Research Journal of Recent Sciences _____ ISSN 2277-2502
Vol. **4(11),** 46-51, November **(2015)** *Res.J.Recent Sci.*

Investigation on Risk Factors causing Parsian Gas Refinery Projects

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Available online at: www.isca.in, www.isca.me
Received 21st February 2014, revised 25th October 2014, accepted 6th June 2015

Abstract

Nowadays, what big projects such as oil and gas projects should be considered is attention and effort to the three parameters of time, cost and quality according to the Project Management performance. One of the techniques of project management which experts believe is attention and proper management to the project, the importance of risk management projects. Risk management is a systematic method of group process that is applied based on systematic experiments, teams, managers and all factors that affect the probability of each event in similar projects and identify the impact of the event and the deviation of the project. Therefore, the correct application of these techniques will lead to the achievement of project objectives. Regarding second grade of Iran with regard to gas store in the world, energy policy in the gas sector of country is based on the efficient use of natural resources. To meet the aim, project implementation plans and massive gas industry is considered as a priority. Since, the negative risks has negative influence on index projects, by using risk manager ,it can be identify possible risks with analysis and selection of appropriate strategies to manage them. The aim of present research is to identify risk projects in Parsian Refinery, ranking risks and determine appropriate risk control strategies. The research method used in this study was descriptive - survey and applied research are considered.

Keywords: Refinery parsian, risk factors, risk control strategies.

Introduction

Main elements of risk All forms of risk, whether they are classified as speculative or as dangerous, are common elements that includes the following four elements:

i. Content ii. Activity iii. Conditions iv. Outcome Content means, situation or the context where a risk to the environment regarded and determines the status of activities and related conditions. In other words, the content provides a view of all measured outcomes.

Without specifying an appropriate content, it certainly cannot be determined to what activities and outcomes of the risk analysis and management activities should be considered. So content should provide for all subsequent activities in risk management. After creating content, residual elements can be investigated. Activity of the active element is risky and should be combined with one or more conditions, especially for emerging risks. All forms of activity created by one activity and without activity there is no possibility for risk.

Strategic Risk: Strategic risk is the risk that an organization accepted to achieve its business objectives. In content of this definition, there are both Potential profit and loss and strategic risk enables speculative in nature. Notice that how the four elements of risk are applied to strategic risk

For example, suppose that the master management in a financial institution are investigating re-entry into a new market, such as online banking services. Since it is implemented through the decision-making process, management should investigate the present potential opportunities and threats in the market.

The first study on economic issues and the risks of oil exploration projects has been done by Alias who is the winner of the Nobel Prize in Economics in 1988 - 1956 in surveys probability in Aljazayer desert by using Algebraic theory and a model of the sequence of detection steps .

That it can be called the first classic example of risk analysis in the oil and gas industry. After studying in America in the 1980s and 1990s, state-owned enterprises and France began to apply risk analysis to assess the course of oil and gas reserves with new techniques such as log-normal distribution, Pareto distribution, normal Frgtal percent .Nowadays, risk management and decision analysis has been used in oil exploitation activities in all around the world and in majority of projects in combining with new technology.

One of quantitative risk method is getting assistance from the FMEA model and obtaining incidence numbers, severity and diagnose risks of each activity and obtaining a numerical estimate of risk in each activity .Risks for each project may vary with other projects based on several factors including project scope, and its users, and other internal and external factors and designing risk management information system in projects can help to identify risks.

Klein J.H and Cork H.B., in an article entitled, "An approach to

technical risk assessment" evaluated the risk factors in the projects[1].

Systematic approach to risk, gave rise to the issue of RPM(Risk Process Managemen) that the related science has gradually developed since the 90s. For example, Del Cano Gochi A.,De la Cruz Lopez M.P, in "The process of risk management: different approaches" article in 2000 studied the risk management process[2].

The risk of the project in 2002 by Fiona D.P. and Kevin N., introduced in an article in the International Journal of Project Management[3].

In an article entitled A Model for Reducing hospital errors that took place in Italy in 2009 by Marialaura and Ponzetti, 2009 use of FMEA for risk analysis, risk processes in a hospital laboratory is discussed[4].

The article entitled Evaluation of health risk factors using the FMEA was conducted in 2009 by Leeuwena and Nauta, Hazards and risks resulting from infrared analyzed and by doing corrective measures was success in reducing the risk of employing infrared radiation[5].

Mousavi and his colleagues in 2005 in an article entitled "presents a fuzzy expert system for risk management in projects" evaluated the performance of Fuzzy risk management projects[6].

Sayed Hussain etal's in, "A comparative study of methods for risk control and monitoring of the projects' article was introduced various processes for risk management[7].

Ehsani and Mirnoori Langroodi in an article entitled "provide a conceptual framework for risk management of state construction projects according to PMBOK" investigated risk management in construction projects[8].

Based on above discussion, the following hypothesis is proposed:

Question and hypothesis: Q: How can identified the risk factors causing Parsian Gas Refinery Projects with qualitative methods? H: The risk factors identified causing Parsian Gas Refinery Projects with qualitative methods.

Methodology

The method to conduct research activities is actually sets of activities which by helping them the researcher determine that required information where, how and by what means collected. In general, behavioral science research methods can be divided into two criteria :research purpose and how data collected.

Most of investigative activities represent a method or strategy that is easily recognizable and include certain common procedures, such as speech problems, collect data and conclusions. Specific details of this process are largely determined by research. Each of these methods are appropriate to answer a question. Knowing the different ways is important for researchers and users of research. Even when the method is used as the criterion or criteria, there are several ways to classify research studies (for example, empirical studies and or historical and descriptive and experimental). However, these studies are all because it requires a completely different strategy.

So, in this research method is descriptive because collected data has been done by questionnaire .Generally, data collection methods can be divided into the two categories :library and field methods[9]. In current study, field method has been used to gather the viewpoints of managers and organizations' experts.

Because collected risks don't have the interaction on each other and don't have internal relations and are not strengthening or weakening of risk. In this research the hierarchical structure has been used and there is no need to network analysis.

Results and Discussion

According to the research hypothesis: The risk factors identified causing Parsian Gas Refinery Projects with qualitative methods.

This study identifies and analyzes qualitative and technical risks through brainstorming techniques and the effect of fail risk analysis" was conducted. Thus with the help of experts and project managers a list of risks that may occur during the project were collected.

Then a meeting hold by experts and executives managers and three rates of "impact risks", "risk likelihood" and "probability of risk identification." according to tables-1,2,3 and 4 has been graded and RPN coefficient was calculated. The results are visible in table-5.

At this stage, according to the calculated risks RPN values in above tables, risks with high the RPN scores has been determined. To this end, 25% of the risks that have the highest RPN were extracted and in order to determine how important they are and went to the next stage of the process. Hierarchical structure of risks displayed in the main and sub criteria .

Paired comparisons tables after getting mean and entering to software and obtained weight is displayed for main and sub criteria in each table. Value judgments inconsistency rate are also visible.

Identification and collection risks
↓
Classifying collected risks
↓
Calculating RPN related to each risk

↓
Screening risks with high RPN
↓
Determining the importance of Screening risks by **Hierarchical fuzzy structure method**
↓
Presenting solution for deletion, reduction or control of risky factors

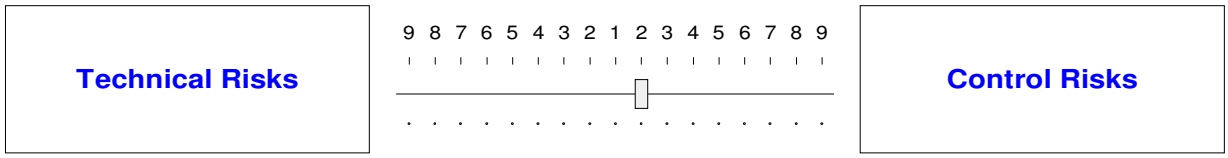
Data analysis: Data analysis have been done in two parts "assessment of potential failure modes and effects" and "Fuzzy Hierarchical Analysis" .That the "evaluation of potential failure modes and its' effects" would be small risks and risks with high RPN score will be ranked in terms of importance.

In table-1, the judgment of inconsistency rate is equal to 0.00 that is less than 0.1 and put in the acceptable range.

In this table-2, the judgment of inconsistency rate is equal to 0.00 that is less than 0.1 and put in the acceptable range.

Table-1
Table of paired comparisons between the main criteria for risk

Numerical Assessment



Compare the relative importance with respect to: Goal: Risk Of Project

	Techn	Control	Risks of	Design	Project	Financial	Human	Organiz	Public	Employ	HSE Ri
Techni		(2.1)	(3.8)	(2.4)	(2.8)	(4.2)	(4.65)	(5.5)	(4.45)	(3.2)	(4.9)
Control			(3.25)	(1.95)	(2.25)	(3.85)	(4.35)	(4.95)	(4.05)	(2.45)	(4.65)
Risks o				2.5	(1.86)	(3.04)	(3.55)	(4.15)	(3.27)	2.87	(3.28)
Design					(2.05)	(3.7)	(4.05)	(4.75)	(3.82)	(2.04)	(4.36)
Project						(3.24)	(3.85)	(4.25)	(3.55)	(1.95)	(4.04)
Financi							(3.06)	(4.04)	(2.78)	2.35	(2.98)
Human								(3.2)	4.03	3.27	(2.98)
Organiz									(2.1)	4.24	(1.1)
Public										1.95	1.65
Employ											(3.08)
HSE Ri	Incon:										

Priorities with respect to:
Goal: Risk Of Project

Figure-1
Weight values obtained for sub criteria technical risk

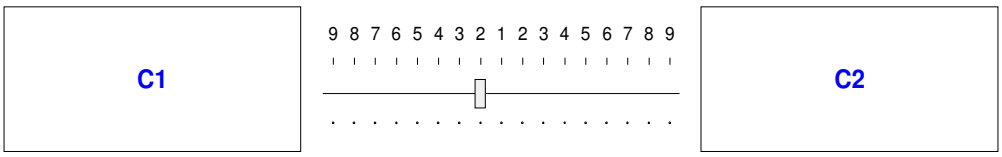
The judgment of inconsistency rate is 0.02, less than 0.1 times the table-3 is located in the acceptable range.

The judgment of inconsistency rate is 0.04, less than 0.1 times the table-4 is located in the acceptable range.

The judgment of inconsistency rate is 0.05, less than 0.1 times the table-5 is located in the acceptable range.

Table-2
Table of paired comparisons between sub criteria of control risks

Numerical Assessment



Compare the relative importance with respect to: Control Risks

	C1	C2
C1		2.04
C2	Incon: 0.00	

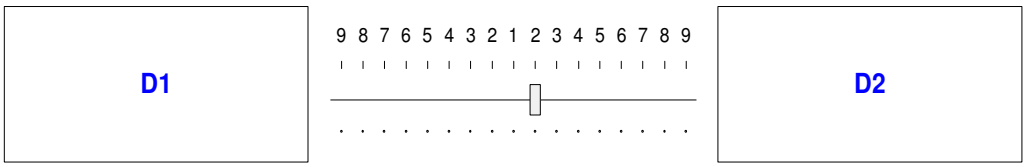
Priorities with respect to:
Goal: Risk Of Project
>Control Risks

Inconsistency = 0.
with 0 missing judgments.

Figure-2
Weight values obtained for sub criteria of control risks

Table-3
Paired comparisons between sub criteria of design risks

Numerical Assessment



Compare the relative importance with respect to: Design risks

	D1	D2	D3	D4
D1		(1.94)	2.17	(2.04)
D2			2.57	1.35
D3				(3.42)
D4	Incon: 0.02			

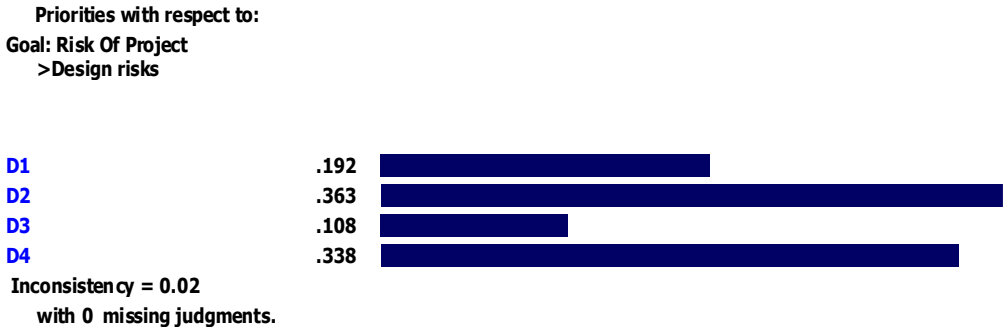
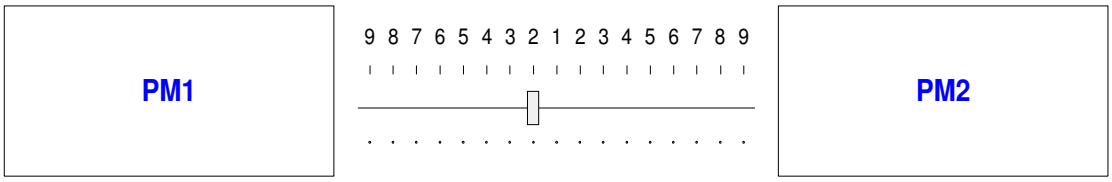


Figure-3
Weight values obtained for Zyrmyarhay design risk

Table-4
Table of paired comparisons between risk and project management subcriteria

Numerical Assessment



Compare the relative importance with respect to: Project Management Risks

	PM1	PM2	PM3	PM4	PM5	PM6
PM1		1.65	4.27	3.06	3.39	2.59
PM2			3.85	2.69	2.83	2.07
PM3				(2.9)	(3.87)	(3.96)
PM4					1.8	(1.96)
PM5						(2.34)
PM6	Incon: 0.04					

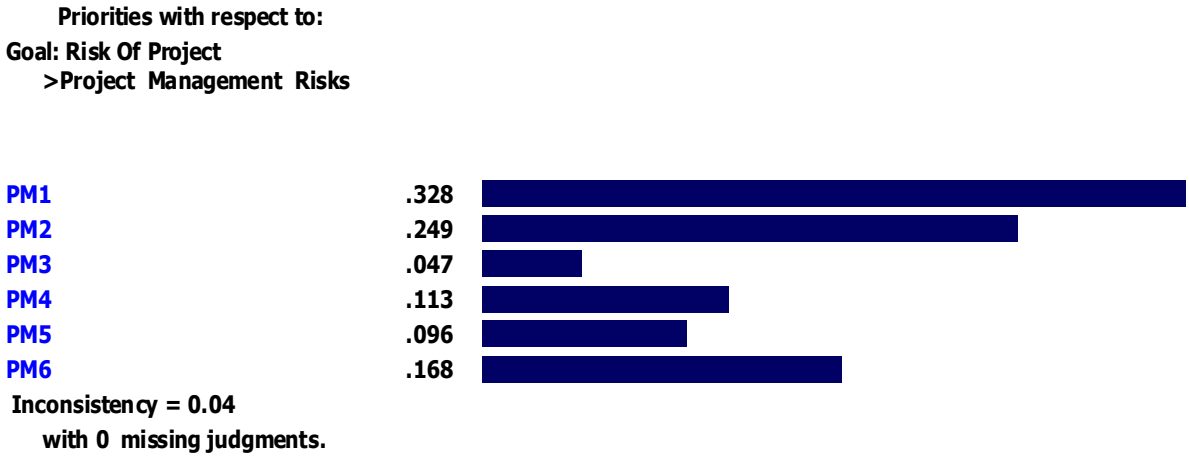


Figure-4
Weight values obtained for subcriteria inRisk Project Management

Table-5
A paired comparison between subcriteria in human resource risks

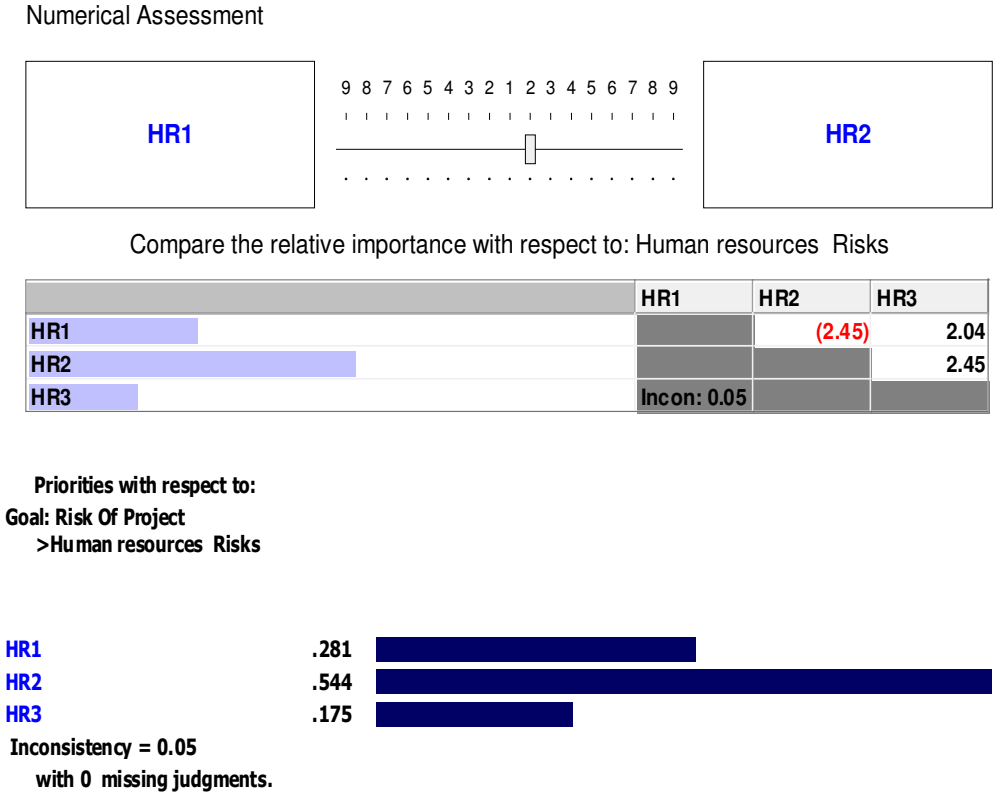


Figure-5
Weight values obtained for human risk subcriteria

Conclusion

According to the definition, methodology RFMEA is a technique used to calculate the score for each risk RPN technique to determine the importance of each risk in terms of uncertainty is due to its weight. Another implication is related to use of other methods such as FTA, HAZOP for identifying the risks in projects. Also, it can be used one of the other methods of MADM for ranking such as TOPSIS or ANP. Some limitations of this study are as follows: The extent and breadth of Parsian Refinery Project. Lack of cooperation with research managers and senior officials. There are many risks in the project and the impossibility of classifying these risks completely. A large number of people involved in the implementation of projects and lack of access to all the experts in order to gather their views.

Acknowledgement

The researchers would like to express their appreciation to Parsian Gas Refinery because of its support and cooperation.

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