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Risk Management

MDA402 Project Management

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Lecture Overview

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   - Risk ANALYSIS
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   - Risk REPORTING

Risk

Definition

One of the main characteristics of the project is **uncertainty** $\rightarrow$ the biggest aspect of uncertainty is **risk**.

Risk is ...

Definition 9.1

the combination of **probability** of an event and its **consequence**. [7]

Definition 9.2

the effect of **uncertainty** on objectives, **deviation** from expected. [1]

Definition 9.3

the event with ability to **impact** objectives, processes, projects or delivery. [5]

Risk

Definition

There are two basic types of risks:

1. **Opportunity**
   - this is called **positive** risk
   - unexpected event that can **create a benefit** (upside)
   - more difficult to experience without an extra effort $\rightarrow$ helps to drive **innovation**
   - response to opportunity: **exploit, escalate, share, enhance, accept**
2. **Threat**
   - this is called **negative** risk
   - unexpected event that can **jeopardize any progress** or **whole project** (if major)
   - risk is usually considered to be only a threat $\rightarrow$ focus is only on mitigating any possible issues
   - response to threat: **avoid, escalate, transfer, mitigate, accept**

Risk

Risk in IT

IT projects could by very uncertain and therefore more likely to be affected **negative risk** $\rightarrow$ greater focus on risks, their potential sources and their mitigation.

Why it requires additional attention?

- unexpected risk can cause **significant increase** in project cost
- it can create additional work and thus **extend timeline**
- it can also **damage trust** between internal or external stakeholders
- based on the impact, it can cause greatly harm reputation of interested parties
- in the worst case it can lead to **the end** of the project [6]

Risk

Risk in IT

We can identify these **sources** [3] of risk in IT projects with the examples of **most common** risks (top 10 highlighted according to [4]):

Requirements

- **continuously changing requirements #1**
- **system requirements not adequately defined #2**
- **unclear system requirements #3**
- **incorrect system requirements #5**

Risk

Risk in IT

Planning & Control

- **lack of effective project management technology #4**
- **poor project planning #6**
- **inadequate estimation of required resources #7**
- **project progress not monitored closely enough #9**
- project milestone not clearly defined
- inexperienced project manager
- ineffective communications

Risk

Risk in IT

Project complexity

- **project involves the use of new technology #8**
- immature technology
- high level of technical complexity
- project involves the use of technology that has not been used prior project

Organizational Environment

- change in organizational management during the project
- **corporate policies with negative effect on the project #10**
- unstable organizational environment
- organization restructuring impacting project

Risk

Risk in IT

User

- users resistant to changes
- conflicts between users
- users not committed enough to the project
- users with negative attitude towards the project

Team

- inexperienced team members
- inadequately trained development team members
- team members lack of specialized skill required by the project

Risk Management

Definition

Definition 9.4

Risk management is the process where organizations methodically **address the risks** within the goal of achieving sustained benefit across the portfolio of all activities. [7]

- it consists of **coordinated activities** to direct and control an organization in regard to risk [1]
- it should be a **continuous** and **developing** process which runs throughout the organization's strategy
- focus of good risk management is not only to **identify** risk, but also their **treatment**

Risk Management

Objectives

Main objectives and goals of risk management are:

- add maximum **sustainable** value to all activities of organization
- **increase** the probability of **success**
- **decrease** both probability of **failure** and **uncertainty** of the project [7]
- to understand what **constitutes** risk and **eliminate** the possible occurrence of it becoming a threat or a major source of rework
- reduce **frequency** and **severity** of errors [6]

Risk Management

Effective risk management

Elements of effective risk management according to ISO [1] are:

- **Integrated** $\rightarrow$ internal part of every organization
- **Structured & comprehensive** $\rightarrow$ creates consistent and comparable results
- **Customized**
- **Inclusive** $\rightarrow$ appropriate involvement of all key stakeholders
- **Dynamic** $\rightarrow$ risks are changing as organization's context changes
- **Best available information** $\rightarrow$ timely and clear inputs based on historical and current information together with future expectations
- **Human and cultural factors**
- **Continual improvement**

Risk Strategy

Day-to-day risk management is task for project manager. To have all the means needed for successful risk management it is a must for every project to adopt **risk strategy**.

We will distinguish these 4 stages of risk strategy of the project:

1. **Risk IDENTIFICATION**
2. **Risk ANALYSIS**
3. **Risk EVALUATION**
4. **Risk REPORTING**

Risk Strategy

Identification

- main goal is to **identify** project's exposure to **uncertainty** [7]
- it should **find**, **recognize** and **describe** risks that might prevent a project achieving its objectives
- successful identification requires **appropriate** and **up-to-date** information as well as **deep** and **intimate** knowledge about project [1]
- **unrecognized** risk can be a cause of many issues and potential failures within the project $\rightarrow$ project manager should utilize useful **methods** for risk identification [5]

Risk Strategy

Identification

Methods for risk IDENTIFICATION

- utilize all available **lessons learned**
  - reflect on the past failures
  - discuss possible improvements or enhancements to prevent any other
- use **WHAT/WHY** technique
  - **WHAT** could go wrong?
  - **WHY** would something go wrong?
- apply **SWOT analysis**
  - define your **strengths**, **weaknesses**, **opportunities** & **threats**

Risk Strategy

Analysis

- main purpose of risk analysis is to comprehend the **nature** of risk and the **level** of risk
- it should consider these **factors**:
  - **likelihood** of consequences
  - **nature** and **impact** of consequences [1]
- several analytical techniques can be used for better assessment of both factors $\rightarrow$ most common one is **quantitative** technique called also **risk matrix**

Risk matrix

Risk matrix is a tool for quantification of risk's **likelihood** and **impact**. Its main purposes are:

- analyze and assess risks based on**likelihood** and **impact**
- define **consequences**

Risk Strategy

Analysis

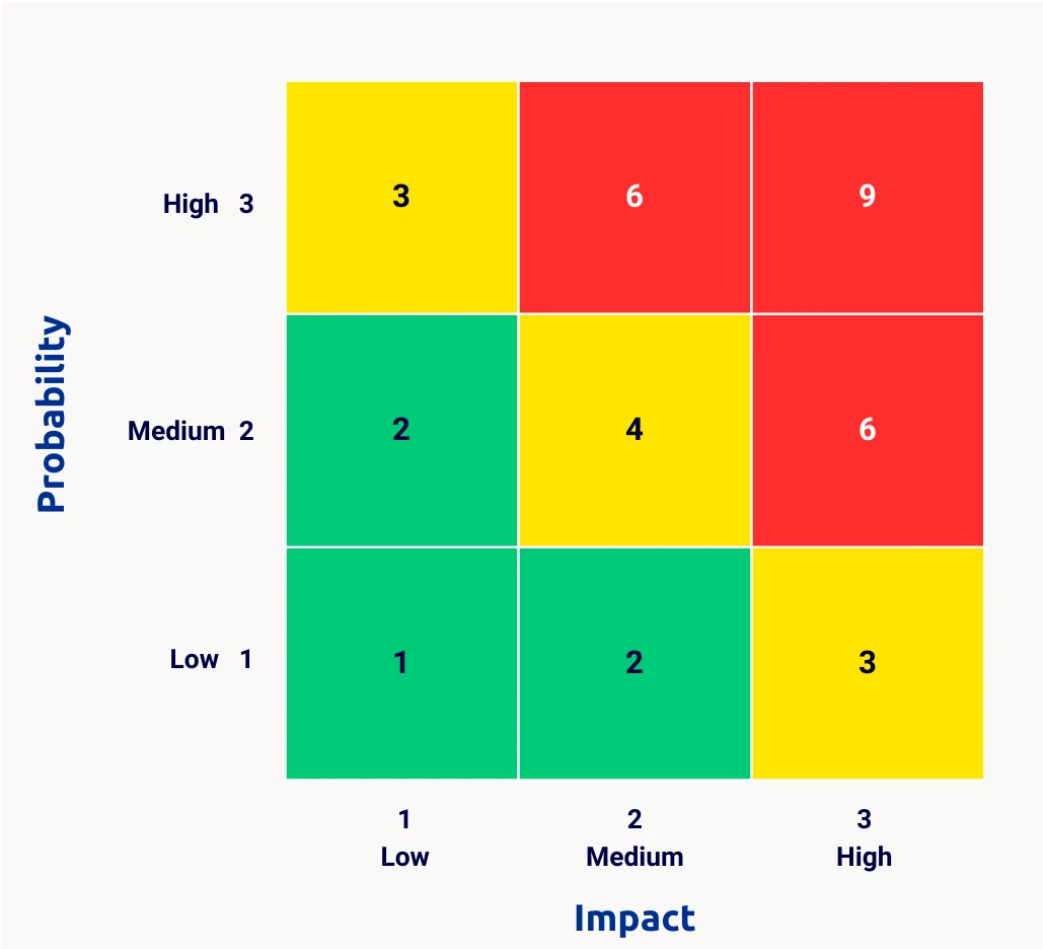

Figure: Risk matrix visualization [2]

Risk Strategy

Analysis

Example 1#

Whole project is too dependent on one specific team member:

- **likelihood** = low, **impact** = high $\rightarrow$ **3**
- consequence: paralyzed project during long-term absence or unexpected exit

Example 2#

Critical component not delivered on time by contracted third party:

- **likelihood** = medium, **impact** = high $\rightarrow$ **6**
- consequence: major disruption in the project timeline and plan due to not available functionality

Risk Strategy

Evaluation

- main purpose of risk evaluation is to **support decisions**
- its goal is to **evaluate** results of risk analysis and **decide** how will the response to certain risk look like
- distinguish 4 ways how to respond to risk $\rightarrow$ **4Ts** [5]:

1. **Tolerate** $\rightarrow$ no action taken, risk is accepted and dealt with on occurrence
2. **Terminate** $\rightarrow$ the activity generating the risk is removed, e.g. by changing plans
3. **Transfer** $\rightarrow$ the impact of risk is transferred to another party
4. **Treat** $\rightarrow$ the likelihood and impact of risk are reduced

Risk Strategy

Evaluation

Example 1#

Whole project is too dependent on one specific team member:

- response = **TREAT**
- execute extensive knowledge transfer to distribute knowledge among several team members

Example 2#

Critical component not delivered on time by contracted third party:

- response = **TRANSFER**
- change in contract to cover potential delays and extra costs

Risk Strategy

Reporting

- important part of risk strategy is to define clear standards how the risk will be communicated
- risk management requires proper communication of risk to all key stakeholders $\rightarrow$ **internal** & **external**
- one of the tools used for reporting is **risk register**
- **risk register** is the formal record of identified risks [6]
- details that should be part of every risk register are: **risk identifier**, **date opened**, **date closed**, **risk description**, **likelihood**, **impact**, **risk matrix score**, **response**, **responsible person / mitigator**

Risk Strategy

Reporting

Identifier	Team member dependency
Description	Knowledge of all critical process and functionalities sits with one developer.
Likelihood	1
Impact	3
Matrix score	3
Response	TREAT $\rightarrow$ execute extensive knowledge transfer to distribute knowledge among several team members
Mitigator	Project Manager

Table: Example 1# in risk register

Risk Strategy

Reporting

Identifier	Component availability
Description	Contracted third-party for critical functionality may face delays in delivery.
Likelihood	2
Impact	3
Matrix score	6
Response	TRANSFER $\rightarrow$ change in contract to cover potential delays and extra costs
Mitigator	Project Manager

Table: Example 2# in risk register

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Thank You for Your Attention!