



## Short Communication

## Necessity to Study of Risk Management in Oil and Gas Industries (Case Study: Oil Projects)

Mojtaba Karami<sup>1\*</sup>, Amir Samimi<sup>2</sup>, Mahsa Ja'fari<sup>3</sup>

<sup>1</sup>Process Engineer & Risk Specialist of Oil and Gas Refinery Company, Iran

<sup>2</sup>Ph.D. of Science in Chemical engineering, Process Engineer & Risk Specialist in Oil & Gas Refinery Company, Iran

<sup>3</sup>Risk & HSE Specialist, National Iranian Oil Production & Distribution Company, Iran

## ARTICLE INFO

## Article history

Submitted: 2020-01-13

Revised: 2020-06-04

Accepted: 2020-06-29

Available online: 2020-06-30

Manuscript ID: [PCBR-2005-1094](#)

DOI: [10.33945/SAMI/PCBR.2020.3.6](#)

## KEYWORDS

Huge Projects

Oil and Gas Industry

Oil Projects

Planning

Risk Management

## ABSTRACT

This paper examines the necessity to study of risk management in oil projects. Annually, a number of large-scale projects face operational problems. Risk management can play a significant role in identifying and taking precautionary measures in this regard. Because the projects of the oil and gas industry have many complexities and uncertainties and therefore, investment in these projects is associated with high risk. Today, however, the use of risk assessment methods and techniques has become very common due to advances in hardware and software. The importance of these projects in the Iranian economy and the need for massive investments in the upstream oil and gas sector of the country, it is necessary to identify the evaluation and prioritize the risks of the upstream oil and gas sector. In the implementation of huge projects, the existence of risk is one of their intrinsic and natural features and identifying and evaluating these risks will help project managers to plan better.

## GRAPHICAL ABSTRACT



\* Corresponding author: **Mojtaba Karami**

✉ E-mail: [karami1984@gmail.com](mailto:karami1984@gmail.com)

☎ Tel number: +(98) 9131099016

© 2020 by SPC (Sami Publishing Company)



## Introduction

Paying attention to economic issues and applying the modern management methods is one of the key requirements of different industries such as oil industry. Huge oil and gas projects has special place due to special complexities, in terms of evaluating and analyzing economic issues, analysis of effective factors in minimizing risk and maximizing the created value of implementation. Project management include four fundamental factors such as knowledge, task, essential tools and techniques for activities implementation to meet the project needs and has this ability to take over the task of growth and development of countries as a set of methods and systems in the post-industrial era and changing world. Project management is a multidisciplinary and team category. So that every project manager, even if he has a lot of experience and expertise, will not be able to lead the project successfully on his own [1-3].

The cooperation and interaction of project management experts in the oil and gas industry, while solving the problems, will provide scientific and technical solutions in order to protect the country's huge national assets. Risk management is a new trend in management science that has found its place in a wide variety of industries, including finance and investment, trade, insurance, healthcare, political, social, military, industrial and civil engineering projects. Risk is an event that is uncertain but measurable. The outcome of this event can be positive or negative [4-6]. Uncertainty is considered by many to be equal to risk but in reality it is not. Risk is a condition of an event that can be calculated but uncertainty does not have this capability and cannot be measured. In fact, risk management is a set of processes required to identify, analyze and respond to project risk in order to maximize the results of positive events and minimize the consequences of adverse events [7].

One of the most important factors in risk management is identifying project-related risks with a breakdown structure design approach. The risk breakdown structure should be commensurate with the organization's situation, project type and organizational structure. According to research, the main source of claims and disputes in the design and construction contracts of the upstream oil and gas industry is the lack of identification and management of project risks [8].

Therefore, it is expected that with risk management identified through contractual capacities, a significant amount of claims and disputes in the industry will be prevented. Risk management studies in risk planning and identification should be done in a simpler, more effective and more reliable way. So far, many efforts have been made by researchers to analyze and risk huge projects [9].

## Risk management strategy decision making process

The task of risk managers is finding solutions to the harmful effects of risk which we call the decision-making process in risk management. The risk management steps are as follows:



**Fig. 1:** Risk Management in General

- Risk Identification: Full identification of the risks and damages that potentially threaten the organization;
- Analysis of identified risks (evaluation);
- Selecting and implementing the best method or combination of appropriate methods to deal with the assessed risks;  
Pursue the results of the previous step in order to create more coordination and control in risk management;

In strategic thinking, focusing on the key factors of success in risk identification and evaluation and using the relative advantages of different risk management methods at any time, to use the initiatives of executive agents involved in risk management in every way [10].

Avoiding a waste of time and resources, recognizing and choosing the best risk assessment and management method to maximize the objective function are affected by independent variables which are the limits of strategic freedom of action. Adopting a top risk management strategy is especially important in terms of performance [11-13].

### **Risk management in the field of oil projects**

Given the entry of Iran into the stage of industrial development and the opening of new global borders, it is necessary to pay more attention to the role of risk management in organizations, industries and various projects in the country. Obviously, due to the high risk of projects, risk management has a great importance in integrated project management. Given the intense competitive conditions as well as the current economic and political conditions, it is obvious that executive projects, especially large ones, will face many risks that, if not identified, prepared and planned in advance, their occurrence will be irreparable and even the nature of project will be dangerous to the extent of threatening [14-16].

Many companies are using their expertise, technical and technological ability to eliminate

the effects and manage their work risk areas in oil and gas drilling and some international companies can be named as leaders in this field. Given that in operational processes, the identification of all risks and the collection of information related to each of them is not optimal in terms of cost and execution time, so another method is commonly used to define the scenario.

In this method, scenarios are defined and they study their effects and consequences by using certain methods then they evaluate and analyze the relevant risk and cost after identifying the relevant risks. There are several available tools to identify risks. For example, Brainstorming, Delphi, cause and effect diagrams and interviews with industry experts related to the project or experienced managers in that field. The output of the risk identification process must be documented and written from the Risk Breakdown Structure project [17]. A structure that comprehensively shows a list of risks, their effectiveness and quality on the project. This structure can display project risks in the form of classification or hierarchy. This structure identifies the most important project risks in groups and subgroups [18-22].

### **Conclusion**

The oil and gas industry is one of the most important and vital industries in the world, especially in our country which due to its strategic, sensitive nature and complex technology has always been associated with uncertainty and high risks.

Despite the expansion of risk management techniques and tools, the lack of a structured and integrated approach, as well as less attention to decision analysis has created inconsistencies in the effective and systematic use of oil and gas project risk management, especially in oil and gas exploration projects.



**Fig. 2.** Necessity to Study of Risk Management in Oil Projects

Today, increasing costs and complexities in projects on the one hand and increasing uncertainty and risks in business environments on the other hand have led project managers to reduce the risk and deviate the project from the set goals, use risk management at the forefront of project planning and control.

In project management standards, risk is defined as a probable and uncertain event. Today, risk management is a central part of management, as many of managers' major decisions are made within the framework of risk management. Revising, improving safety standards, promoting safety education and culture and enhancing management control processes can serve as part of a risk management strategy to reduce the likelihood of damage

## References

- [1]. A. Samimi, S. Zarinabadi, M. Setoudeh, Safety and Inspection for Preventing Fouling in Oil Exchangers, *International Journal of Basic and Applied Sciences*, 1(2) (2012), 429-434
- [2]. Samimi, S. Zarinabadi, A. Bozorgian, A. Amosoltani, M. Tarkesh, K. Kavousi, Advances of Membrane Technology in Acid Gas Removal in Industries, *Progress in Chemical and Biochemical Research*, 3 (1) (2020), 46-54
- [3]. Domnikov, G. Chebotareva, M. Khodorovsky, Systematic approach to diagnosis lending risks in project finance. *Audit and Finance Analyses*, 2 (2013), 114-119
- [4]. D. Osabutey, G. Obro- Adibo, W. Agbodohu, P. Kumi, Analysis of Risk Management Practices in the Oil aIndustry in Ghana. Case Study of Tema Oil Refinery, *European Journal of Business and Management*, 5(29) (2013), 15-25.
- [5]. D. Mohammadnazar, A. Samimi, Nessacities of Studying HSE Management Position and Role in Iran Oil Industry, *Journal of Chemical Review*, 1(4) (2019), 252-259
- [6]. Trujillo-Ponce, R. Samaniego-Medina, C. Cardone-Riportella, Examining what best explains corporate credit risk: accounting-based versus market-based models. *Journal of Business Economics and Management*, 15(2) (2014), 253-276
- [7]. Domnikov, P. Khomenko, G. Chebotareva, A risk-oriented approach to capital management at a power generation company in Russia. *WIT Transactions on Ecology and the Environment*, 186 (2014), 13-24
- [8]. M. Gurtler, D. Heithecker, Multi-period defaults and maturity effects on economic capital in a ratings-based default-mode model. *Finanz Wirtschaft*, 5 (2005), 123-134
- [9]. A. Samimi, Risk Management in Information Technology, *Progress in Chemical and Biochemical Research*, 3 (2) (2020), 130-134
- [10]. R. Trujillo-Ponce, A. Samaniego-Medina, C. Cardone-Riportella, Examining what best explains corporate credit risk: accounting-based versus market-based models. *Journal of Business Economics and Management*, 15 (2014) 253-276.
- [11]. I.V. Osinovskaya, Prinyatie upravlencheskih reshenij v usloviyah riska (Management decision-making under risk), *Economy and Entrepreneurship*, 8-1 (2015), 767-770

- [12]. H. U. Buhl, S. Strauß, and J. Wiesent, "The impact of commodity price risk management on the profits of a company," *Resources Policy*, 36, 346-353, 2011.
- [13]. A. Domnikov, G. Chebotareva, P. Khomenko, M. Khodorovsky, Risk-oriented approach to long-term sustainability management for oil and gas companies in the course of implementation of investment projects. *WIT Transactions on Ecology and the Environment*, 192 (2015), 275–284
- [14]. J. Pollock, Risk Management for Black Swan Events: Planning for Nuclear Catastrophe, Fracking Problems and Other Environmental Disasters, American Bar Association, 13(1) (2012), 1-28
- [15]. Samimi, Risk Management in Oil and Gas Refineries, *Progress in Chemical and Biochemical Research*, 3 (2) (2020), 140-146
- [16]. C. Lim, H. D. Serali, and S. Uryasev, "Portfolio optimization by minimizing conditional value-at-risk via nondifferentiable optimization," *Comput Optim Applications*, 46, 391–415, 2010.
- [17]. M. Bashiri, H. Badri, T. Hejazi, Selecting optimum maintenance strategy by fuzzy interactive linear assignment method, *Applied Mathematical Modelling*, 35 (2011), 152–164
- [18]. N.S. Arunraj, J. Maiti, Risk-based maintenance policy selection using AHP and goal programming., *Safety Science*, 48 (2011), 238–247
- [19]. Y.H. Cheng, H.L. Tsao, Rolling stock maintenance strategy selection, spares parts' estimation, and replacements' interval calculation, *International Journal of Production Economics*, 128 (2010), 404–412
- [20]. A. Saumil, N. Li, A. Jun, Condition-based maintenance decisionmaking for multiple machine systems, *Journal of Manufacturing Science and Engineering*, 131 (2009), 3:1-9
- [21]. H. Xie, L. Shi, H. Xu, Transformer Maintenance Policies Selection Based on an Improved Fuzzy Analytic Hierarchy Process, *Journal of Computers*, 8 (5) (2013), 1343-1350
- [22]. K. Jain, S. Singh Jain, M. Singh Chauhan, Selection of optimum maintenance and rehabilitation strategy for multilane highways, *International Journal for Traffic and Transport Engineering*, 3(3) (2013), 269-278

#### HOW TO CITE THIS ARTICLE

M. Karami, A. Samimi, M. Ja'fari, Necessity to Study of Risk Management in Oil and Gas Industries (Case Study: Oil Projects), *Prog. Chem. Biochem. Res.* 2020, 3(3), 239-243

DOI: 10.33945/SAMI/PCBR.2020.3.6

URL: [http://www.pcbiochemres.com/article\\_109685.html](http://www.pcbiochemres.com/article_109685.html)

