

**YDK 638.38**

**ANALYSIS OF RISK MANAGEMENT PRACTICES IN THE OIL AND GAS INDUSTRY**

*Ilona Mandryk*

*Ivano-Frankivsk National Technical University of Oil and Gas*

*email: jin@nung.edu.ua*

**Introduction**

It is an undeniable fact that risk management the value of firms and may reduce financial distress. The health and safety of employees poses great risk to the oil and Gas industry. Interruptions in oil production caused by fires and accidents easily lead to significant economic losses, and potential hazards to humans and the environment. Wilson and Shlyakter defined the concept of risk and its origins in uncertainty. They identified a number of different types of uncertainty and as part of a review of a number of risk calculation methods; they considered the theory of error and concluded that such error is valuable input to any probabilistic risk analysis.

**Risk Management Theories.** Economic approach to corporate risk management has so far been the most prolific in terms of both theoretical model extensions and empirical research. This approach builds upon classic Modigliani,-Miller and Modigliani (1958) paradigm which states risk management theory finds conditions for irrelevance of financial structure for cooperate value. This paradigm was later extended to the field of risk management. This stipulates that hedging leads to lower volatility of firm value. Rationale for corporate risk management were conducted from the irrelevance conditions and concluded, higher debt capacity. (Miller and Modigliani, 1963), Sarewitz, Pielke, & keykhah, (2003) argued for a disconnect between event risk and outcome risk. The former being the probabilistic risk of an event occurring, while the latter reflects the risk of a certain outcome of an event occurring. They introduced six assertions that are fairly critical of how extreme events are modeled in risk analysis: a recurring pattern in these is that risks need to be viewed from multiple perceptive. Covering the cost of risk, they concluded, does not necessary depend on vulnerability reduction. Taken together, these theories, models and prepositions led to certain but not always explicitly recognized assumption about how managers should manage the corporation .Managerial motivation factors in the implementation of corporate risk management have been empirically investigated in a few studies with negative effect. (Faff and Nguyen 2002; Maccrimmon and Wehrung, 1990; Geczy et al. 1997) notably positive evidence was found by Tufano (1996). Agency theory provides strong for hedging as a response to mismatch between managerial incentives and shareholders interest. In certain industries especially the oil and gas industry, consumer trust in the company being able to continue offering its products in future which can substantially contribute to company value. However the value this implicit claim is highly sensitive to expected costs of financial distress and bankruptcy since corporate risk management

practices lead to decrease in these expected costs. Many of the reasons listed in financial management textbooks for undertaking risks management are informed by potential conflict of interest among the stakeholders, managers and creditors; conflict that were noted by Berle and Means in the 1930's. Therefore stakeholder's theory provides a new insight into possible rationale for risk management. Hall (1997) developed a Risk Management Map to help chart a course for increasing the capability to manage software risk. The Management Map contains five evolutionary stages of risk management capability, defined as:

1) **Problem Stage:** Describes circumstances when risk identification is not seen as positive existing problems.

2) **Mitigation Stage:** Details a shift from crisis management to risk management.

3) **Prevention Stage:** Discusses the shift of risk management as solely a manager's activity to risk management as a team activity.

4) **Anticipation Stage:** Describes the shift from subjective to quantitative risk management, through the use of measures to anticipate predictable risks, that is characterized by the use of metrics to anticipate failures and predict future events.

5) **Opportunity Stage:** This represents a positive vision of risk management that is used to innovate and shape the future. Risks are perceived as an opportunity to save money and do better than planned. Risk, like quality, is everyone's responsibility. A continuous process of identifying, communicating and resolving risks in an open and non-threatening environment is used. Administration that some things are not known are acceptable and allowances are made for their existence using a best-case, worst-case scenario.

**Health and Safety in the Oil and Gas Industry.** Originally the oil and gas industry is one of the riskiest industries when it comes to health and safety of its employees. Interruption in oil production caused by fires and accidents easily lead to huge economic losses and potential hazards to humans and environments. Shrivastava, (1995) reviews the switch from the industrial to postindustrial revolution from a risk perspective. He identifies a change in understanding that production necessarily implies risk. Risk has also proven not to be merely a technical issue but to have a distinct social profile. It has become a functional equivalent of power. Shrivastava clarifies the disregard management paradigms generally have for ecology. He proposes two alternatives, industrial ecosystems and eco centric management. The first considers harmful by-products of operations as potential useful input products of other production processes, while the second focuses on better aligning an organization with its natural environment. Markussen dated several effects on employees' Health that a geological survey can produce. He concluded oil and gas production causes chemicals and physical agent exposure, specifically on drilling mud; petroleum products; treatment chemical; radioactive sources. Markussen recommended that all risks must be.

Identified and managed through wisely incorporated resources in order for quality operation to be long lasting. Verma, Johnson and Maclean (2000) undertook research on the benzene and total hydrogen exposures in the upstream petroleum oil and gas industry and formed several safety concerns. The study was based on the Canadian oil and gas industry and total of 1547 air samples taken by oil companies in various sectors were evaluated. The outcome of the research can be generalized for the whole oil and gas industry around the world. For instance, it was discovered that the percentage of samples are over the occupational exposure limit (OEL) of 3.2 mg/m<sup>3</sup> or one part per million for benzene for personal long-term samples range from 0 to 0.7% in the different sector, and area long-term samples range from 0 to 13%. The findings assist to establish a precaution to the global oil and gas industry that certain operations such as glycol dehydrators should be carefully monitored and there should also be-based monitoring program along with the traditional long-and short-term personal.

### **Conclusions**

The objective of the research was to identify major risks confronting oil refinery. To examine if oil refinery incorporates risk management in their strategic plan and to also identify the challenges they face in the implementation of risk management. After computing and decomposing Risk indicator, it became clear that the most crucial Risks which the refinery is still battling with are foreign exchange exposure resulting in huge debt to the Refinery.

### **References**

1. Holt, A. and H. Andrews,(1993) Principles of Health and Safety at Work, London, IOSH Publishing.
2. Hansson, S. O. (2004) "Fallacies of Risk". Journal of Risk Research, Vol.7,No.3, April 2004, pp. 353-360.
3. Zimmerman, R. "A Process Framework for Risk Communication" Journal of Science, Technology & human Values, Vol. 12, No. 3/4 . Summer- Autumn pp 131-137.
4. Covello, V. and J. Mumpower, "Risk Analysis and Risk Management". An Historical Perspective. Risk Analysis, Mclean, VA: Vol,5, No. 2 , pp. 103-119
5. Keykhah, M. R., Pielke and D., Sarewitz, (2003)"Vulnerability and Risk": Some Thoughts from Political and Policy perspective, Risk Analysis, Mclean, VA, Vol. 23, No. 4.
6. Narco B. W.(2006), Journal of Applied Corporate Finance, volume 18.
7. Petts, J.,(1998) Risk management and communication: decision-making and risk Safety , Reliability and Risk Management, An Integrated Approach.