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Make Harmony Between Technology and Nature, and Your Mind will Fly Free as a Bird
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RISK MANAGEMENT

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Abstract: *Every day, companies are exposed to various types of risk. They can be connected to property, liability of third parties, staff or decisions; risk is the usual companion in every business and with direct influence on result. Risk management in quickly changing environment is a requirement, for it contributes to reaching strategic advantages of a company. Risk is a possibility that a certain problem will arise in the future. Risk does not mean the actual existence of a problem. Risk is a fact that follows every activity and does not cause damage in itself. The damage arises only when the risk is executed. Assessing risk is usually about looking for errors. It is about searching for possibilities and ways of improving the state where the most widely used method is transfer of risk by ensuring suitable options.*
Key words: *risk management, risk assessment, risk handling, risk monitoring*

1. INTRODUCTION

Risk management represents traditionally analytical approach which was established in the framework of project management. Risk means uncertainty with known distribution of probability. In accordance with this risk analysis it represents a study which defines the outcomes of decisions together with their probabilities. The risks facing an organisation result from factors both external and internal to the organisation (Fig. 1).

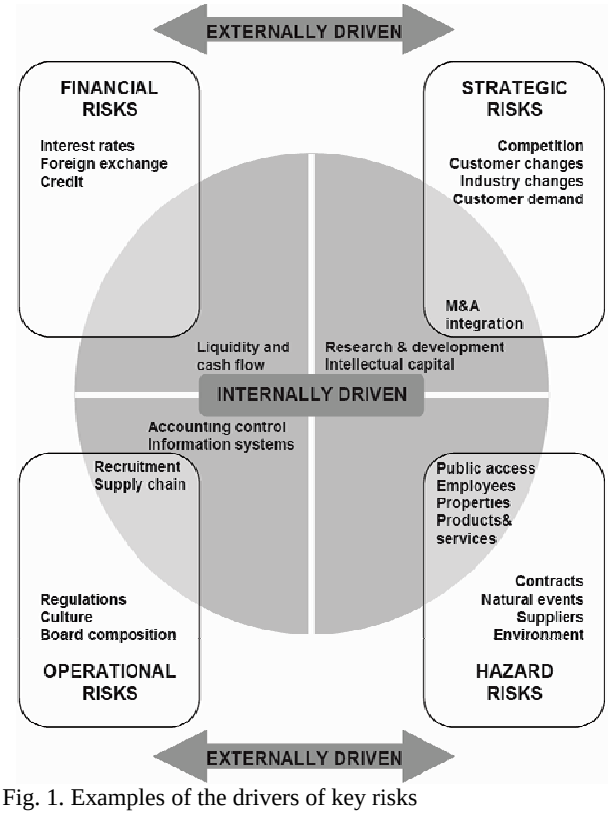

Fig. 1. Examples of the drivers of key risks

In system analysis a person who makes decisions is usually worried about possibility that a project will not be implemented in a certain time period and with funds at disposal. Risk must not be confused with uncertainty and risk management does not deal with problems of structural uncertainty (Carpenter & Fredrickson, 2001).

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2. ELEMENTS OF RISK MANAGEMENT

Risk management is an organized method for identifying and measuring risk and for selecting, developing and implementing options for the handling of risk. It is a process, not a series of events (Kremljak, 2004), see Fig. 2.

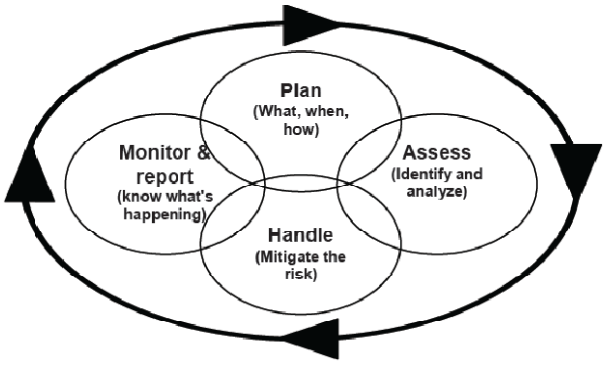

Fig. 2. Four elements of risk management

Risk management depends on risk management planning, early identification and analysis of risks, continuous risk tracking and reassessment, early implementation of corrective actions, communication, documentation and coordination. Though there are many ways to structure risk management, this paper will structure it as having four parts (Fig. 3): **planning**, **assessment**, **handling** and **monitoring**. Risk management is increasingly recognised as being concerned with both positive and negative aspects of risk (Augier & Kreiner, 2000).

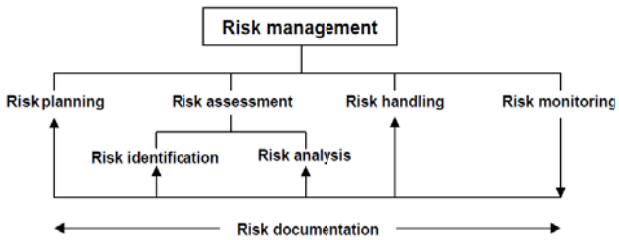

Fig. 3. Risk management structure

2.1 Risk planning

Risk planning is the continuing process of developing an organized, comprehensive approach to risk management. The initial planning includes establishing a strategy; establishing goals and objectives; planning assessment, handling and monitoring activities; identifying resources, tasks and responsibilities; organizing and training risk management members; establishing a method to track risk items; and establishing a method to document and disseminate information on a continuous basis. Planning begins by developing and documenting a risk management strategy.

2.2 Risk assessment

Risk assessment consists of identifying and analyzing the risks associated with the life cycle of the system. The risk assessment process is shown in Fig. 4.

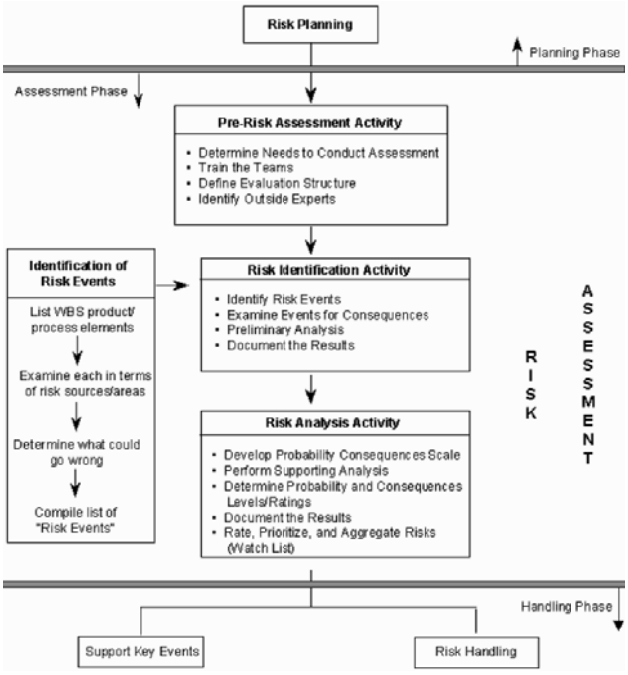

Fig. 4. Risk assessment

One common method is through the use of a matrix such as shown in Fig. 5. Each item is associated with a block in the matrix to establish relative risk among them. On such a graph risk increases on the diagonal and provides a method for assessing relative risk. Once the relative risk is known, a priority list can be established and risk analysis can begin.

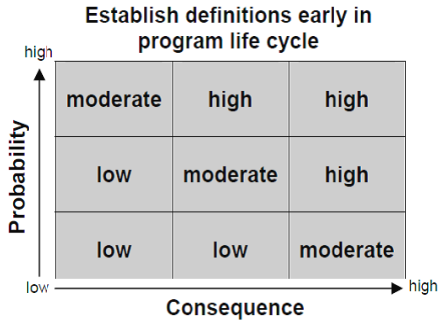

Fig. 5. Simple risk matrix

2.3 Risk handling

Risk handling includes specific methods and techniques to deal with known risks and a schedule for accomplishing tasks, identifies who is responsible for the risk area and provides an estimate of the cost and schedule associated with handling the risk, if any. It involves planning and execution with the objective of handling risks at acceptable levels.

Once the risks have been categorized and analyzed, the process of handling those risks is initiated. The prime purpose of risk handling activities is to mitigate risk. Methods for doing this are numerous, but all fall into four basic categories:

- risk avoidance,
- risk control,
- risk assumption,
- risk transfer.

2.4 Risk monitoring

Risk monitoring and control is the process of keeping track of the identified risks, monitoring residual risks and identifying new risks, ensuring the execution of risk plans and evaluating their effectiveness in reducing risk. Risk monitoring and control records risk metrics that are associated with implementing contingency plans. Risk monitoring and control is an ongoing process for the life of the project. The risks change as the project matures, new risks develop or anticipated risks disappear (Kremljak, 2004).

3. QUALITATIVE ANALYSIS OF PROJECT RISK

In projects whose results are not only tangible resources but also capabilities, qualitative risk assessment is important. Qualitative risk analysis is a process of evaluating influence and certainty of recognized risks. Risks are arranged according to their potential influence on project goals. Qualitative risk analysis is one of the ways to define importance of treatment of individual risks and managing reaction to risk. Time aspect can rather increase the importance of risk. Assessing the quality of available information can also help manage the assessment. For qualitative risk analysis one must asses the probability and consequences of risk with established methods and tools for qualitative analysis (Barkley, 2004; Grey, 1995; Vose, 2008).

4. CONCLUSION

Decision making has always been a difficult task. Managers employed in industrial companies, the public sector and service industry cope with high levels of uncertainty in their decision-making processes. This means that managers do not possess complete information on future events, do not know all possible alternatives or consequences of all possible decisions. Decision-making in high-risk conditions is becoming a common area for research within strategic management, organizational theory, R&D management and industrial engineering.

Tackling uncertainty involves developing heuristic tools that can offer satisfactory solutions. The research will continue withih project management field.

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