Zeszyty Naukowe UNIWERSYTETU PRZYRODNICZO-HUMANISTYCZNEGO w SIEDLCACH
Nr 92 Seria: Administracja i Zarządzanie 2012

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Project risk management – selected aspects
Zarządzanie ryzykiem projektu – wybrane aspekty

Abstract: *Risk is present in all spheres of human activity then, when people are not able to control or accurately predict a certain aspect of the future. The goal of the article is to present risk management process and some methods and approaches regarding project risk management cycle.*

Keywords: risk management, identify the risks, analyze and evaluate the risks

Streszczenie: *Ryzyko jest obecne we wszystkich sferach ludzkiej działalności wtedy gdy ludzie nie są zdolni do kontroli albo dokładnie przewidywać aspekty przyszłości. Celem artykułu jest przedstawienie procesu zarządzanie ryzykiem oraz metody i podejścia ukierunkowane na zarządzaniem ryzykiem projektu.*

Słowa kluczowe: zarządzanie ryzykiem, identyfikacja ryzyka, analiza I ocean ryzyka

Introduction

A project risk is something that may happen within the project and if it does, it will have a positive or negative impact on the project outputs. The likelihood of something happening should be less than 100% and something above 0%. It must be a chance some actions or events to happen, otherwise it is not a risk.

According to ISO 31000: 2009 risk is an *effect of uncertainty on objectives*, whether positive or negative[1].

Generally speaking, there are three factors that characterize project risk: risk event, risk probability and impact. Those factors will be presented in details in the article.

Therefore risk in the project is the chance, smaller or bigger, that damage or an adverse outcome will occur from a particular hazard. There are some important elements that need to be in place if risk management is to be effective:

[1] ISO 31000: 2009 *Risk management - Principles and guidelines on implementation. International Organization for Standardization.* http://www.iso.org

- the organization top managers supports and promotes risk management, understands and accepts the time and resource implications of any preventive action,
- risk management policies and the benefits of effective risk management are clearly communicated to all staff,
- a consistent approach to risk management is fully embedded in the management processes,
- there is a clear structure to the risk process so that each element or level of risk identification fits into an overall structure.

Risk management

Several risk management standards have been developed including the Project Management Institute, the National Institute of Science and Technology and ISO standards. Methods of project risk management vary widely from methods of risk management in the context industrial processes, financial portfolios, security or public health and safety.

The objective of risk management is to identify and manage considerable risks and it involves several phases including monitoring and process review. In most projects, risk management activities overlaps with other management processes and procedures, therefore some steps of risk management are undertaken as part of regular project management activities.

Most of risk management approaches cover the processes involved in identifying, analyzing, assessing and judging risks, assigning ownership and then responding to them. Risk management also include taking actions and coordinated and economical use of resources in order to mitigate or anticipate risks, and monitoring and control the probability and impact of unfortunate events or to maximize the realization of opportunities.

According to Australian/New Zeeland Standard no 4360 "Risk management is a logical and systematic method of creating the context, identification, analysis, evaluation, operation, monitoring and risk communication in a way that will enable organization to minimize losses and maximize opportunities"[2].

Above approach is consistent with similar approaches adopted by the major project management professional bodies and government agencies that have issued project risk guidelines. The steps in the process of risk management according to Australian and New Zealand Standard is presented below (Fig. 1.1).

[2] Australian/New Zeeland Standard no 4360:1995 Risk management.

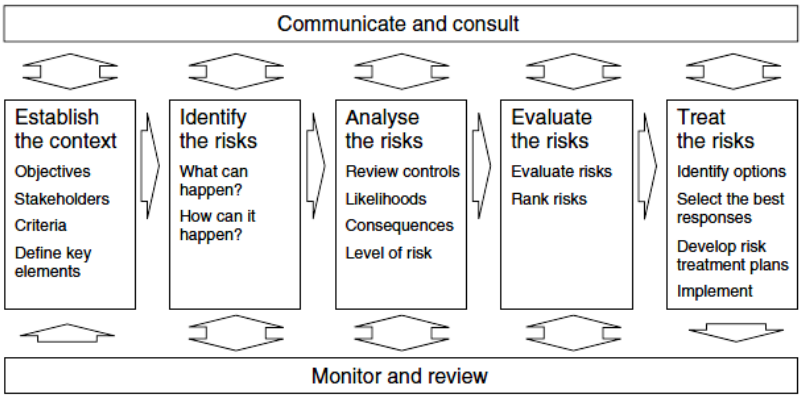

Fig. 1.1 Steps in the process of risk management
Source: Australian/New Zeeland Standard no 4360.

Every project is subject to constant change in its closer and wider environment, which is also constantly changing too. Therefore project's risk will be shifting and changing also. For that reason assumptions about risk have to be regularly redefined and reconsidered.

There are few main steps of the risk management cycle which include:

Establish the context

Establishing the context is concerned with developing a structure for the risk identification and assessment tasks to follow. Within this stem organizational and project environment in which the risk assessment is taking place is establishes, main objectives and outcomes are specified and criteria of success are identified.

Inputs to this stem include key project documents, such as the project execution strategy, project charter, cost and schedule assumptions, scope definitions, economic analyses, and any other relevant documentation about the project and its purpose.

The output from this step is a statement of the project objectives and specific criteria for success, the objectives and scope for the risk assessment itself, and a set of key elements for structuring the risk identification process in the next stage.

Identify the risks

This step identifies the potential risks or opportunities facing the project. Risk identification determines what might happen that could affect the objectives of the project, and how those things might happen. It is important not to

judge the likelihood of a risk at this stage because it may lead to incorrect decisions to exclude some risks.

The risk identification process must be comprehensive, as risks that have not been identified cannot be assessed, and their emergence at a later time may threaten the success of the project and cause unpleasant surprises. The process should be structured using the key elements to examine risks systematically, in each area of the project to be addressed.

A number of techniques can be used for risk identification. The most popular and useful is brainstorming. At the stage of risk identification may be used another information such as historical data, theoretical analysis, empirical data and analysis, opinions of experts and project stakeholders.

The output is a comprehensive list of possible risks to the successful outcome of the project, usually in the form of a risk register which is also called risk log or risk matrix.

Analyze and evaluate the risks

Risk assessment is the overall process of risk analysis and risk evaluation. Its purpose is to develop agreed priorities for the identified risks. Risk evaluation is concerned with assessing probability and impact of individual risks, taking into account any interdependencies or other factors outside the immediate scope under investigation.

Probability is the evaluated likelihood of a particular outcome actually happening. For example, serious damage to a building is relatively unlikely to happen, but would have enormous impact on business continuity. Impact is the evaluated effect or result of a particular outcome actually happening. If possible impact should be considered under the elements of: time, quality/scope, people/resource, budget.

Some risks, such as financial risk, can be evaluated in numerical terms. Others, such as adverse publicity, can only be evaluated in subjective ways.

Risks need to be quantified in two dimensions. There some ways for categorizing risks, for example, high, medium and low or rating the scale in numbers, for example 1 to 5 scale. The larger the number, the larger the impact or probability. By using a matrix, a priority can be established The proximity of each risk is included in the risk log (Figure 1.2.).

This stage of analysis and evaluation of the risk generates a prioritized list of risks and a detailed understanding of their impacts upon the outputs of the project. The likelihood ratings and possible consequences are all recorded in the risk log.

If probability is high, and impact is low, it is a Medium risk. On the other hand if impact is high, and probability low, it is High priority.

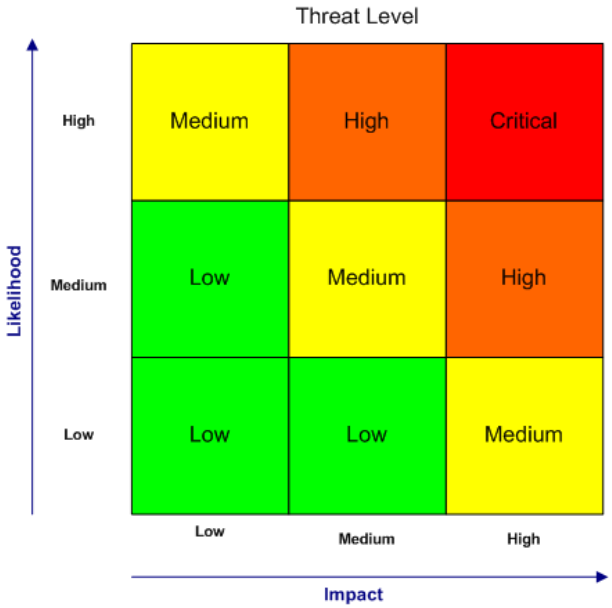

Fig. 1.2. Risk Log
Source: on the base of www.nasa.gov.

Treat the risks

The purpose of risk treatment is to determine what will be done in response to the risks that have been identified, in order to reduce the overall risk exposure. Risk treatment converts the earlier analyses into substantive actions to reduce risks.

The primary inputs to this step are the lists of risks and their threat level from the previous step. Risk treatment involves identifying the options for reducing the likelihood or consequences of each critical, high or medium risk. There are five types of actions regarding response to risk:

1. **Prevention** - terminate the risk − by doing things differently and thus removing the risk, where it is feasible to do so. Countermeasures are put in place that either stop the threat or problem from occurring or prevent it having any impact on the project or business.
2. **Reduction** - reducing the negative effect of the risk. Treat the risk − take action to control it in some way where the actions either reduce the likelihood of the risk developing or limit the impact on the project to acceptable levels.
3. **Transference** - transferring the risk to another party is a form of risk reduction where the management of the risk is passed to a third party via, for instance, an insurance policy or penalty clause, such that the impact of the risk is no longer an issue for the success of the project. Not all risks can be transferred in this way.

4. **Acceptance** - accepting some or all of the consequences of a particular risk - tolerate the risk − perhaps because nothing can be done at a reasonable cost to mitigate it or the likelihood and impact of the risk occurring are at an acceptable level.
5. **Contingency** - actions planned and organized to come into force as and when the risk occurs.

Risk treatment involves also determining the potential benefits and costs of the options and selecting the best options for the project and developing and implementing detailed Risk Action Plans. There may be no cost-effective actions available to deal with a risk, in which case the risk must be accepted or the justification for the project correction possibly resulting in the termination of the project. There are several possible risk actions, each with different effects. The choice may be one of these options or a combination of two or more. Project manager then has to consider the impact of the risk on: the team, stage of the project, the business outcomes and other parts of the project.

Having made the selection, the implementation of the selected actions will need planning and resourcing and is likely to include plan changes, new or modified tasks.

Planning of risk countermeasure actions usually consists of:

- identifying the quantity and type of resources required to carry out the actions,
- developing a detailed plan of action which will be included in project plans as additional activities or as a contingency plan,
- confirming the desirability of carrying out the actions identified during risk evaluation in light of any additional information gained.

Resourcing, involves identification and assigning the actual resources to be used to conduct the work involved in carrying through the actions. Resources required for the prevention, reduction and transference actions usually have to be funded from the project budget. Only contingent actions can be funded from a contingency budget if such a budget exist.

Monitor and review

Continuous monitoring and review of risks ensures new risks are detected and managed, and that action plans are implemented and progressed effectively. Review processes are often implemented as part of the regular management reviews at significant project phases and milestones. Monitoring and review facilitate better risk management and continuous improvement.

The input to this step is the risk watch list of the major risks that have been identified for risk treatment action. The outcomes are in the form of revisions to the risk register, and a list of new action items for risk treatment.

Communicate and consult

Communication and consultation with project stakeholders is very important factor in good risk management and achieving project outcomes which are broadly accepted. Communication and consultation procedures help stakeholders to understand the risks and ensures all parties are fully informed, and in consequence avoids unpleasant surprises. In practice, regular reporting is an important element of communication. Project managers report on the current status of risks and risk management. Risk reports are usually submitted on a regular basis or as required (by sponsors or according to organization policy), as part of standard management reporting.

The input to risk communication and consultation is the risk register and the supporting action plans which provide the basis for most risk reporting. Reports provide a summary of project risks, the status of treatment actions and information about trends in the occurrence of risks.

Summary

Project risk management is an important aspect of management because it is the foundation for proper organizational governance. Good risk management provides an environment for:

- continuous assessing risks,
- data about risks which are important enough to address within the,
- strategies and plans to address risks.

Risk is inherent to every project, but it can be managed. The first step in managing a risk is identifying it, then it does not appear as a total surprise. It is important to prioritize the risks by determining which ones are most threatening to the project. Due to limited resources project manager has to address the most threatening ones first.

There are a few possible benefits of implementing methods of project risk management throughout the organization are:

- greater likelihood of achieving the project objectives,
- less unforeseen events affecting the project,
- better use of resources,
- faster response to issues of crisis.

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