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## The risk management system as a necessary factor for Innovation Company

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### Abstract

Innovation activity of companies takes place in conditions of high uncertainty and is associated with high risks. Therefore, under current conditions, a comprehensive and complete system of risk management is becoming an indispensable tool company, providing measures for the entire spectrum of threats activity. In this regard, a detailed analysis of the risk management system of elements for example a gas company. The necessity of integrating risk management into the overall enterprise management system as the main instrument to minimize the risk and consequences of risk situations, as well as for the successful implementation of innovation in general, and enhance the competitiveness of enterprises. It proposed to conduct its own risk register for the largest innovative companies.

*Keywords:* Risk, risk management, risk register, the risks of innovation;

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### 1. Introduction

In the modern economic world innovations are one of the key factors determining social and economic development prospects. However, today not only correct assessment and choice but also successful realization of innovative projects makes it possible for organizations to dominate in the branch and ensure a stable basis for further growth.

The largest gas companies play a special role among the organizations supporting the development of innovation activity.

Innovation activity of gas companies provides for elaboration of long-term plans and programs for Russian fuel and energy complex sustainable development, development of raw material supplies base and creation of new technologies for efficient natural raw materials extraction [1].

### 2. The risk in the gas industry

In comparison to common processes in industrial and business operations, innovation activity in the gas industry is associated with high uncertainty and high risk. That is why under the current conditions a comprehensive and full-featured system of risk management is becoming an essential constituent for gas companies providing measures for the whole activity threat spectrum. While estimating risks in general or any kinds of possible risks it is necessary to initiate measures for risk

management using the whole complex of integrated regulatory, managerial, economic, engineering and other activities aimed at reducing or preventing possible or current losses [2, 3].

A great number of definitions of risk, which can be found in literature, consider various combinations of such notions as uncertainty, probability, event and damage. According to the ISO 31000 standard, risk is the influence of uncertainty on achieving a goal whereas influence is a positive or negative deviation from the expected course of events. Innovation activity risk can be defined as the probability of loss occurring while investing money in manufacturing new kinds of products, developing new types of equipment and new technologies which can fall short of expectations. Unlike commercial, innovative risks are attributed to new kinds of production commercialization. Uncertainty negotiation is the primary target of the risk management.

### 3. The risk management system of one of the gas companies

As a result, the question arises: how can gas companies manage risks? Consider the risk management system through the example of one of the gas companies.

Risk management in the company is realized in order to identify and effectively response to risks related to the project and has the following risk management processes:

- I. Risk management planning
- II. Risk identification
- III. Qualitative risk analysis
- IV. Risk monitoring and control
- V. Risk response planning

Make a detailed analysis of each point.

- *Risk management planning*. This stage provides the process of choosing an approach, planning and carrying out risk management operations.

- *Risk identification*. Risk identification is identification of risks influencing the project and documentation of their characteristics. It appears at the project planning stage but has a repetitive nature occasionally occurring at different stages of project realization to add new risks to the register.

Logical and creative techniques such as brainstorming, quizzes and questionnaires are used for risk identification. Identified risks are registered.

- *Qualitative risk analysis*.

Qualitative risk analysis is mainly aimed to determine risk factors, work stages and activities where risk appears, in other words, to state potential risk zones and after that identify all the possible risks. Potential risk danger determination is necessary for making decisions about innovations promotion, especially while choosing alternative ways. At this stage we answer the question “What is the risk and in what way does it influence the innovation realization results?”, in other words, we determine a risk zone.

To measure project risks risk 5x5 matrices are used. In vertical direction the likelihood of occurrence is measured (from “the event doesn’t happen” - 1 to “the event happens often” – 5), and in horizontal direction the potential damage is measured (from “very low” – 1 to “very high” – 5).

Ranging and taking each risk to one of the following categories: low, average and high risks (green, yellow and red zones respectively) (see table 1) is determined by the “weight of the risk” parameter (the intersection of influence and likelihood).

Table 1: Risk matrix

<u>Risk probability</u>						
5	Very high	5	8	15	20	25
4	High	4	8	12	16	20
3	Average	3	6	9	12	15
2	Low	2	4	6	8	10
1	Very low	1	2	3	4	5
	<u>Damage</u>					
		1 Very low	2 Low	3 Average	4 High	5 Very high
		1	2	3	4	5

<u>Risk measurement</u>	
1-4	Low risk
5-12	Moderate risk
15-25	Significant risk

*- Risk response planning.*

The risk analysis stage is followed by the risk response planning stage which provides the development of possible actions and variants contributing to auspicious opportunities increase and threats to achieving project goals reduction:

- Aversion

Risk aversion implies changing the project management plan in order to exclude a threat caused by the negative risk, to protect project goals from risk effects or to reduce the goals under the threat.

- Assignment and sharing the risk

Assignment and sharing the risk implies delegating the negative risk effects and the responsibility for the risk response to the third part partially or entirely.

Sharing the risk is an easier variant for assignment. This strategy implies the responsibility of both contracting parties for realization of the project.

- Reduction

Risk reduction strategy implies the following:

- Reduction of risk probability
- Reduction of negative risk event consequences to acceptable limits, namely the risk either won't happen or will happen but with fewer consequences.

- Assumption

This strategy implies the decision not to change the project plan because of occurring risks. The strategy is used when risk probability is low and its consequences are few. The risk is assumed because the risk management development costs exceed consequences costs.

- Unforeseen circumstances response strategy

The management reserve constituting 10 % of the total budget of the project is created for unforeseen circumstances response. It is used by the project management team in agreement with the company in case of unforeseen circumstances.

The choice of the risk response strategy is determined by risk realization probability which is estimated by the risk consequences in case of its realization (green, yellow and red zones).

If the risk is minimum (the green zone), the risk owner is better to choose the risk assumption strategy because the development of the response plan claims more costs than the risk consequences. In the moderate risk zone (the yellow zone) the risk owner will choose either the risk transfer strategy or the risk reduction strategy.

With the increase of risk probability and the number of consequences (the red zone) the risk owner will tend to use the aversion strategy or use an integrated solution combining the assignment and reduction strategies in case aversion is not possible for some reason.

It is possible to use several strategies simultaneously, if risk probability is high and the consequences are serious.

- Risk monitoring and control

The last step in risk management is risk monitoring and control. The identified risks monitoring, new risks identification, risk response plans implementation and assessment, residual risks monitoring are provided throughout the project life cycle.

#### **4. The risk register**

The risk register is the result of threats data representation and storage. The document contains the results of qualitative risk analysis, quantitative risk analysis and risk response planning. All the known risks are considered in the risk register. It includes:

- Clear risk description
- Identification of risk factors
- Qualitative description of risk realization consequences (scenario)
- Risk realization probability estimation
- Estimation of risk realization impact on project goals (terms, cost, quality, flow of money , etc.)
- Estimation of risk impact on other risks
- Responsible person/subdivision
- Guidelines for risk management
- Additional information, resources, etc.

This approach to risk identification, analysis and response allows minimizing risk factors before their occurrence. The clear, structured and repetitive process is used to prevent the dangers and treats; it deals with the primary cause but not with the appearing symptoms. The basic principle is to prevent risks but not to deal with their consequences.

Depending on the project and its goals each of the risk management system process will surely have its own peculiar features. However, the risk management principles are identical.

## 5. Conclusion

Analyzing the risk management system of a gas company we can make a conclusion that it is necessary for large innovational companies to maintain their own risk register which can provide forehanded risk response and minimize the loss. The risk management system in the innovative process is an integral complex of interrelated elements aimed at integral estimation of a combination of all risk factors. It is aimed at minimizing risk factors influence on the system taking into account how these risks are interconnected. Separate measures and steps will not provide effective risk management. The integration of the risk management system into the common system of innovation process management is needed. It should be an integral part of strategic and operational management of any company which tends to strengthen its position in the market. The basic principle in management decision making should be taking into account the risk resulting from the decision made [4].

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