

ABSTRACT

Enterprise Risk Management application in the Oil Industry: A study towards a better implementation in the Middle East Oil Industry

This study appraises the current status of Enterprise Risk Management (ERM) in the Middle East Oil & Gas Companies and the study has focused on the oil and gas entities of GCC countries (*Gulf Co-operation Council comprising of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates*). The thesis empirically investigates the GCC Oil Industry through six CASE studies, encompassing the six countries in the GCC. Through a Comparative Case Study Analysis, this study 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 study also discusses the Best Practice approach for successful ERM implementation in these companies. The study recommends a ten-point practical, region-specific & systematic Action Plan for the GCC Oil & Gas Industry that can transform the existing ERM Models to a mature & robust framework.

Since ERM is relatively a new concept and a new corporate activity and is also yet to be fully implemented in most organizations, apart from banks and insurance companies, there has been little academic research about its accomplishments and implementation challenges especially in the oil industry. Furthermore, owing to the significant opacity of the National Oil Companies of the region and lack of explicit data has discouraged academic analysis in these entities. This study is *possibly the initial study* exploring the scope and extent to which Middle East Oil and Gas Companies have embraced an ERM framework.

The major focus on the ERM Framework under study is the ERM Framework promulgated by COSO ('Committee of Sponsoring Organization' of the Treadway Commission, 2002) known as 'COSO ERM Framework'. The Committee of Sponsoring Organizations of the Treadway Commission has released its Enterprise Risk Management-Integrated Framework describing the essential components, principles and concepts of enterprise risk management for all organizations. The *principles-based-framework*, built on the foundation of COSO's Internal Control-Integrated Framework, provides Boards of Directors and Managements a map for identifying risks, avoiding pitfalls and seizing opportunities to grow stakeholder value (Dun & Bradstreet). 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 & risk management.

The objectives of this study are the following:

1. To understand the nature of ERM within the GCC Oil and Gas companies.
2. To identify the motivators of ERM within the GCC Oil and Gas companies.

3. To evaluate the structure of ERM for effective implementation within the GCC Oil and Gas companies.
4. To identify the most significant challenges for its implementation within the GCC Oil and Gas companies.
5. To investigate the performance metrics of ERM in the GCC Oil and Gas companies.
6. To recommend the best practice approach for successful ERM implementation.

The thesis is organized into the following seven chapters.

CHAPTER-1: Introduction

The thesis introduces the evolution of the ERM paradigm by presenting a vignette into the evolution of the management thinking within the precincts of the Board Room on corporate risk management. The key drivers and trends in ERM are established; primarily driven due to corporate governance guidelines, regulatory and rating agencies requirements from various perspectives i.e., General Industry (*Turnbull, 1999; Sarbanes-Oxley Act, 2002*); Financial Industry (*Basel II Accord, 2004*); Insurance Industry (*Solvency II Directive, 2002*) and Rating Agencies (*S&P, Moody's, Fitch*). Furthermore, wake up calls from corporate disasters (*Enron, WorldCom*); reports of tangible benefits from early adopters (*J.P. Morgan, Duke Energy*) and global initiative on corporate governance, internal control and risk management have given the impetus to establish an ERM framework. ERM now is a hot topic and a contemporary area in traditional risk management discipline. COSO ERM framework is widely used in many organizations and it is also the most commonly used starting point for implementing an ERM initiative.

CHAPTER-2: Literature Review

The thesis presents an overview of the significant literature published on works in ERM, providing relevance to the area of research and to convey what ideas have been established and contributed to the 'Body of Knowledge' thus far. The seminal idea in the creation of a new theory on risk management promulgated by COSO and the underlying principles of ERM through the 'COSO Cube' and its risk management process thereof is presented. This landmark model serves as a broadly accepted benchmark to help organizations enhance their risk management efforts (IIA, USA). COSO ERM which is rapidly becoming a preferred model (Minter, 2006; Leech, 2006; Rittenberg, 2006), 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 *et al*, 2004; Quinn, 2006; Mc Namee, 2004; Moeller, 2007; De Loach, 2003).

A wider spectrum of issues related to understanding of ERM itself and the multi-disciplinary involvement of the process are essential to understand this emerging business practice which is now a Board Room priority (KPMG Survey, 2008; Shaw, 2005; Lam, 2003). 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 & gas industry and also specifically the Middle East Oil Industry. Several industry specific reports, presentations, articles published by Management Consultants (*Big Fours*), Specialty Consultants (AON, Protiviti, Mercer, Tallinghast-Towers Perrin, Booz Allen, Mc Kinsey) and other professional bodies (*IMA, ACCA, IIA, GARP, PRMLA, Actuarial Societies*) have been reviewed to provide a description, summary and critical evaluation of each work (Cooper, 1998; Galvan, 1999).

Based on the literature survey, it is evident that historically the management of risks has tended to be in silos (Shaw, 2005; Lam, 2003). There were serious over and under management of key risks because of the lack of an overall unified risk management effort. Additionally risks could go unidentified and fail to be managed. ERM is a new paradigm for managing Business Risks (Walker, Shenkir & Barton, 2002), 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, 2007) and is purposefully broad in its definition (COSO ERM, 2004; Moeller, 2007; Kloman, 2005; Lam, 2003; Rittenberg, 2007). Furthermore, while some organizations in various sectors are stimulated by corporate governance best practices (SOX, 2002; Moeller, 2007; Moeller, 2004; Turnbull, 1999; Carey, 2000) to consider establishment of an ERM system, Minsky (2006), Fineberg (2006), Palast (2006), Lewis *et al* (2005), and Blanco & Regan (2006) have vividly illustrated the need for a proactive ERM program in the oil & gas industry.

A number of studies and prophecies (Lam, 2003) have concluded that ERM manages all business risks using an integrated and holistic approach (Mc Namee, 2004; Miccolis *et al*, 2003) by considering a portfolio of risks (Ching, 2007; Niehaus *et al*, 2004). ERM seeks to strategically consider the interactive effects of various risk events with the goal of balancing an enterprise's portfolio of risks to be within the stakeholder's appetite for risk (Beasley *et al*, 2007). The *need for additional research* has been identified by Stulz *et al* (2006) in their studies with respect to implementation of ERM and its metrics. Furthermore, most of the existing studies acknowledge that the goal of ERM is to create, protect, and enhance shareholder value by managing the uncertainties surrounding the achievement of the organization's objectives (Moody, 2005), but lacks practical advice in terms of its implementation (Tueten, 2005). Clearly, this suggests that *there is scope here for a great deal of more research to understand the implementation requirements of ERM*. As risks affect entities holistically, they need to be managed in a holistic manner beyond disciplinary boundaries (Sobel & 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 & Reding, 2004) and show possible future exposures to risk (Mc Name, 2004). However, these studies have not shed light on the parameters which affect the *efficiency* and *effectiveness* of the ERM system (Berlin, 2004; Walker & Shenkir, 2006; Lewis, 2005; Marie *et al*, 2007; Blanco & Regan, 2006) and also on the *approach to implement* such a system, especially in the oil & gas sector, expressing the location of the ERM maturity level along the risk continuum (Walker & Shenkir, 2007).

Current status of ERM has been studied by Marie *et al* (2007), in business organizations in Dubai. The study does not fully add credence to this academic study as their study is not focused at the oil & gas entities, which are all unique as National Oil Companies dealing with sovereign assets in a Strategic Industry (Broomley, 1991).

Several regional reports advocate four *key risks* in the GCC business environment that include inflation, inadequate infrastructure, property price bubbles and oil price volatility. While Boer & Turner (2007), state that the challenges before the GCC states are substantial in the hydrocarbon sector, but nevertheless, oil revenues will serve as a catalyst to break away from the *boom-and-bust cycles* that volatile energy markets create. This key risk is the singular opportunity to diversify their economies beyond hydrocarbons through appropriate reforms.

Many analysts suggest *risks and challenges* in GCC Oil Industry include strategic challenge due to regional geopolitics (Marten, 2008; Caruso, 2006), widening gap in the skills gap (Booz Allen), operational challenge in GCC wide co-operation which also include the co-operation in energy (Asoomi, 2008) and common currency initiative supposedly to combat inflation (Handy *et al.* 2008a), extremes of laissez-faire culture in a traditional society (Elmusa, 1997; Albers, 1989; Jerisat, 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; Handy *et al.* 2008b; HIS/CERA Upstream Capital Cost Index) and the looming threat of a control driven failure due to weak corporate governance (Ditcham, 2007) that might occur within 2010.

Although ERM is an Anglo-Saxon phenomenon and to a degree Australasian (Merrifield, 2001; Leech, 2006), entities in other countries seem to have embraced ERM system and focused on COSO ERM implementation (Lam, 2006). Its overreaching nature appears overwhelming for some organizations (Ballou & Heitger, 2005) and yet no studies exist by 'exploring the business environment for better implementation of ERM system in the Middle East oil & gas companies', investigating the extent to which these entities manage risks in a truly holistic manner. Critical synthesis (Hart, 2000) of previous research, commentaries, articles and reports have logically guided the researcher to the research questions.

CHAPTER-3: Research Methodology

The thesis establishes the technique to the procedural framework within which the research is conducted. The following research statement has been adopted as the research topic: '*Enterprise Risk Management (ERM) application in the Oil Industry: A study towards a better implementation in the Middle East Oil Industry*'.

Based on the establishment of research questions derived from the Literature Review (Chapter-2), this study attempts to fill the gap by exploring the following research questions in the GCC countries, to recommend the best practice approach for successful ERM implementation.

1. *What is the understanding of the nature of ERM within the oil & gas industry?*
2. *What are the value drivers to develop ERM in the oil & gas companies?*
3. *How do oil companies structure ERM for effective implementation?*
4. *What challenges do oil & gas companies face in implementing ERM?*
5. *How do oil & gas companies measure the performance of ERM?*

The research study will examine the ERM system in the oil & gas sector through a *Comparative Case Study Method* (Kasanen & Suomi, 1987; Yin, 1989; Smith, 1990; Huber & Van de Ven, 1995; Yin, 2003; Eisenhardt & Graebner 2007). The scope of the research study pertains to the GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates).

The research explores ERM system in the GCC oil & gas industry by presenting case studies of six GCC countries and attempt to answer the five research questions, while addressing the two research objectives. In order to investigate the answers for the research questions and provide the best practice solutions thereof, the following aspects (variables) are compared in the six CASES (Units of study).

- *Comparison of perception of ERM.*
- *Comparison of driving forces for ERM.*
- *Comparison of ERM model as practiced.*
- *Comparison of structural, operational & technical challenges in implementing ERM.*
- *Comparison of the means of measuring the performance of ERM.*

Yin (1989, 1993) defines case study as an empirical enquiry that 'investigates a contemporary phenomenon within its real life context, when the boundaries between the phenomenon and context are not clearly evident, and in which multiple sources of evidence is used.' Huber & Van de Ven (1995) recommend to the scholars and researchers engaged in organizational studies to utilize the comparative case study method to understand the dynamics of organizational life and to *developing and testing theories* of organizational adaptation, change, innovation and redesign. Remenyi *et al* (2000) further add that the philosophy behind the case study is that sometimes only by looking carefully at a *practical, real life instance* can a full picture be obtained of the actual interaction of variables or events. The case study allows the investigator to concentrate on specific instances in an attempt to identify detailed interactive processes which may be crucial, but which are not transparent to the large-scale survey. They conclude that the aim of this method is *to provide a multi-dimensional picture of the situation* under study. When a phenomenon can be studied in a *real life situation*, the case study is considered to be a research strategy of greater relevance. Pettigrew (1973) has emphasized the use of case studies often studying one case in greater depth to deduce a theory or apply a general model to explain empirical instances. Eisenhardt & Graebner (2007) state that 'a major reason for the popularity and relevance of theory building from case studies is that it is one of the best of the bridge from rich qualitative evidence to mainstream deductive research.' The case study is built around a deductive approach where the researcher wants to find information that suit the existing theories. The topic

on ERM is akin to the various works carried out by such renowned organizational researchers. Consequently, the proposed Research Methodology in this academic work utilized is the *'Comparative Case Study Method'* for further explorations.

The *'variables to the study'* focus on the ERM activities in the GCC Oil and Gas Industry. The study attempts to present a comprehensive picture of the characteristics of the ERM initiative in the entities and examine their risk management framework. 'Unit of analysis' and 'time boundaries' are critical to the research issues and needs to be related to the way the research questions have been defined. The unit of analysis normally refers to the type of organization that is to be studied. Time boundaries are essential as they help determine the limits of evidence collection and analysis (Yin, 2003). In this thesis, the *embedded multiple case studies* methodology is used to further explore the ERM application in the Middle East Oil Industry towards a better implementation of the same; with a defined *time boundary between 2005 up until 2010*.

Case studies typically combine data collection methods such as archives, interviews, questionnaires and observations. The evidence may be qualitative, quantitative or both Eisenhardt (1989). To carry out the research, a semi structured type of interview was taken up to have a mix of interviewing, observing and analyzing strategy to primary data collection. Furthermore, appropriate Check Lists were used that was designed around the 8 categories in the 'COSO Cube' with respect to the Oil & Gas Industry. It should be noted that most companies in GCC are National Oil Companies (NOCs) and they do not easily provide information and data for public use. Most of the participants contacted were C-suite executives or equivalent. Some of the C-suite executives have turned down the request for information as a matter of company policy. In such cases it was difficult to obtain and validate the data. However, in such cases, inputs from middle management or equivalent staff and personal contacts from certain independent consultants advising these entities were pursued to validate the analyses.

The plausible limitations of this study could be:

- The scope of the research study pertains to the GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates). Geographically, Middle East comprises of other countries which are rich in their hydrocarbon reserves like Iraq and Iran. There are valid reasons for not considering the above countries.
 - a) Although Iraq is an OPEC founder member, this study does not consider such a major participant. Due to many conflicting Iraqi oil reports ever since the 2003 invasion of Iraq, it has almost rendered it impossible to take up a study of this nature.
 - b) Information on the Iranian hydrocarbon industry is not easily available in the public domain owing to the political sensitivity, although Iran is a major contender in the industry and also an OPEC founder member.
- There are limitations in terms of the research methodology used. The use of case study has been made precluding the use of other direct methods such as survey questionnaires.
- Based on the case study method, the primary data presented in the study is qualitative. The quantitative data is derived from secondary sources and carries

the disadvantages typically associated with such data. For instance, some of the secondary data may be outdated, partly irrelevant or left partially unutilized for the purpose of analysis.

- 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.
- This study explores and compares the industry structure of oil sector in GCC countries, for this purpose selected individual firms in the upstream and downstream oil sector are discussed.
- In some CASES participants from only the gas sector have responded and there was no response to validate variables of the CASE study in the oil sector in such CASES.

The immediate contribution of the study first is to contribute its mite to the existing 'Body of Knowledge' in Enterprise Risk Management so as to steer the way forward for an improved understanding and implementation of the ERM system within the precincts of the Oil & Gas industry. The stake holders of this study of the ERM system are the shareholders, management and the board of directors of oil & gas companies, as well as the nation at large being a study addressing a 'Strategic Industry' (Bromley, 1991). The study will also benefit Strategic Think Tanks, Scholars in Future Studies, Corporate Planning cell implementing long-term strategy for business sustainability in the oil industry, Risk Managers, Internal Auditors and Board of Directors of Oil Companies, Management Consultants at large and Academia.

Perhaps this study is the *first of its kind* to report the results of a study examining ERM practiced by the oil companies in the Middle East, particularly the GCC companies. This research may lead to some interesting future studies. Some of the future directions for research are suggested below:

- There is ample opportunity to evaluate the ERM framework in the oil & gas industry due to the range of inter-disciplinary subjects being intertwined in the ERM *process* and *function* per se.
- This study offers a full range of opportunities for future studies to researchers, basis this similar framework of study, by extending empirical data from other oil & gas economies in the world.
- 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 the country match with the ERM strategy of the National Oil Company.
- 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.

On the whole, the research study can be considered as an attempt *to push the boundaries of knowledge in the theoretical area of Enterprise Risk Management in the Oil and Gas Industry and the practical area of the Strategic Management of Oil and Gas Industry.* After all, the present day modern management thinking in Risk Management has evolved from a whole range of influences over a period of time. As a consequence, this study can

lend itself to a plethora of opportunities for future studies to researchers in management thinking within the precincts of the *Board Room* discussions in the oil and gas industry.

CHAPTER-4: The GCC Oil & Gas Industry

The thesis presents an overview of the GCC Oil Industry, socio-political ramifications, GCC hydrocarbon reserves estimates and GCC economy. The purpose of this section is to appreciate the risks and challenges in the GCC's business environment and in particular the GCC hydrocarbon sector.

One of the contentious parameters is the Reserves-to-Production ratio as it depends largely on the geologic, technological, economic and political limitations (Feygin *et al.*, 2004; Campbell, 2007) and the *National Depletion Policies* (Handy *et al.*, 2008b; Bromley, 1991) of the GCC oil companies. However, the hydrocarbon rich countries of the GCC are of enormous strategic importance due to their overwhelming importance in the global supply of fossil energy. *Accidents of geology* (Noreg, 2002) have left this region with abundance of oil and gas reserves and with comparatively low production cost. Therefore, Middle Eastern oil remains of vital political and economic importance to both American and other world powers, including the developing economy. Many studies have concluded that GCC's importance is even bound to increase in the 21st century.

Oil-producing region of the Middle East have been endowed with vast hydrocarbon reserves and the Proved Oil & Gas Reserves of GCC seem destined to play an increasingly influential role in meeting world energy demands. Oil Industry has been nationalized in most oil-producing regions of the world including the Middle East and is regarded as a Strategic Industry. The upstream and downstream entities are entrusted to National Oil Companies (NOC) in the GCC countries. NOCs 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, GCC oil entities are exposed to the effects of *OPEC intransigence*. Therefore, NOCs are not *just companies*, but they are *politically sacred* entities (Hartshorn, 1993; Aburish, 1997; Stone, 1977; Noreg, 2002; Val erie *et al.*, 2006) involved in the business with a *strategic commodity* in a *Strategic Industry* (Bromley, 1991; Heiss, 1997).

The GCC's *economic fundamentals* (massive energy reserves, rapid population growth, financially sound public sectors with long-term capital expenditure programmes) are sound and enjoy an economic boom. Economic growth is the increase in real GDP per capita over time. GCC's economic growth is contributed by the *petrodollar monetization* which is a key driver of fresh liquidity in the GCC banking system/ economy. Although GCC countries are trying to reduce their dependence on the oil economy (through their Structural Reforms) but it always revolves around their rich hydrocarbon resources. Oil and gas accounts for about a third of the GCC's GDP, three-quarters of GCC government revenues and three-quarters of exports and this dominance naturally makes the economies

of the GCC relatively synchronized. However, many analysts state that *inflation has taken some of the sheen off the economic boom* scenario in the GCC.

It is a fine balancing act between Fiscal Policy & Monetary Policy that has to be executed by the GCC leaders with two main tools in managing the economy virtually absent *traditionally*:

- *Zero tax policy* as GCC is a 'tax haven': while tax is one of the main tools of the fiscal policy.
- *Ineffective control on interest rates* due to GCC's 'currency peg' to the US dollar and interest rates are virtually out of the hands of the GCC Central banks; while interest rates is yet again one of the tools of the monetary policy.

Consequently, the main economic tool for GCC governments is fiscal policy. The role of fiscal policy is heightened by the fact that hydrocarbon revenues are accrued to the government, and it is through government spending that this revenue enters into the economy. Government spending is an important driver of both private consumption and investment.

According to Middle East Economic Digest (MEED) reports and Gulf Finance House (GFH) reports, the GCC is still expected to report economic growth in 2009 that will outperform the G7 group of industrialized nations, and match its emerging market peers. Furthermore, windfall oil inflows accumulated over the past six years will serve to cushion against a systemic crisis in 2009-10.

Based on the review of the GCC's business environment and in particular the hydrocarbon sector, there are endogenous and exogenous factors (OECD, 2002; Pearl, 2000) triggering risks and challenges to an entity (COSO, 2004) in its business environment.

Exogenous factors that trigger some of the key risks are however at a macroeconomic level, and are primarily policy level matters and a suitable recourse is decided by the Sheikhdoms depending upon the level of exposure by the individual states and to a greater extent derived from the size and prestige of the state, via appropriate reforms and policies. Noreg, (2002); Aburish (1997) and Hawary (2002) have also acknowledged that energy market is exposed to Terrorist, Security, Economic and Price risks; which are however more meaningful at a macro front. The risks triggered from socio-economic and geo-political issues are exogenous to the oil companies.

Endogenous factors comprise of institutional constraints which include issues of management, technical and operational business processes of the oil companies; and hence are triggers for enterprise risks which are *the best contenders for the application of an Enterprise Risk Management framework*, at least to start with. Val erie *et al* (2006) and Margonelli (2007) have articulated that the Middle East oil titans take pride on their business and technical expertise, rather than on the mixed pressures from the macro front, which are generally left in the hands of the government entities of the Sheikhdoms. Business and technology are the endogenous channels of the oil companies and NOCs strive to improve in their performance excellence models to address predominantly their

local objectives. Val erie *et al* (2006) and Margonelli (2007) have also established an important characteristic in their narration of the NOCs regarding the difficulty in the perception of Middle East Oil Company's style of communication as they are not unequivocal; and with a restricted supply of official information present in the public domain.

CHAPTER-5: Case Studies

The thesis empirically investigates the GCC Oil & Gas Industry through six CASE studies, comprising of the six countries in the GCC. The purpose of these case studies (Units) is to set the background 'to evaluate the most significant aspect of the case study' (Yin, 1994) which is to study the impact of the ERM framework in the corporate governance, business control and strategy development areas of the oil and gas companies in GCC. The following structure of case study has been followed in all the CASES for an easy evaluation in the comparative analysis:

- *Overview of the Business Value Chain*
- *Corporate Ethos*
- *Corporate Governance Framework*
- *Upstream Petro-Strategies*
- *Downstream Petro-Strategies*

The 'variables in the case study unit' include the following:

- *Overview of the Business Value Chain:* This section investigates the Business processes of the oil company via information related to the Company history, Oil & Gas assets, Business Value Chain, Impact on Economy, Industry Forecasts and Key revenue lines.
- *Corporate Ethos:* This section investigates the Strategic Direction of the entity expressed through its Corporate Mission, Vision, Values and Objectives; and Compliance to various Management Systems like Environmental Health and Safety (EHS), Quality Management Systems, Risk Management Systems, Sustainable Development etc.
- *Corporate Governance Framework:* This section investigates the three layers of the entity's Organizational Structure comprising of the Board of Directors, Management and Internal Auditors; while reviewing the entity's initiative in ERM.
- *Upstream Petro-strategies:* This section investigates the company strategy in terms of value chain positioning via ongoing and upcoming projects, contracts, MOUs, Industry activities pertaining to *upstream operations* like Discovery, Development, Exploration and Production.
- *Downstream Petro-strategies:* This section investigates the company strategy in terms of value chain positioning via ongoing and upcoming contracts, MOUs, new projects, Industry activities pertaining to *downstream operations* like Refining & Marketing and Transportation.

CHAPTER-6: Case Study Analysis

The CASE study analyses indicate the following:

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.

The analysis suggests that the most significant driving forces/motivators for ERM in the GCC oil and gas companies are *self fulfilling* by virtue of the strong interconnection between and across the drivers - 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 & Van der Heijden, 2003) that has been repeatedly feeding each other is evident in the nature of the drivers and therefore strategic thinking and corporate expectations are stronger, as a consequence driving a synergy within the entity to shape *Organizational Futures* coupled with *Organizational Foresight* (Burt & Wright, 2006).

However, the analysis suggests that the CASES exhibit inconsistent risk preferences. The limitations in the ERM Framework of the GCC oil and gas companies include the following:

- Ramifications due to a *high degree of subjectivity* in risk assessment with a predetermined probability of failure in a predetermined period of time.
- Weaknesses in quantifying emerging risks for the Petro-Strategies i.e., '*All Risks*' are not considered with a holistic approach to Risk Assessment.
- Unstable Risk Appetite which is varying with the changes in Board members as there is a strong relationship to '*Corporate Culture*'.
- *Unquantifiable risks* lacked a scientific approach to quantify as all the CASES did not have the necessary expertise to handle such situations.

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.

In most CASES, the Internal Audit team does not fully utilize the collation of risks for determining their *Internal Audit Plan*. However, too many Audit Reviews exist in upstream and downstream business processes that are rendered by external and internal parties. Several external audits are covered in refinery operations, finance, IT, legal, geophysical, laboratory, reserves estimate, maintenance, reliability, 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 GCC Oil and Gas Companies 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*. Furthermore, the entities utilize silo type risk management and try to practice ERM within the broader scope of a specific disciplinary silo. The various disciplines, while contributing on ERM, bring their own silo histories and experiences (Aabo *et al.*, 2005; Power, 2005) and believe that they are the most salient business perspective, and try to take control (Kloman, 1992) and alter each other's opinion (Skipper, 2005). This leads to the greatest implementing challenge i.e., *Risk Communication*. While communication is often considered to be a challenge with any emerging topic, a major impediment is due to *personnel attitude* and *corporate culture* in the GCC Oil and Gas Companies which also include expatriate staff, mostly in lower & middle management. This is one of the reasons wherein there is descent in the attitude of middle management levels and they presume that ERM is only a Board or Senior Management priority.

There is soaring rhetoric in the entities in the implementation process of an ERM system but most CASES did not emphasize on the establishment of an *integrated framework model* and the Risk Governance thereof. 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. While the entities had sufficient leeway to absorb the cultural sensitivity of the Middle East, it did not fully tackle the commercial and economic aspects of the business.

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) and it correlates with individual attitude towards risk and gets subsequently associated to the risk culture of the entity. Therefore, under Risk Communication, the following three areas were further articulated in the exploration -

- Risk Communication: Risk culture
- Risk Communication: A common risk framework
- Risk Communication: Across disciplines / departments

Furthermore, participants invariably agreed that Corporate Culture is a major barrier to effective communication.

A very unique aspect that throws a specific challenge in the Oil and Gas sector is the existing scenario on Oil Governance - with fragmented trinity forces of Corporate Governance in oil & gas sector, comprising of *Policy - Regulation - Operations* which directly influence the effectiveness of ERM. This has led to a disjointed Risk Governance framework at an entity (operator) level. The above scenario is applicable to both upstream and downstream oil and gas segment. There is a significant weakness due to the lack of unequivocal demonstration of a comprehensive strategy that does not drive synergy between the building blocks of governance in the oil sector governance. This is a very sensitive area and this causes a typical challenge in terms of *Corporate Culture* which has a direct impact while using a contemporary and sophisticated framework like ERM.

All CASES had a common aspect, as the portfolio of Risk Manager was occupied by personnel from the *Finance background*. The challenges were further intricate due to the need of a multi-disciplinary blend of knowledge in the business. There was a need for holistic understanding of 'all risks' within the upstream and downstream oil and gas business value chain. Risk identification, classification, assessment, measurement and control are different and are *discipline specific*. However, risk culture should instill the need to integrate all these disparate shreds of risk managers (silo management) in the Line Departments.

GCC Oil and Gas Companies have almost typically set out similar Upstream Petro-Strategies and Downstream Petro-Strategies, 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 entities. While the GCC oil and gas companies acknowledge the benefits of ERM implementation as - increased management accountability, better governance practices, greater managerial understanding of and consensus about Corporate Strategy; the chasm between 'Petro-Strategy and ERM Strategy is apparent and greater understanding of strategic risks and operational risks is paramount to the success of the overall ERM implementation.

GCC Oil and Gas Companies have four common and *Principal Corporate Objectives* i.e., *Corporate Social Responsibility, Profitability, Operational Excellence* and *Sovereign Reserves Replenishment*. Several unique characteristics in the GCC industry drive these Principal Corporate Objectives.

- From the Reporting/Financial point of view, the 'maximization of shareholder value' (Power, 2004; Dickinson, 2001, 2005, Lam, 2003) 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 (Arab) society and the grand strategy of the National Depletion Policies.
- From Social point of view, the 'trusteeship between social groups and the value creating national oil company' is linked to the 'Corporate Social Responsibility' extending itself further in terms of environmental protection.

All the above view points have the 'Compliance view point' interspersed in their business efforts.

However, from Risk Management point of view, one of 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 a 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 the GCC Oil and Gas Companies requires 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, in the GCC oil entities, all risk management functions is predominantly tackled from financial perspective and also the position is undertaken by finance personnel. Financial perspective does not consider the behavioural, individual risk preferences, psychological and social aspects. In the GCC scenario, most entities are nor exactly commercially run, but have a large burden in terms of Corporate Social Responsibility; nevertheless, the ultimate objective of ERM is to reduce loss due to potential surprises and exploit opportunities. However, there is no 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 accomplished an *out-of-box thinking* as some of the Petro Strategies seem to even trigger certain immeasurable Project Risks, Contractual Risks, Strategic Risks, Credit Risks and Legal Risks.

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, the 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.

Furthermore, the *spirit of ERM 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 (Val erie *et al*, 2006), unfortunately, ERM is regarded as a '*Business Tool*' and not as a '*Business Driver*' which is attributed to the weaknesses in Risk Communication and the Corporate Culture in the entities. In fact, for the GCC Oil and Gas Companies, similar to the Banking and Insurance sectors, ERM should be regarded as the *Principal Corporate Objective* as well as the *Business Value Driver*.

Improving risk management with a financial perspective is important, but integrating it with operational performance is critical. The analysis suggests that the CASES gravitate towards a *Band Score* method - with High, Medium and Low risk category established. A significant observation is that all CASES had given relatively less attention to the performance of the ERM system.

For Middle East Oil and Gas Companies to embrace a Risk Metric like 'Value at Risk' (VaR), entities should determine certain parameters which contribute in determining VaR i.e., a threshold value, time horizon and probability. Such parameters are difficult to set out in the CASES. VaR is the predominant 'Risk Metric' in other industries, nevertheless, VaR typically is a downside risk measure, and it typically *focuses on losses and not on the lost opportunity*. While VaR is a popular risk metric to aggregate risk across an enterprise, it is also viewed with confusion as a risk indicator for risk measure. A deterministic approach to evaluating risk ignores all soft initiatives or soft measures and heavily depends on numerical measures like frequency, severity etc. Furthermore, participants believed that VaR is more applicable to investment projects and they need to further study this risk metric to confidently apply in the oil industry business processes as their ERM Model matures.

While the ultimate goal of ERM is to help Management in achieving Corporate Objectives (Dickinson, 2001), ERM is also an emerging hot topic (Roberts, 2003; Beasley *et al*, 2007; Deloitte, 2008) and is maturing as a result of initiatives from at least two perspectives (Power, 2004; Dickinson, 2001; Dickinson 2005; Lam, 2003)

- *Finance-driven shareholder value model*
- *Compliance-driven risk governance model*

For the Middle East Oil Companies, when the focus is to increase shareholder value, some of the KRIs demonstrate added value in a tangible form. Participants seem to feel that financial indicators are given importance than non-financial indicators, solely because ERM is driven more from a financial perspective. However, when these entities focus on risk governance, the quandary over value creation is arguable; comparable to the dilemma of measuring the performance of a R&D unit adding value to the core business value chain. Nevertheless, the analysis further suggests that the CASES also utilized many types of Risk Metrics (typical of a silo management approach) and this could lead to integrate the system across the upstream and downstream value chain to perhaps arrive at a uniform Risk Metric like VaR in the future.

CHAPTER-7: Conclusion & Recommendations

The foremost objective of this academic work is to answer the five research questions; and the detailed analyses of the CASES presented in Chapter - 6 reveal the following:

1. This study demonstrates that the understanding of ERM is fairly inconsistent within the Middle East Oil Companies. While the perception considerably differs from one organization to another and also between different disciplines and management echelons, the majority of entities believe that it is Board and Executive Management priority to achieve a robust ERM Framework.
2. This study identifies that the most significant driving forces to develop an ERM Framework in the Middle East Oil Companies are self sustaining by virtue of the strong interconnectivity between the emerging drivers in the Middle East oil industry. The most significant motivators being identified as Corporate Governance, Leadership of the CEO, Good Business Practice, Initiative of the Board of Directors and Internal Audit Recommendation. Other outstanding motivators influencing are Market Competition, Changing Risk Landscape, Investment Community Pressure and Brand Image.

3. The study finds that existing ERM Models in the Middle East Oil Companies spread from a stage of 'completely established framework' with potential to test effectiveness of all components of the ERM Framework, to a stage of being 'under construction' with pilot project and testing in progress. Internal Audit Plan does not necessarily derive their 'Audit Focus' from the 'Corporate Risk Register' while 'Strategy Development' is also not fully aligned to the 'ERM Strategy'. The materiality of the risks is entity-specific and has a strong relationship to Corporate Culture and management ethos thereof. Furthermore, there is no scope for 'Benchmarking the ERM Framework' across the entities as risk preferences vary from one organization to the other. However, there is credence to the fact the initial implementation of the framework is the biggest challenge before the process can reach its full potential and these oil and gas entities have already embarked in their journey in ERM system.
4. This study identifies the following implementation challenges:
 - a) The two most significant Structural Challenges are 'Risk Communication' in terms of a consistent framework and a 'Lack of Risk Awareness at Board level' which are primarily due to cultural barriers and disjointed Risk Governance Framework.
 - b) The two most significant Operational Challenges are 'Determining the Risk Owners' and 'Risk Awareness at lower echelons' which are primarily due to cultural barriers, framework perception and descent amongst lower levels.
 - c) The two most significant Technical Challenges are 'Data Accuracy' and 'Risk Measurement' which is primarily due to the ignorance associated with subjective evaluation and lack of skills to estimate/evaluate risk return scenarios.
5. The study establishes that the most significant Risk Metric in the Middle East Oil Companies is the Band Score generated from Impact / Likelihood Analysis which determines the category of risk. The organizations have clearly differentiated from Key Risk Indicator (*which drives the Operations/Business Value Drivers*) to Risk Metrics (*which indicates a standard unit of measure*). However, the approach to measure the portfolio of risks is not apparent. The integration of risk metrics within the various risk management in silos to a unified risk metric can be viewed as an emerging challenge for these organizations.

In summary, the study concludes that the level of understanding of the nature of ERM varies significantly between GCC oil & gas entities 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.

It is acknowledged by many scholars that '*anonymity is believed to increase the veracity*' of the findings. The case study has revealed a number of differences and inconsistencies between the ERM Framework as espoused in the literature and the existing risk models in the Middle East Oil Industry.

The next objective of this academic work is to recommend the best practice approach for successful ERM implementation in the Middle East Oil Industry. Though ERM is conceptually straightforward, its implementation in practice is not. A lot more investment and progress is needed before many oil and gas entities in the Middle East can claim ERM is strongly embedded in their organizations. In particular, the less tangible aspects of ERM i.e., *risk management culture, capability and tone at the top* was rather underdeveloped than the '*functional structure*' of the framework. Furthermore, in the functional structure of the framework, the complexity of ERM at every level is also daunting, raising many tricky questions in its implementation. The thesis discusses on the region-specific *Change Drivers* that are responsible for developing best practices in ERM implementation.

This study leads to a ten-point, region-specific and practical Action Plan for the Middle East Oil and Gas Companies that can transform their existing ERM Models to a mature and robust framework.

1. 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, ethical standards and without conflicts of interest between policy maker, regulator and operator.
2. 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. Form an effective Risk Committee and the 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. Embrace Risk Based Internal Auditing which is the current best practice, which has superseded both controls based auditing and basic compliance auditing, but still maintains elements of both.
5. Establish an Audit Charter that declares the alignment of the ERM for addressing 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 which 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 go unidentified.
6. 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. 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. Introduce Incentive scheme for improved Risk Ownership and promoting Bottom-Up approach whilst retaining the Top-Down approach.
9. 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.
10. 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. Furthermore, this should also include a common Investigative Policy for incidents & a common Incentive Policy (as mentioned in item 8) for efficient and effective Risk Response and pursuing opportunities as well.

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*. No matter how well designed or mature, even the best ERM framework can only provide a reasonable assurance that the company's strategic objectives can be achieved and their assets and revenue streams protected. This is because no process or system can provide absolute certainty about the future. At the same time, there are limitations inherent in all management processes and certain events will simply be outside of management's control. However, it does not mean to imply that ERM will frequently fail. Rather, applied holistically and effectively implemented, ERM framework should enable management in the following:

- Balancing opportunity and risk
- Enhancing and protecting the entity's reputation
- Embedding continuous process of improved decision-making and performance
- Promoting an environment with fewer negative surprises

Building that framework nevertheless 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 & 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 will produce the desired results, enabling them with the technical and business skills to develop responsibly the immense petroleum resources entrusted to them.