Managing Processes & Systems & Projects

Improve

Risk Management (22)

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Qualitative & Quantitative risk management in project management

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Summary

Risk management should be undertaken as part of a structured, formal process that needs to be aligned to the overall approach to project management. In conclusion, key elements that need to be considered as part of a risk management process are as follows:

- Identify staff and resources assigned to the risk management process.
- Define lines of reporting and responsibility for the risk management process.
- Link the risk management plan to other project tools such as safety, quality and environmental management, and planning and reporting systems.
- Consolidate all risks identified into an appropriate and digestible response strategy in order that cumulative effects can be perceived.
- State risk audit intervals and key milestones.
- Include risk milestones in project plan.
- Identify possible response strategies and programs for each risk category, including contingency plans and how to handle new or unresolved risks.
- Assess cost involved.
- Monitor success of responses strategies, and produce feedback for reporting into future projects.

Risk management processes

Common risk processes

National standards associations (Bristish standards institute etc.)

Professional institutions (PMI, APM etc)

Government departments (e.g. Department of Defense DoD)

1 Risk strategy

Integrate with Project strategy, Risk management plan

Key areas are: *Scope and objectives, Roles & Responsibilities, Approach & Processes, Deliverables, Review & reporting cycle, Tools to be used*

2 Risk identification

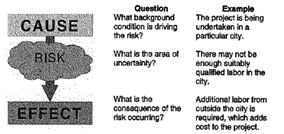
Structured identification of all sources of risks (Team)

- Peel-off the major risks
- True risks need to be identified --> Manage the risk and not the effect !!!!

Identification techniques

- Research
- Structured interviews / Questionnaires
- Checklists
- Brainstorming in a workshop environment
- Risk register
  - **most useful tool** during project to cope with risk (spreadsheet)
  - Nr, Description, Ownership, Probability, Impact, Risk factor, Response, Status (Done, Active, Monitor), Comments
- Database of historic risk

FIGURE 2.1. CAUSE, RISK, AND EFFECT.



Question	Example
What background condition is driving the risk?	The project is being undertaken in a particular city.
What is the area of uncertainty?	There may not be enough suitably qualified labor in the city.
What is the consequence of the risk occurring?	Additional labor from outside the city is required, which adds cost to the project.

Risk Category	Risk Name	Risk Number	Probability (1-3)	Impact (1-3)	Risk Score	Mitigation	Contingency	Action By	Action When
Guests	The guests find the party boring	1.1.	2	2	4	Invite crazy friends, provide sufficient liquor	Bring out the karaoke	Mack	within 2hrs
Guests	Drunken brawl	1.2.	1	3	3	Don't invite crazy friends, don't provide too much liquor	Bring in the guards	Jerry	Now
Nature	Rain	2.1.	2	2	4	Have the party indoors	Move the party indoors	Milind	10mins
Nature	Earthquake or fire	2.2.	1	3	3	Start the party with instructions on what to do in the event of fire or earthquake	Implement the appropriate natural disaster response plan	Everyone	As per plan
Food	Not enough food	3.1.	1	2	2	Have a buffer	Order pizza	Magua	30mins
Food	Food is spoiled	3.2.	1	3	3	Store the food in deep freezer	Order pizza	Zubair Malik	1Hr

3 Risk analysis

Qualitative analysis

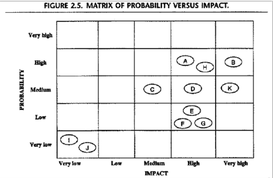
should be untertaken at all projects whereas quantitative is not always required

1. Analysis of risks to assess **impact** & **probabilty**
2. Synthesis of all risks to predict the most likely project outcome
3. Investigation of alternative course of action
4. Probability / impact matrix

FIGURE 2.3. SCORING OF PROBABILITY AND IMPACT SCALES.

	PROBABILITY	IMPACT	
		Cost	Time
Very high	70%–95%	>50%	>50%
High	50%–70%	20–50%	20–50%
Medium	30%–50%	10–20%	10–20%
Low	10%–30%	5–10%	5–10%
Very low	5%–10%	<5%	<5%

FIGURE 2.5. MATRIX OF PROBABILITY VERSUS IMPACT.

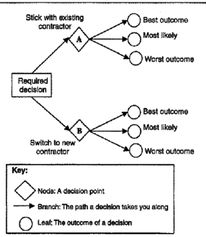


Quantitative analysis

Allows project risks to be modeled, statistical theory

1. **Decision tree**

FIGURE 2.6. DECISION TREE.

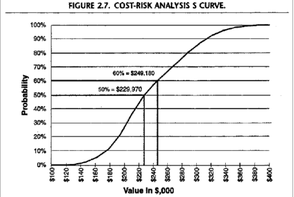


2. **Monte Carlo Simulation**

generates a number of possible scenarios

Calculate the combined impact of the model's various uncertainties to determine a probability distribution of the possible model outcomes

FIGURE 2.7. COST-RISK ANALYSIS S CURVE.

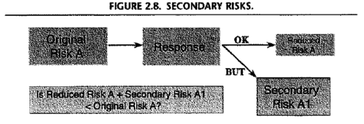


4 Risk response

Methodology

- Avoid
- Transfer
- Mitigate
- Control
- *Be aware of secondary risk if you apply your response --> Secondary risk + Reduced risk mustn't be greater than Original risk !!!!*

FIGURE 2.8. SECONDARY RISKS.



Tools and techniques

- Contract aquisition
  - Procurement plan
- Contingency management
  - Money only released if predefined event occurs
- Project controls

5 Risk control

- Strategy --> Change required?
- Identification --> new risks identified?
- Assessment --> new risks need to be assessed
- Response --> Responses still valid?

Benefits of risk management

- Awareness of uncertainty
- Awareness van lead to positive outcome if recognized early enough
- Must not remove incentives
- Complete transfer of risk is not possible or useful
- Perception of risk is important to its assessment
- All risks change with time and action