answer the research questions. The research questions and the work have been done from the perspective of the naturalistic (inductive) research paradigm.

Findings – This paper establishes the understanding of the current existing ERM models while identifying the determinants of ERM adoption and the most significant challenges for its implementation. Furthermore, the paper also develops the best practice approach for successful ERM implementation in the GCC oil and gas entities.

Research limitations/implications – The use of a case study has been made precluding the use of other direct methods such as survey questionnaires. The analytical methods used are deductive and discursive in nature, limited to the nature of the methodology of case study used. Rigorous statistical methods could not be applied owing to the limitations of the case study method. The paper explores and compares the industry structure of oil and gas sector in GCC countries, for this purpose, only a few selected entities in the upstream and downstream oil and gas sector are discussed.

Practical implications – Although ERM is conceptually straightforward, its implementation in practice is not. Furthermore, ERM is accepted as a contemporary hot topic and also a board room priority in most industries. The present paper steers the way forward for an improved understanding of the ERM system in a strategic industry dealing with a strategic commodity.

Originality/value – There is a need for a proactive ERM program in the oil and gas industry and also a need for additional research especially in terms of its implementation. Nevertheless, an apparent caveat in the ERM system is that there is no standard approach to implementing and entities grapple with how they should go about putting together an ERM program. The findings provide useful and timely analysis of the GCC oil and gas industry from the perspective of implementation of an ERM framework which is contemporaneous business priority item in most entities in the GCC hydrocarbon sector.

Keywords Risk management, Corporate governance, Oil industry, Middle East

Paper type Research paper

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1. Introduction

Enterprise risk management (ERM) is a new paradigm for managing business risks (Walker *et al.*, 2002), which is highly strategic in nature (Ward, 2006) and is an array of components (Psica, 2008), put together through due process (Beasley, 2006) within an organization that work together to manage risk over time efficiently and effectively (Moeller, 2007a, b) and is purposefully broad in its definition (Moeller, 2007a; Kloman, 2005; Lam, 2003a; Rittenberg, 2006). ERM now is a hot topic and a contemporary area in traditional risk management discipline (Roberts, 2004; Beasley and Frigo, 2007; Deloitte Report, 2008). The seminal idea in the creation of a new theory on risk management was promulgated by the Committee of Sponsoring Organization of the Treadway Commission (COSO) and the underlying principles of ERM are explained through the "COSO Cube." The major focus in this study is the "COSO ERM Framework."

As ERM is relatively a new concept and a new corporate activity, it is also yet to be fully implemented in most organizations globally. COSO ERM Framework is widely used in many organizations and it is also the most commonly used starting point for implementing an ERM initiative (EuropeanCEO, 2001). Oil and gas companies constitute some of the world's largest corporations. Accidents of geology (Noreg, 2002) have left this region with abundance of oil and gas reserves and such size and scale introduces additional challenges in managing risks. Recent oil and gas related international debacles that hit the headline news across the globe had risks in "hard to define" and/or "hard to quantify" categories across the enterprise risk spectrum. The significance of ERM for oil industry has been elucidated in several reports that have vividly illustrated the need for a proactive ERM program in the oil and gas industry (Minsky, 2006; Fineberg, 2006; Palast, 2006; Lewis *et al.*, 2005; Blanco and Regan, 2006). Nevertheless, apart from banks and insurance companies, there has been little academic research about ERM's accomplishments and implementation challenges especially in the oil industry. Furthermore, owing to the significant opacity of the national oil companies (NOCs) of the region and lack of explicit data (Valerie and Mitchell, 2006) have discouraged academic analysis in these entities. The objectives of this study are the following:

- (1) to evaluate the existing structure of ERM;
- (2) to identify the motivators of ERM;
- (3) to identify the most significant challenges for ERM implementation; and
- (4) to recommend the best practice approach for ERM implementation within the Gulf Co-operation Council (GCC) oil and gas companies.

2. Literature review

The background research for such a topic is a challenge since numerous data are not available through scholarly articles and in particular there is no study available that focuses on the implementation of ERM in the oil and gas industry and furthermore, specifically on the Middle East oil industry.

COSO ERM Framework is a landmark model which serves as a broadly accepted benchmark to help organizations enhance their risk management efforts (IIA, USA). This model is rapidly becoming a preferred model (Minter, 2006; Leech, 2006; Rittenberg, 2006; Everson, 2006), that goes beyond internal controls to provide a system to address organizational risks in a comprehensive fashion, as opposed to dealing with individual types of risks through a silo-based risk management. The overall goal is to

provide reasonable assurance of achieving organizational objectives in four areas, i.e. strategy, operations, reporting, and compliance, in the spirit of preventing corporate disasters and maximizing entity value (Beasley and Hermanson, 2004; Quinn, 2006; McNamee, 2004b; Moeller, 2007a, b; De Loach, 2003). A wider spectrum of issues related to understanding of ERM itself and the multi-disciplinary involvement of the process (Power, 2005; Ward, 2001) are essential to understand this emerging business practice which is now a board room priority (KPMG Survey; Shaw, 2005; Lam, 2003b; Wyman, 2005). Risks affect entities holistically and they need to be managed in a holistic manner beyond disciplinary boundaries (Sobel and Reding, 2004). A framework of ERM should include such an approach to risk management, which provides a common understanding across a multidisciplinary group of people (Sobel and Reding, 2004) and show possible future exposures to risk (McNamee, 2004a). To consider establishment of an ERM system, some organizations in various sectors are stimulated by corporate governance best practices (SOX, 2002; Moeller, 2007a, b; Turnbull, 1999; Carey, 2000; Barton *et al.*, 2001; Burns, 2003; Emen, 2004), regulatory guidelines (Basel II Accord, 2004; EC, 2002), rating agencies requirements (S&P, Moody's, and Fitch) and wake up calls from corporate disasters. Furthermore, global initiatives on corporate governance, internal control, and risk management have given the impetus to establish an ERM framework.

Several studies have not shed light on the parameters which affect the efficiency and effectiveness of the ERM system (Berlin, 2004; Walker and Shenkir, 2006; Lewis *et al.*, 2005; Blanco and Regan, 2006) and also on the approach to implement such a system, expressing the location of the ERM maturity level along the risk continuum (Walker and Shenkir, 2007). This observation is also especially true in the oil and gas sector. Furthermore, ERM is an Anglo-Saxon phenomenon and to a degree Australasian (Merrifield, 2001; Leech, 2006), and it is reported that entities in other countries seem to have embraced ERM system and have focused on COSO ERM implementation (Lam, 2006a, b, c). Its overreaching nature appears overwhelming for some organizations (Ballou and Heitger, 2005) and yet no studies exist by "exploring the business environment" for better implementation of ERM system in the GCC oil and gas companies, investigating the extent to which these entities manage risks in a truly holistic manner. While exploring the GCC environment, current status of ERM has been studied in business organizations in Dubai (Marie and Rao, 2007), but the findings did not include the hydrocarbon sector.

The upstream and downstream entities in the oil industry are entrusted to NOCs in the GCC countries and are regarded as the symbol of national sovereignty that controls the most important and the most valuable strategic commodity (Bromley, 1991) in their respective countries. There is a deep emotional attachment and sense of emancipation, ideology of resource nationalization in the existing model of NOCs as instruments of the state, which is not only a unique characteristic to Middle East, but also in other parts of the world with vast mineral deposits. Furthermore, as members of the OPEC, a number of GCC oil entities are also exposed to the effects of OPEC intransigence (Huettner and Al Hajji, 2000). Therefore, NOCs are not just companies, but they are politically sacred entities (Hartshorn, 1993; Aburish, 1997; Noreg, 2002; Valerie and Mitchell, 2006) involved in the business with a strategic commodity in a strategic industry (Bromley, 1991; Heiss, 1997). Many analysts suggest risks and challenges in GCC Oil industry include the following:

- Strategic challenge due to regional geopolitics (Marten, 2008; Caruso, 2006; Di Piazza and Bremmer, 2006).
- Widening gap in the skills gap (Booz-Allen, 2008).
- Operational challenge in GCC wide co-operation which also include the co-operation in energy (Asoomi, 2008).
- Common currency initiative supposedly to combat inflation (Handy *et al.*, 2008a).
- Interpretation of reserves-to-production ratio which is a contentious parameter as it depends largely on the geologic, technological, economic, and political limitations (Feygin and Satkin, 2004; Campbell, 2007).
- National depletion policies (Handy *et al.*, 2008b; Bromley, 1991) of the GCC oil companies.
- Extremes of *laissez-faire* culture in a traditional society (El Musa, 1997; Albers, 1989; Jreisat, 1997).
- Petroleum law and legislative impediments due to weak arbitration laws (Angell, 2006).
- Project financing and wider investment challenges in upstream/downstream sectors (Handy *et al.*, 2008a, b; HIS/CERA Upstream Capital Cost Index).
- The looming threat of a control-driven failure due to weak corporate governance (Ditcham, 2007) that might occur within 2010.

Consequentially, organizations in the oil and gas sector in the Middle East cannot afford to not step up their internal control framework and lag behind the world. It is high time that oil entities start planning for and implementing an effective ERM system integrating its building blocks – corporate governance, internal audit, and risk management.

3. Methodology

Six case studies or units of analysis (Yin, 2003) were produced based upon the operational review of the NOCs in the upstream and downstream business value chain, derived from the six countries comprising the GCC. “embedded multiple case studies methodology” are more compelling and the results are more robust (Remenyi *et al.*, 2000; Yin, 2003; Eisenhardt and Graebner, 2007); and this approach was used to further explore the extent of ERM application in the GCC oil industry, with a defined “time boundary” between 2005 and 2010. By further investigating the business value chain, corporate ethos, corporate governance framework, upstream and downstream petro-strategies, categorically as the “variables in the case study unit” (Stake, 1995), the study distilled down with a final comparative analysis. The purpose of the units of analysis with the above variables was to study the strategic fit between the ERM strategy and the corporate strategy/petro-strategy being pursued by the entities across the value chain.

To carry out the research, a semi-structured type of interview was taken up to have a mix of interviewing, observing and analyzing strategy for primary data collection (Hussey and Hussey, 1997). A semi-structured approach to data gathering generates great ideas and works better than unfettered brainstorming or strict qualitative analysis or questionnaire format (Coyne *et al.*, 2007). “who,” “why,” “what,” and “how” questions were asked in the interview to explore the answers to all the objectives of

the study. Furthermore, a wider view analysis with a theme “beyond ERM” was instigated by stretching management thinking in their ERM journey. The investigations were formulated using a check list that was structured around the eight categories of the “COSO cube” with respect to the GCC oil and gas industry.

Being a board level topic, participants approached to collate primary data were C-suite executives engaged with internal audit; corporate planning; finance and engineering. Furthermore, in some entities, participants also responded at superintendent and managerial levels; adding up to 25 responses. Information was collated after assuring participants that their responses will be treated as anonymous and confidential. Furthermore, owing to the sensitivity of the information being sought and analyzed; and due to the prevailing corporate culture of the region, the specific entities being analyzed are not disclosed in this study. Owing to the above reasons, the comparative analyses therefore amalgamate the overall findings and do not portray country-specific data, with regards to the corporate information being analyzed. However, anonymity is believed to increase the veracity of the findings in this study.

To extend knowledge further (Remenyi *et al.*, 2000) in the GCC oil industry with the back drop of ERM, secondary data collection (Hussey and Hussey, 1997) were collected through several regional publications, journals, reports, conference proceedings in the Middle East and corporate web sites of interest.

The summary of findings from the six case studies are presented briefly in Appendix 1, Table AI.

4. Analysis of findings

4.1 Findings pertinent to Objective 1: to evaluate the existing structure of ERM

The outcome of the comparative case study analyses indicates that ERM means different things to the GCC oil and gas companies.

Emerging themes in ERM. Analyses of the interviews have recognized three emerging themes/trends in the GCC oil companies, namely standardization, integration, and centralization.

Standardization is a technique that has an effect on a number of areas of public concern, such as the competitiveness of industry or the functioning of a single market environment. Therefore, standardization can also play a role in regulatory policy. However, ERM is not yet a regulatory requirement in the GCC business environment. The awareness of the ERM framework was less seen in the lower levels of the entity. Participants in some cases broadly seem to attribute a “risk management framework” as a *de jure* standard which was extensively aimed at statutory requirements for compliance and legal requirements. While other cases differentiated a “risk management framework” from the conventional technical standards by recognizing the “COSO ERM framework” as a *de facto* standard and were willing to consider other framework for future implementation.

Integration is a technique for aggregation of different parts to a holistic framework across a layer of organization and between layers of organization. Integration is about value-addition to the overall entity that is precisely possible by “integrating the silos” within the entity. COSO acknowledges that, “every enterprise faces a myriad of risks affecting different parts of the organization, and ERM facilitates effective response to the interrelated impacts, and integrated responses to multiple risks.”

Centralization is a technique that accumulates different data as an act of consolidating decision-making power under a central control within a framework. Knowledge, information, and ideas are concentrated only at the top and decisions are cascaded down the organization – departments or subsidiaries. Although these subsidiaries are enjoying certain degree of latitude by delegation (de-centralization), they are ultimately accountable to the corporate parent which is governed by a national authority as seen in the cases. Centralization results in less empowerment for the management although it does ensure the entity takes a consistent risk policy line. When the oil and gas value chain is controlled by one entity, which is central to all the major pieces of the hydrocarbon industry and placed as subsidiaries, centralization was advocated. As an integrated oil major or as a centralized entity, it is entrusted with the central planning function of the industry and is seen as a coordinating entity between various elements of the business value chain and the risk governance framework.

ERM progression and maturity model. Progression of the ERM implementation project and the present state of ERM is defined by an ERM maturity model. Several maturity models along the risk continuum exist, however, in this study, based on the responses, three levels of maturity indicating the ERM project completion phases are set out:

- (1) under construction or investigating concept;
- (2) partial ERM framework in place; and
- (3) complete ERM framework in place.

While the position of the ERM would seem to reside in a debatable location along the risk continuum in the cases, however, based on the empirical data. Figure 1 shows the position of the GCC countries considering their ERM implementation *per se*.

Although there was a widespread consensus on the importance of ERM, only few of the entities could show substantial progress as ERM is also perceived as board and senior management priority and not necessarily a line management priority, driven by a centralization process, particularly where power was consolidated within the entity. This perception is triggered due to the creation of a new function “chief risk officer” (CRO) which is also typically a position from the finance disciplines (Aabo *et al.*, 2005), located in the corporate/head office. Nevertheless, most GCC oil and gas companies are far-off from the expected and actual perspective of Integration as promulgated by the ERM framework, masked by a host of differences arising due to corporate culture. The typical risk governance characteristics exemplified in the entities aligning with the three themes identified in the study are presented in Appendix 2, Table AII.

Risk perception. The analysis suggests that ERM does not emerge in GCC oil and gas companies in a consistent pattern. The understanding of what ERM represents differs from organization and also at different levels of management. ERM process needs to develop a common risk vocabulary so that the understanding of ERM is not just with the top echelon of the organization.

As NOCs, the nationalization policy is applied in all industries including the oil and gas sector. The relationship between “corporate social responsibility” (CSR) due to their obligation to provide employment for nationals and “expenses/loss due to inefficiency” were not commented as they were culturally sensitive issues and participants refrained to comment. It also supports the common notion that most NOCs are not exactly run on a commercial basis and such human resources risks are accepted

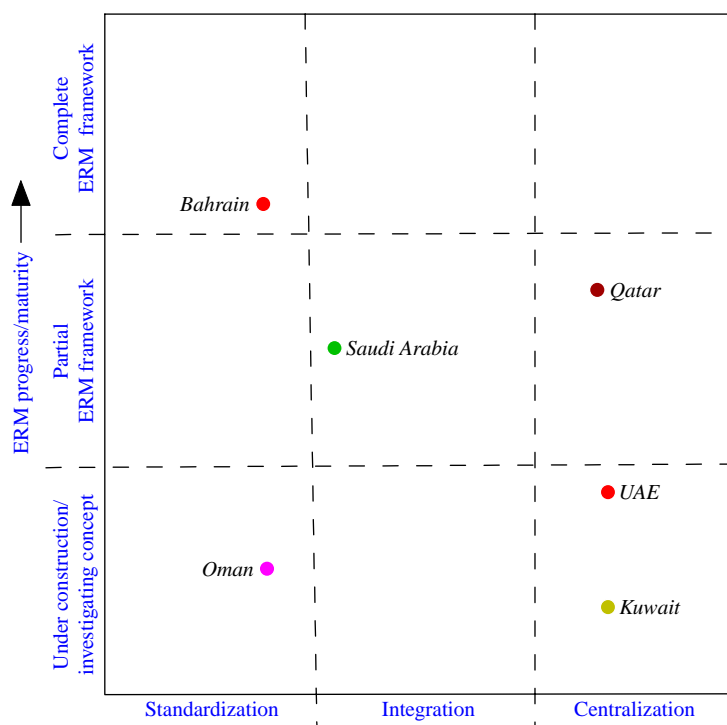


Figure 1.
Emerging themes in ERM implementation

in their business processes and it is regarded as a norm within the facets of the “cultural/organizational entropy.”

A “phase-gated mechanism” was evident in most cases and the management decision is based on fixed parameters thereby obstructing the intrinsic flow of information from the management and staff. Most importantly, the existing models did not have a mechanism to identify and exploit lost opportunities. Furthermore, it was evident that the risks captured were not based on transient conditions of the business environment. It was mostly subjective and risk controls were decided on the end condition of an incident. The controls were based on certain “assumptions” and “givens” and the materiality of the risks presented could change based on the widespread weaknesses in evaluating the board’s risk appetite and thereby the corporate risk tolerance level.

Role of internal audit and ramifications in risk communication. In most cases, the internal audit team does not seem to fully utilize the collation of risks for determining their internal audit plan. Too many audit reviews exist in upstream and downstream business processes that are rendered by external and internal parties. Several external audits, review various business processes, apart from the usual environment, health, safety, and quality audits. In a scramble to comply with various technical codes and standards, “many silos have been created” in the entities in terms of risks and compliances by external assurance providers. Many of these silos have typical risks and are based on same underlying data, thereby duplicating internal audit efforts.

Even in those cases wherein ERM is believed to be attaining maturity, internal audit does not verify the ERM implementation process. The risk committee in some cases derives only a passive support from internal audit.

Corporate risk governance. There is soaring rhetoric in the entities on the ERM implementation project; but most cases did not emphasize on the establishment of an integrated framework model and the risk governance thereof. Some cases even lacked established policies and procedures for the “ERM process” and “ERM function.”

Top-ten enterprise risks. In the cases where a risk register was generated, the entity’s corporate risk register is logged out using in-house software tools and the register is the master document of the entire COSO ERM Framework implementation. The following risks can be recognized as the top-ten risks faced by the cases:

- (1) disruption of refined products;
- (2) environmental contamination due to hazardous leakage/fire;
- (3) negative perception affecting company’s image;
- (4) lack of business continuity planning;
- (5) non-compliance to process safety management;
- (6) inadequate exploration strategy in upstream business;
- (7) lack of team work/inter-disciplinary co-ordination;
- (8) ineffective financial controls;
- (9) ineffective maintenance interrupting refinery throughput; and
- (10) inability to identify, plan, and acquire skilled personnel.

Other prominent corporate risks recognized in some cases are the following:

- bank/funding crisis;
- legal risks in various engagements/contract risks; and
- smuggling of subsidized diesel bringing loss due to subsidies given on local fuels.

Apart from the above risks, participants in some cases confirmed that the risk register also provides a variety of information including risk owners and even the probability of occurrence. The types of tools used by the entity to implement ERM are through risk assessment workshops conducted across the organization, financial modeling and weighted average score. There is a wide departure from the entity’s ERM strategy and consequently the petro-strategy. This observation primarily stems out of the fact that “all risk” are not actually being considered. Furthermore, no significant information was available to understand the extension of ERM to the national energy policy as it was a culturally/politically sensitive topic.

Performance metrics: business value drivers, key risk indicators, and risk metrics. Business value drivers vary with the type of business and industry. Once business value drivers are identified, enhanced decisions can be made surrounding the business. The top-five business value drivers are:

- (1) local gasoline consumption;
- (2) global market demand;

- (3) crude prices;
- (4) explore new acreage; and
- (5) mechanical availability.

The business models in the cases have not yet realized that “ERM” can itself be a business value driver. Furthermore, “market share” would also be an appropriate business value driver, which was not picked from the response.

Key risk indicators (KRIs) are measures used to indicate how risky an operation/activity/project is. KRIs may be tangible or intangible, but gives an early warning to identify potential event that may harm continuity of the operation, to better manage operational risks. The top-12 KRIs are:

- (1) revenue;
- (2) labour costs;
- (3) refining margins to crack spreads;
- (4) capacity utilization;
- (5) operational flexibility (to run any crude slate);
- (6) reserves estimate;
- (7) number of near misses;
- (8) number of accidents;
- (9) breakdown time;
- (10) protracted delivery (lead time);
- (11) contingency plans; and
- (12) management oversight.

Upstream and downstream petro-strategies are generally driven in maximizing the business value drivers and the KRIs presented above positively add value to the business value drivers.

In some cases, participants did not distinguish between KRI and risk metric; and believed that they basically meant the same. While “value at risk” (VaR) is a popular risk metric to aggregate risk across an enterprise; it is not a preferred metric in the cases. Consequentially, risk metrics used by the entities is primarily the impact/likelihood analysis and is derived from financial, operational, and compliance perspectives. The cases then gravitate towards a band score method – with high-, medium- and low-risk category being established. Ideally, this approach could only be viewed as a risk assessment method with more emphasis on financial perspective and less emphasis on strategic perspective. Furthermore, participants in some cases stated that the entity is also using metrics like cost of risk and return on capital employed depending upon the business process. The findings from traditional risk management systems like hazard and operability studies, hazard identification studies, environment health and safety (EHS), and quality management system “are taken into account” in the ERM system, only in some cases.

Performance metrics and its correlation to corporate objectives. The ultimate goal of ERM is to help management in achieving corporate objectives (Dickinson, 2001) and

ERM framework is maturing as a result of initiatives from at least two perspectives (Power, 2004; Dickinson, 2001, 2005; Lam, 2003a; Barton *et al.*, 2001):

- (1) finance-driven shareholder value model; and
- (2) compliance-driven risk governance model.

Basis the above perspective, when the focus is to increase shareholder value, some of the KRIs demonstrate added value in a tangible form. Some cases seem to feel that financial indicators are given importance than non-financial indicators, solely because ERM is driven more from a financial perspective by people from finance background. However, when these entities focus on risk governance, the quandary over value creation is arguable. Nevertheless, the analysis further suggests that the cases also utilized many types of deterministic risk metrics (typical of a compliance-driven silo management approach). This could lead to integrate the system across the upstream and downstream value chain, to perhaps arrive at a uniform risk metric similar to VaR in the future.

Furthermore, the spirit of ERM, performance metrics thereof and its impact in the entity is not articulated through the corporate objectives, values, mission, and vision statements. While the entities take considerable pride in their business and technological expertise (Valerie and Mitchell, 2006), in general ERM unfortunately is regarded only as a “business tool” and not as a “business driver” which can be attributed to the weaknesses in risk communication and the corporate culture in the entities.

4.2 Findings pertinent to Objective 2: to identify the motivators of ERM

Clear expectations from achieving Turnbull, SOX; capital requirements from Basel Accords, Solvency; and Rating Agency’s evaluation had become the key factor that have led banking and insurance sectors to embrace an ERM system. But in the case of the GCC oil and gas companies, none of the stated factors seem to have an impact, but it just offers a raft of “value-creating opportunities” that makes “good business sense” in embracing an ERM system. How far opportunities are being exploited in these entities are yet to be fully understood. Nevertheless, the entities have indeed embarked somewhere in their ERM journey, enabling them to better understand the aggregate level of risk, allowing them to take risk with their eyes open, or to mitigate the exposure.

Determinants of ERM adoption. The analysis suggests that the most significant, top-four driving forces/motivators for ERM in the cases are self-fulfilling by virtue of the strong interconnection between and across the drivers identified:

- corporate governance;
- leadership of the chief executive;
- good business practice;
- initiative of board of directors; and
- internal audit recommendation.

A cause-and-effect scenario (Burt and Van der Heijden, 2003) that has been repeatedly feeding each other is evident in the nature of the drivers and therefore ideally, robust strategic thinking and corporate expectations should be stronger, as a consequence driving a synergy within the entity to shape up better organizational futures coupled with organizational foresight (Burt and Wright, 2006). Some cases have even acknowledged that they are embracing an ERM system as it “just makes good business sense.”

Cases further acknowledged that the other motivators for ERM can also be attributed to drivers like:

- market competition/competitive advantage;
- changing risk landscape;
- investment community pressure; and
- brand image.

Furthermore, “volatile economic situation,” “corporate disasters,” “SOX compliance,” “globalization,” “recent catastrophe in the organization,” and “pressure from rating agencies” were regarded as almost insignificant considering the nature of business environment of most of the NOCs in GCC. “environment” did not seem to be a motivator for ERM although most cases have petro-strategies driven by environmental challenges. Entities are not exactly pressured by regulators or rating agencies to adopt ERM; corroborating the fact that in practice, banks and rating agencies do not actively demand risk management disclosures from GCC oil companies.

4.3 Findings pertinent to Objective 3: to identify the most significant challenges for ERM implementation

Oil governance in the oil and gas sector. A very unique aspect that throws a specific challenge in the oil and gas sector is the existing scenario on oil governance, with fragmented role in policy, regulatory, and operator functions. This has led to a disjointed risk governance framework at an entity (operator) level and its ramifications are far-reaching especially in an ERM environment.

Top-five structural challenges. The following are the emerging structural challenges for ERM implementation in the cases:

- (1) risk communication: a consistent framework;
- (2) lack of risk awareness at board level;
- (3) audit committee;
- (4) corporate culture; and
- (5) linking risks to overall corporate strategy.

Some cases have stated that “lack of transparency,” “weak risk governance/risk committee,” “lack of risk awareness at executive management,” and even “disassociation between internal audit plan and ERM findings” as significant structural challenges.

Top-five operational challenges. The following are the emerging operational challenges for ERM implementation in the cases:

- (1) determining risk owners/ownership;
- (2) risk awareness at lower levels;
- (3) risk communication: risk culture;
- (4) risk identification; and
- (5) risk classification.

Some cases have stated that “appropriate risk analysis techniques,” “risk awareness at middle levels,” “allocation of capital for risk response,” “risk communication:

a common risk language,” and “risk communication: across disciplines/departments” as significant operational challenges.

Top-five technical challenges. The following are the emerging technical challenges for ERM implementation in the cases:

- (1) data accuracy;
- (2) risk measurement;
- (3) determination of risk appetite;
- (4) risk assessment; and
- (5) risk modeling.

Some cases have stated that “data storing,” “data adequacy,” “determination of correlation among various risk classes,” and “determining offset benefits in risk response/strategy” as significant technical challenges.

A wider view analysis: “beyond ERM” challenge. Adoption of ERM in the other business sectors is primarily due to taking their ERM system beyond Rating Agency, Basel, Solvency, and SOX requirements. On similar lines, a wider view analysis explored the challenge of extending the ERM system to integrate with the changing business environment utilizing appropriate business tools (Beasley *et al.*, 2006; McWhorter *et al.*, 2006) in all cases.

(A) Extension to corporate strategic planning. A disassociation between corporate business plans and ERM findings was felt to be in a “difficult to comment” category. Some cases are utilizing the ERM findings in corporate strategic planning exercise while other cases felt that their ERM maturity has not yet attained a status to think “beyond ERM.” This was also viewed as a structural challenge in most cases. In one case, participants mentioned that “not seriously perceived as a priority by top management” as one of the primary reasons for not thinking beyond ERM.

(B) Ambiguity in the risk communication process. The analysis suggests that the cases exhibit a major weakness in risk communication as it poses structural, operational, and technical challenges. Risk communication is not an isolated issue (Tansey, 2004) as it correlates with individual attitude towards risk and gets subsequently associated to the risk culture of the entity. Furthermore, participants invariably agreed that corporate culture is a major barrier to effective communication. The specific challenge on the accuracy of data, measuring risks, assessing, and modeling risks for a given risk appetite is difficult primarily due to the ignorance associated with the subjectivity attached to the events that could plausibly unfold. Some of the risks are quantifiable and some non-quantifiable. However, another significant outcome from the study is to understand that the risks are just accepted, simply transferred or shared among the stakeholder for a chosen petro-strategy. The exact approach is firm-specific and also culturally sensitive. Nevertheless, risk communication, corporate culture/risk culture, and risk awareness need to be aligned through a common risk language to develop an efficient ERM system in all the cases.

(C) Chasm between the ERM strategy and petro-strategy. The cases acknowledged the benefits of ERM implementation as:

- increased management accountability;
- better governance practices;

- greater managerial understanding of corporate strategy; and
- consensus about corporate strategy.

Nevertheless, the chasm between petro-strategy and ERM strategy is apparent. A greater understanding of strategic risks and operational risks is paramount to the success of the overall ERM implementation. Entities have almost typically set out similar upstream and downstream petro-strategies (Appendix 1), but the outstanding risks have not been picked up in the risk assessment of the existing risk models. The tools and techniques used to identify and measure the impact of strategic risks appear to vary, depending upon the stage of ERM implementation. However, corporate attempts to identify and manage strategic risks while integrating them into a corporate-wide ERM framework is an area that needs greater focus in the cases.

Furthermore, there is no strong co-relation between the petro-strategies being pursued and the ERM strategy as the entities have not actually considered “management of all risks in a holistic framework” as espoused in the literature. They have not exactly accomplished an out-of-box thinking as some of the petro strategies seem to even trigger certain immeasurable project, contractual, strategic, credit, and legal risks.

(D) Chasm between corporate objectives and ERM strategy. Analysis suggests that the cases have four common and principal corporate objectives:

- CSR;
- profitability;
- operational excellence; and
- sovereign reserves replenishment.

Several unique characteristics in the GCC industry drive these principal corporate objectives as shown in Figure 2. A broader understanding is attained by mapping the objectives further into the COSO ERM Framework:

- From the reporting/financial point of view, the “maximization of shareholder value” (Power, 2004; Dickinson, 2001, 2005; Lam, 2003a, b) is directly linked to “profitability.”
- From the operational point of view, the excellence models in terms of “utilization of state of the art hydrocarbon technology and skills” are directly linked to “operational excellence.”
- From strategic point of view, the “long-term prospects” of the entities is directly linked to the “sovereign reserves replenishment” with utmost co-operation with the government and rulers thereof. It must be noted that the long-term economic prospects are not essentially linked to financial figures, but with various win-win relationships within the society and the grand strategy of the national depletion policies.
- From social point of view, the “trusteeship between social groups and the value creating NOC” is linked to the “CSR” extending itself further in terms of environmental protection and sustainable value creation (Wade, 2003).

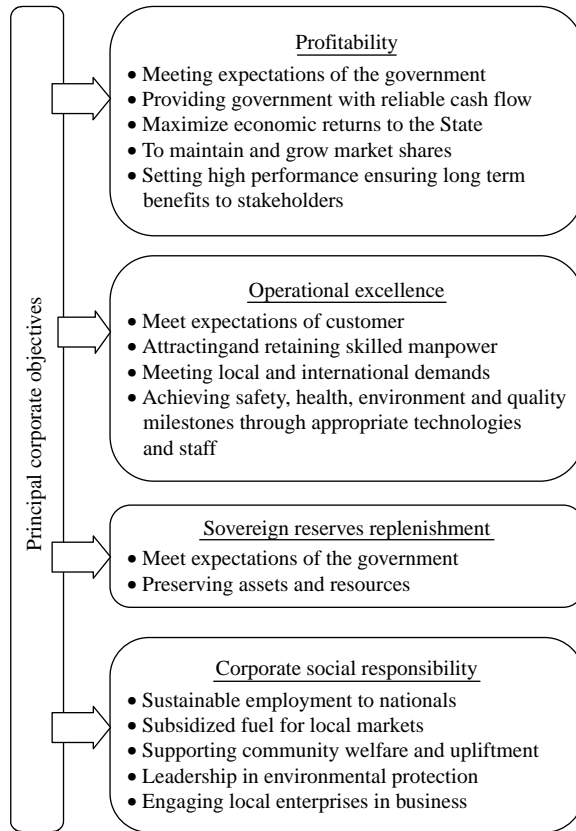


Figure 2.
Drivers of principal
corporate objectives

All the above view points have the “compliance view point” interspersed in their business efforts. However, from risk management point of view, one of the key objectives in the GCC upstream value chain is “sovereign reserves replenishment” and in the GCC downstream value chain is “operational excellence” as refiners have an overwhelming operational task of honing its capability to treat varying crude slates while guaranteeing exacting product slates.

The ultimate of goal of ERM is to help management in achieving corporate objectives (Dickinson, 2001) through appropriate petro-strategies across the business value chain. Corporate objectives in these entities require a joint initiative from financial, technical, and strategic planning personnel while internal audit provides comfort to board on the decisions taken by the above disciplines. However, all risk management functions are predominantly tackled from financial perspective in the cases and the function of CRO is undertaken by finance personnel. Financial perspective does not consider the behavioural, individual risk preferences, psychological, and social aspects. Furthermore, most entities are not exactly commercially run, but have a large burden in terms of CSR; paradoxically, the ultimate objective of ERM is to reduce loss due to potential surprises and exploit opportunities. Consequentially, there is a tension between finance-driven strategy that seems to be at

logger heads with the CSR. There is no strong co-relation between the enterprise risks, ERM strategy thereof with the corporate objectives set out in the cases.

5. Discussion

The findings from the comparative analysis has revealed a number of differences and inconsistencies between the ERM framework as espoused in the literature and the existing risk models in the GCC oil industry. There are enough similarities between each of these entities to make a meaningful comparison; whilst there were enough differences present in terms of risk perception, risk vocabulary and correlation between petro-strategy and ERM strategy that offered potential for interesting within – and across – case analysis to proffer a practical recommendation (final objective of this study) and learning experience. The limitations in the ERM framework in the cases include the following:

- Weaknesses in quantifying emerging risks for the petro-strategies, i.e. “all risks” are not considered with a holistic approach to risk assessment in most cases. There was a significant chasm between the petro-strategy being pursued and the ERM strategy being implemented. The weakness therefore is a lack of better mechanism to communicate the risk appetite and risk commitment which is paramount to risk assessment and as a consequence a better aligned strategy development. One of the challenges facing management teams is how to link business plans and ERM (Frigo, 2008). Recent global events show us that strategy development and risk management must be closely linked to be effective in protecting shareholder value. Risk commitment to consider cross-segment risk issues and interdependencies facilitate an enterprise to remediate significant risk issues; which is a critical driver to attain an efficient ERM maturity model. A clearly articulated risk appetite with clear risk prioritization and interdisciplinary coordination to achieve goal congruence between petro-strategy and risk strategy can sustain a smart risk culture.
- The unstable risk appetite varies with the changes in board members and there is a strong relationship to “corporate culture.” A strong risk management culture requires the right “tone at the top” driving everyday behaviours of people from the board level to the front line staff. Consequentially, C-suite executives need to cultivate a culture that incorporates originators-conservers-pragmatist perspectives (Musselwhite and Randell, 2004).
- The cases exhibit inconsistent risk preferences. There is a significant overlap between the players of oil governance leading to ambiguity in the risk models. Others studies have also acknowledged that a significant number of distortions and inefficiencies in the business indicators of oil exporters in the Middle East have been primarily due to poor quality of governance (Askari, 2006), further exacerbated and nebulous due to OPEC intransigence (Huettnner and Al Hajji, 2000). Furthermore, the CEO, as an advocate of ERM, should again exemplify a dynamic leadership style to develop a strong institutional governance model.
- Some cases place far more emphasis on risk mitigation and preserving value with risk strategies that were fairly conservative rather than adding value and using risk information to gain competitive advantage using advanced risk strategies.

- Unquantifiable risks lacked a scientific approach to quantify as all the cases did not have the necessary expertise to handle such situations. There are serious consequences due to a high degree of subjectivity in risk assessment with a predetermined probability of failure in a predetermined period of time.
- The genesis of ERM in most cases comes from board initiatives; the study has revealed that cases have an organizational tension in terms of accountability. While board responsibility should be limited to oversight (Sobel and Reding, 2004), some believe that it is board/executive management's responsibility to uphold ERM. Managing risk, like managing cost or revenue, cannot be done from the top alone. It must be owned by the ones closest to its occurrence, i.e. better risk ownership is required in the cases. Addressing the challenge of change and establishing successful ERM through a series of bottom-up steps that build on existing functional capabilities (Mosimann, 2008) contribute to smart risk culture. This should not be seen as replacing a top-down approach; however it is should be seen as acting in parallel, in an iterative, mutually re-adjusting and reinforcing manner. To develop such a process, entities must have appropriate incentive schemes to motivate a bottom-up process, improve transparency and communicate unequivocally the board's risk preferences to the front line staff. Extending the risk assessments and integrating internal audit findings is the next practical step towards better implementation.
- In most cases, entity's mission and/or vision statement did not consider the adoption of ERM as it is a major posturing and communication tool to define its corporate ethos across the business value chain.
- The study has revealed that all the NOCS have almost stereotype set of corporate ethos in terms of stating the purpose, objective, direction, mission, and vision statements. Nevertheless, it should also embrace certain other cultural characteristics like: "transparency to and ability to respond to changes in the external environment" and "stable, unequivocal, effective systems for getting things done." The "ability to respond to changing markets" and "stable operating system" appear mutually exclusive. But companies that learn to manage the positive tension, i.e. risk quotient (RQ) (Musselwhite, 2005) between these divergent qualities have created a smart-risk culture. Entities should view innovation as a daily on going process and not just before the board review. ERM leaders should collaborate with interdisciplinary members to assess effectiveness of ongoing operations and/or risk mitigation process as well as the impact of innovation. Furthermore, employee empowerment to promote employee commitment goes a long way in managing the RQ.
- There is a significant chasm between the proponents of ERM and the players in the existing silos. Implementing ERM has taken many shapes in the cases. Some have only one personnel in charge of risk, under the aegis of a C-suite executive; while others seem to employ a team. As ERM is a "four players' game" (Marcus Evans Conference, London, 2007; Deloitte & Touche, 2003) comprising of board of directors, internal audit team, executive team, and the risk committee; applying the principles of the "law of the few" (Gladwell, 2000) can integrate the silos to render an effective ERM system. These leadership voices should help create shared beliefs, shared boundaries, effective decision-making processes, and effective change

management processes (Brewer, 2008; Simons, 1994; Shapiro, 2003). Furthermore, the cases did not have a mechanism to motivate the management and staff with incentive schemes to motivate prudent measures in mitigating a risk or exploiting an opportunity. Infusing an organization with shared beliefs includes reinforcing the entity's mission, ethical tone, and attitude towards risk and employees. Risk policies and mission statements including audit Charter should acknowledge and incorporate the ERM initiatives to drive the effectiveness of the ERM framework.

- Internal audit does not play an active role in the ERM implementation. However, internal audit can play a unique role in this exciting new area of corporate management but only if it is up to the challenge and only if it is truly empowered by the board of directors of the entities. The genesis of ERM in most cases comes from audit recommendation as determined in this study. However, the recognition, importance, and effectiveness of ERM comes not from mere audit recommendation; but when the corporate risk register is driving the audit plan through a sharp audit focus on appropriate "business process objective," "scope of audit" and "review of risks." Furthermore, it probably goes without saying that internal auditing can only participate effectively in the implementation of ERM if it has embraced its own paradigm shift from "compliance-based internal auditing" to "risk-based internal auditing" (RBIA). It is important that the entities understand the value-adding service through RBIA (Deloitte & Touche, 2003). Furthermore, embracing this approach addresses the need for an efficient tool for "reporting and monitoring risk" that is advocated in the COSO ERM Framework.
- The existing risk models in some cases did not fully align with the internal audit focus and the petro-strategies were weak in identifying and exploiting lost window of opportunities. Risk models were revisited at intervals rather than being a contemporaneous update as these entities had an "ERM process" but not a dedicated "ERM function" in the risk governance structure. It is imperative that such risk models recognized transient conditions in business cycles like the new business risk – "deepening recession." This has triggered a new risk – "business model redundancy" which is also the top-ten global business risks (Ernst & Young, 2009). This could force leading firms like the NOCs of the Middle East to reinvent their petro-strategies and the risk governance structures.

Notwithstanding the above gaps, however, the GCC oil and gas companies have been in business, ever since 1930 and have been serving their nations and the world at large, which is evident from some of their overarching strategic direction expressed as "energizing the nation" and "energy for our world." This obviously suggests that they have some established and tested mechanisms to manage their risks to generate profit and meet the expectations of their stakeholders. With the changing business landscape, and with the emergence of ERM, the Middle East oil industry is witnessing a change in risk attitude. ERM is not a fad or a new idea or a management process which is nice to have because some other oil and gas entity seem to have it, but is becoming an indispensable "business tool" now; and is poised to be one of the top "business drivers" or "value drivers" by itself in the near future. Similar to the banking and insurance sectors, the GCC oil and gas companies should regard ERM as the principal corporate

objective as well as the business value driver. Some of the entities are early adopters while others are beginning to embrace an ERM framework.

Best practice approach for ERM implementation

The final objective of this study is to propose a best practice approach for ERM implementation. This study has led to the following ten-point, region-specific, and practical action plan for the GCC oil and gas companies that can transform their existing ERM models to a mature and robust framework:

- (1) *Establish an unequivocal oil governance framework.* To instigate better oil governance framework in the oil and gas sector and push for reforms aimed at better corporate governance, to enable operators to design a robust ERM model upholding established integrity, fostering ethical standards and without conflicts of interest between policy maker, regulator, and operator.
- (2) *Adjust the CEO's alter ego.* Assume a leadership style that fosters a management philosophy, which creates and infuses shared beliefs that enable organizational change and innovation in terms of enterprise wide risk management.
- (3) *Create a contagious commitment to ERM.* Form an effective risk committee with an advocate pool using the best mix of personnel who can lead to significant adoption of ERM best practices across ever-wider circles of organizational personnel.
- (4) *Instigate a paradigm shift in internal auditing process.* Embrace RBIA, which is the current best practice, which has superseded both controls-based auditing and basic compliance auditing, but still maintains elements of both.
- (5) *Align the internal auditing process with ERM.* Establish an audit charter that declares the alignment of the ERM in order to address the audit focus on critical business areas as identified by ERM and highlight any potential gaps thereof. This will develop a more comprehensive risk model or risk register in turn will facilitate and enhance the process of risk identification and assessment and hence setting up appropriate mitigation measures. This also highlights and monitors the gap between petro-strategies and ERM strategies and any risks thereof, which could go unidentified.
- (6) *Uphold the corporate risk register across the business value chain.* Develop a strategic internal audit plan using the corporate risk register thereby having a prioritized audit coverage designed to render independent assurance as to the adequacy of risk management arrangements.
- (7) *Manage the entity's RQ with appropriate risk communication.* Promote a risk-focused culture, by declaring the ERM initiative in the company's vision and mission statements to foster risk discipline as a business value of the entity leading to better awareness. Risk awareness is a powerful tool because incumbents who understand the company's approach tend to self-align.
- (8) *Establish unequivocal risk preferences across the board.* Set out a common risk language conveying a threshold for material risks for processes across the upstream and downstream business value chain, thereby board's risk appetite is openly expressed.

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- (9) *Instigate a pragmatic bottom-up and top-down approach to risk ownership.* Introduce incentive scheme for improved risk ownership and promoting bottom-up approach whilst retaining the top-down approach. Risk policy should include a common investigative policy for incidents and a common incentive policy for efficient and effective risk response and pursuing opportunities as well.
- (10) *Embed smart risk culture by integrating ERM with strategy planning process.* Exploit the natural links of ERM and strategy planning. ERM as a strategic business driver should examine how well a petro-strategy will perform under different scenarios and events. ERM must look closely at scenarios and include “all risks,” where the petro-strategy could perform so poorly that it could potentially result in significant losses, destruction of shareholder value, or lead to damaged corporate integrity and corporate reputation.

This study sheds light on the parameters which affect the efficiency and effectiveness of the ERM system; approach to implement such a system in the GCC oil and gas sector; while expressing the location of the ERM maturity level along the risk continuum; and recommends a practical best practice approach towards better implementation. This study should provide an answer for the stakeholders to their questions: “what went wrong?” and “how can we do it better?” with respect to the ERM implementation in the cases.

The immediate contribution of the study is to contribute its mite to the existing “body of knowledge” in ERM so as to steer the way forward for an improved understanding and implementation of the ERM system within the precincts of the oil and gas industry. Being a study addressing a “strategic industry,” the stake holders of this study are the shareholders, management and the board of directors of oil and gas entities and regulatory bodies. This will also benefit strategic think tanks, scholars in future studies, and corporate planning cell implementing long-term strategy for business sustainability in the oil industry, risk managers, internal auditors, management consultants, and academia. This study is perhaps the first of its kind to report the results of a study examining ERM practiced by the oil entities in the Middle East, particularly the GCC entities. This research could lead to some interesting future studies and the future directions for research suggested are:

- With a basis of similar framework of study, one can extend the empirical data from other oil and gas economies.
- The range of inter-disciplinary subjects being intertwined in the ERM process and ERM function *per se* offers new areas of research.
- Further research gaps can be addressed by taking a similar approach for an in-depth analysis with a unique theme.
- An interesting possibility would be to evaluate if the foreign policies of a country match with the ERM strategy of the NOC.
- The basic issues explored in the study could be approached with the aid of alternative research methodologies generating numerical data amenable to rigorous quantitative analysis.

Finally, this study is an attempt to push the boundaries of knowledge in the theoretical area of ERM in the oil and gas industry and the practical area of the strategic management of oil and gas industry. Furthermore, this paper also provides useful and timely analysis of the GCC oil industry from the perspective of implementation of an ERM framework which is a contemporaneous business priority item in most entities in the GCC hydrocarbon sector.

6. Conclusion

The study concludes that the level of understanding of the nature of ERM varies significantly between the cases and across the various sections of the entity. Effective ERM requires an interdisciplinary approach and it is dominated by a single discipline in all the cases. ERM requires capabilities not only to be a generalist in terms of understanding the hydrocarbon value chain, but also to be a specialist with a focus on risks to develop and manage a portfolio of risks. It requires the collaboration from technical, strategic, finance, legal, IT, EHS, quality, human resources, marketing, and as well as plant security; which are necessary for the paradigm shift, emerging through convergence of the shareholder value models and the risk governance models leading towards corporate reputation management. As much as ERM is essential to better managing uncertainty (both risk and opportunity) and optimizing performance, it is not a panacea, but nevertheless builds business resilience. Building such a framework requires a number of interrelated components that work in harmony and iteratively, evaluating transient conditions, support commitment, execution, goal congruence with the appropriate petro-strategies and risk strategy, and sustainability of ERM as an integrated risk management framework in the oil and gas entities. If properly implemented, ERM initiative in the cases will mature over time from tactical solution to a strategic imperative with the ultimate goal of improved performance. In its ongoing search for potential, ERM will produce results from “risk elimination” to “preparation” for possible problems to “opportunity exposure.” NOCs in the Middle East are evolving, seeking an elusive balance between their national and commercial missions; and ERM when applied rightly as recommended in the best practice approach which comes out of this study will produce the desired results, enabling them with the technical and business skills to develop responsibly the immense hydrocarbon resources entrusted to them.

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<i>Case 1: Bahrain</i>	<i>Case 2: Kuwait</i>	<i>Case 3: Oman</i>
<p>BAPCO catering for upstream oil and gas, and downstream oil</p> <p>Bahrain National Gas Company catering for downstream gas</p>	<p><i>Major entities in the business value chain</i></p> <p>Kuwait Petroleum Corporation controls oil and gas activities, producing 100 percent of oil and gas production.</p> <p>Kuwait National Petroleum Company subsidiary has 100 percent of national refining capacity and the fuels distribution segment</p>	<p>Petroleum Development Oman that holds more than 90 percent of the country's oil reserves, and accounts for more than 90 percent of production</p> <p>Oman Refineries and Petrochemicals Company operate two refineries.</p> <p>Oman Gas Company is the major gas transportation and distribution entity</p> <p>Oman Liquefied Natural Gas is a joint venture (JV) entity engaged in the business of producing and selling LNG</p>
<p>Strategic direction elaborates the spirit of the business statements, via business purpose, mission, vision, and values</p> <p>Compliance to management systems like – quality environment, health safety, and information security</p> <p>Strong CSR with a passion for safety, cleaner world, and localization initiatives</p> <p>Overseeing authority by the National Oil & Gas Authority – regulatory body</p>	<p><i>Corporate ethos</i></p> <p>Strategic direction elaborates the spirit of the business statements, via business purpose, mission, vision, and values</p> <p>Compliance to management systems like – quality environment, health safety, and information security</p> <p>Strong CSR with a passion for safety, cleaner world, and localization initiatives</p> <p><i>Corporate governance framework</i></p> <p>Overseeing Authority by the Supreme Petroleum Council (SPC) – policy body</p> <p><i>Upstream petro-strategies</i></p> <p>Kuwait oil industry is aiming for ambitious production target with less optimism from political front. The following upstream petro-strategies have been set out:</p> <p>Negotiating performance-related contracts with IOCs</p>	<p>Strategic direction elaborates the spirit of the business statements, via business purpose, mission, vision, and values</p> <p>Compliance to management systems like – quality environment, health safety, and information security</p> <p>Embraces the three pillars of sustainable development, i.e. people, planet, and profit</p> <p>Overseeing Authority by Oman's Ministry of Oil and Gas – regulatory body</p>
<p>Bahrain oil industry is aiming for early recovery and also hoping to increase its production. The following upstream petro-strategies have been set out:</p> <p>Soliciting International Oil Companies (IOCs) for offshore blocks and onshore deep gas blocks through exploration production sharing agreements (EPSA)</p>	<p>Kuwait oil industry is aiming for ambitious production target with less optimism from political front. The following upstream petro-strategies have been set out:</p> <p>Negotiating performance-related contracts with IOCs</p>	<p>Oman oil industry is hoping for swift recovery with a potential to reverse the existing trend. The following upstream petro-strategies have been set out:</p> <p>Utilizing enhanced oil recovery techniques for existing blocks to reverse decline</p>

(continued)

Table AI. Qualitative information about the cases

Table AI.

<p>Soliciting IOCs for existing onshore blocks through incremental development production sharing agreements</p> <p>Considering gas import option from Iran</p>	<p>Expand overseas forming international subsidiaries</p>	<p>Soliciting IOCs for new discoveries</p> <p>Extensions to existing concessions</p> <p>Developing gas projects in Iran and importing to Oman</p>
<p>Bahrain oil industry is also aiming for potential expansions while exploring markets with new products. The following downstream petro-strategies have been set out:</p> <p>Constructing the world's largest hydrocracking plant (100,000 bpd) for producing LSD/ULSD specifications</p> <p>Building lube base oil plant through JV partnership</p> <p>Constructing a new naphtha cracker in the near future</p> <p>Privatization of the local retail fuels network</p>	<p><i>Downstream petro-strategies</i></p> <p>Kuwait oil industry is also aiming for boosting refining capacity with less optimism from political front. The following downstream petro-strategies have been set out:</p> <p>Constructing a new refinery (615,000 b/d) at Al-Zour which is currently under re-tender due to a political stalemate</p> <p>Capacity expansions for ULSD fuels to cater to new market segments</p>	<p>Oman oil industry is also engaging with costly expansions while taking the downstream way. The following downstream petro-strategies have been set out:</p> <p>Constructing an integrated refinery and petrochemical complex</p> <p>Further expansion plans on recently constructed refinery in Sohar</p>
<p><i>Case 4: Qatar</i></p> <p>Qatar Petroleum, owns all downstream oil interests, negotiates E&P agreements, shares in upstream projects and is involved in LNG and GTL schemes</p> <p>Qatargas and RasGas are responsible for the production and marketing of LNG</p>	<p><i>Case 5: Saudi Arabia</i></p> <p><i>Major entities in the business value chain</i></p> <p>Saudi ARAMCO accounts for virtually all oil and gas production and owns refineries either outright or through JVs with IOCs</p>	<p><i>Case 6: UAE</i></p> <p>Abu Dhabi National Oil Company, dominates the Abu Dhabi upstream oil sector and UAE in general</p>
<p>Strategic direction elaborates the spirit of the business statements, via business purpose, mission, vision, and values</p> <p>Compliance to management systems like – quality environment, health safety, and information security</p> <p>Strong CSR with a passion for safety, cleaner world, and localization initiatives</p>	<p><i>Corporate ethos</i></p> <p>Strategic direction elaborates the spirit of the business statements, via business purpose, mission, vision, and values</p> <p>Compliance to management systems like – quality environment, health safety, and information security</p> <p>Strong CSR with a passion for safety, cleaner world, and localization initiatives</p>	<p>Strategic direction elaborates the spirit of the business statements via business purpose, mission, vision, and values</p> <p>Compliance to management systems like – quality environment, health safety, and information security</p> <p>Strong CSR with a passion for safety, cleaner world, and localization initiatives</p>

(continued)

<p>Overseeing authority by Ministry of Energy and Industry – regulatory body</p>	<p>Overseeing authority by the Supreme Council for Petroleum and Minerals Affairs – regulatory and policy bodies</p>	<p>Overseeing authority by the SPC – policy body</p>
<p>Qatar oil industry is attracting interest for rising oil production amidst vast gas reserves. The following upstream petro-strategies have been set out:</p> <p>Soliciting IOCs for new offshore and onshore blocks through EPSA</p> <p>Bottlenecking projects for capacity expansions</p> <p>Emphasis on advanced LNG contracting strategy and LNG trading</p>	<p><i>Corporate governance framework</i></p> <p>Saudi Arabian oil industry is in fact leading the way its vast oil reserves. The following upstream petro-strategies have been set out:</p> <p>Soliciting IOCs for an upside in the “vast emptiness” or “the empty quarter”</p> <p>Vast development plans and expansion projects</p> <p>Soliciting IOCs for pursuing gas development projects forming consortia</p>	<p>UAE oil industry is gathering pace in oil production amidst vast sour gas reserves. The following upstream petro-strategies have been set out:</p> <p>Soliciting IOCs for new offshore and onshore blocks through EPSA</p> <p>Reforming the existing concessions system for improving competition amongst the IOCs</p> <p>Developing LNG business segment</p>
<p>Qatar oil industry is currently facing a pressure due to conventional oil production amidst vast gas reserves. The following downstream petro-strategies have been set out:</p> <p>Expansion projects on refinery capacity</p> <p>Enhancing condensate recovery to feed petrochemical segment</p> <p>Emphasis on advanced LNG contracting strategy and LNG trading</p>	<p><i>Downstream petro-strategies</i></p> <p>Saudi Arabian oil industry is the biggest and is aiming still higher. The following downstream petro-strategies have been set out:</p> <p>Constructing an integrated refinery and petrochemical complex</p> <p>Boosting refining capacity through a new refinery under construction</p> <p>Capacity expansions for ULSD fuels to cater to new market segment</p>	<p>UAE oil industry is developing on its upside potential in refining capacity and refined products exports</p> <p>The following downstream petro-strategies have been set out:</p> <p>Constructing an integrated refinery and petrochemical complex</p> <p>Boosting refining capacity through a new refinery under construction</p>

Table AI.

Standardization	Integration	Centralization
1 "Power is spread out across the risk owners in the business value chain"	"Power is spread out across the risk owners in the business value chain"	"Power rests at a single source in the overall business value chain"
2 "Management decision is less proactive and more emphasis is on compliance to standards"	"Well coordinated management decision with quicker and efficient risk response"	"Management decision is slower and hence slower risk response across the risk spectrum"
3 "Standards may be implemented in part and not in full resulting in conflicts and contradictions across risk categories"	"Management supervises operational risks with least interference from top management, allowing them to reach out to achieve overall corporate objectives"	"More interference from top management in operational risks, when they should ideally be engaged with long term strategic risks"
4 "One world language – with better risk ownership; standardized risk response but could lack creativity"	"Encourages efficient/better risk communication"	"Does not allow efficient risk ownership as managers may not acquire requisite exposure and acceptance of risks"
5 "Repression of management creativity"	"Better goal congruence achieved across and through out the entity"	"Silo management resulting in conflicts and contradictions"
6 "Unequivocal top-down approach"	"Bottom-up (360° feedback)"	"Unequivocal top-down approach"
7 "Standardized dashboard indicators of KRIs"	"Better analyses and monitoring of KRIs through integration"	"Biased analyses and monitoring leading to unreliable KRIs"
8 "Fairly motivated management"	"Highly motivated management"	"Less motivated management"

Table AII.
Risk governance characteristics in the cases

About the author

K. Muralidhar holds a PhD (Management) in Petroleum Management from the University of Petroleum & Energy Studies, India; MBA from the University of Strathclyde, Glasgow, UK and a Bachelor Degree in Mechanical Engineering from the Bharathidasan University, India. He has about 18 years of industry experience and is currently working at BAPCO as a Senior Internal Auditor. He has worked in various major companies and was involved in project development, project financing, engineering, and contracts management activities in the energy and oil and gas sectors. Over the past ten years, his career engagements are generally involved with various business development initiatives and a variety of specialist roles in corporate services including board assurance services. He is a Member in the Graduate Management Association of Australia and the Australian Institute of Company Directors. K. Muralidhar can be contacted at: murali@bapco.net

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