

EPM 16 - Risk Management Planning

Project Risk Management

1. Definition and Importance
2. Four Ways to handle risks
3. Risk Management Processes
 - a. Plan Risk Management
 - b. Identify Risks
 - c. Evaluate Risks
 - d. Plan Risk Responses
4. Project Risk by Phases

Project Risk Definition

1. Project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost and quality
2. A risk may have
 - a. one or more causes
 - b. one or more impacts

Project risk

More than the sum of the identified risks—there's an overarching risk as well

What can be done about risks?

1. Avoid
 - a. Use another method
 - b. Don't perform the risky activity
2. Transfer
 - a. Share or transfer the impact
 - b. Insurance is a major approach used here
3. Mitigate
 - a. Reduce the probability of an impact
 - b. Reduce the degree of potential impact
4. Accept
 - a. The activity is necessary and you cannot think of any cost-effective ways to mitigate the potential impacts of the risk

Example

1. Before paint can be applied, the surface must be cleaned. Toxic chemicals are one method of cleaning.
2. Risk: someone may injure their skin or their eyes due to a spill or splash of the chemical.
3. Options:
 - a. Avoid: find another method of cleaning—would high-pressure water work as well? Could a longer delay for curing be considered? Is painting really necessary?
 - b. Transfer: get insurance on the workers; if toxic exposure is based on time limits, use a larger workforce for shorter each. (An unethical method sometimes used: outsourcing internationally)
 - c. Reduce the probability of injury: require protective equipment such as clothing and safety goggles and masks; provide training and information to the workers.
 - d. Reduce the degree or impact of possible injury: ensure that onsite first aid attendants are available; eyewash stations, etc.
 - e. Accept: do nothing

Risk Appetite

Degree of uncertainty an entity is willing to take on in anticipation of a reward

Risk tolerance

The degree, amount, or volume of risk that an organization or individual will withstand

Risk threshold

The point above which a stakeholder or organization is no longer willing to accept the level of uncertainty or impact

Example

1. Think about Northern Gateway, a proposed oil pipeline in northern British Columbia
 - a. Risk appetite may be greater for the stakeholders who anticipate personal gain, or who value economic benefits more highly.
 - b. Risk tolerance and threshold may be very low for those concerned about the impact on wildlife, particularly if they do not see the value of the anticipated benefits in economic activity.
2. On a personal level
 - a. Is there any level of uncertainty you will accept for your child's safety?
3. Note that there are also risks for "do nothing"

Plan Risk Management (process)

1. Make an overall plan of how the project will identify, track and respond to risks
2. Inputs:
 - a. Project plan, project charter, shareholder register, enterprise environmental factors, organizational process assets
3. Tools:
 - a. Analytical techniques
 - b. Expert judgment
 - c. Meetings
4. Outputs
 - a. Risk Management Plan
 - b. (note that this becomes the input to the other four risk management processes: Identify Risks, Perform Qualitative Risk Analysis, Perform Quantitative Risk Analysis, and Plan Risk Responses)
5. Comment:
 - a. The complexity of the Risk Management Plan will vary with the complexity of the overall project.

Identify Risks (process)

1. Inputs:
 - a. Most of the other documents you already have regarding the project
 - b. Enterprise environmental factors and Organizational Process Assets
2. Tools and Techniques:
 - a. Fact-finding: Documentation reviews, etc.
 - b. Risk Breakdown Structure
 - c. Diagramming techniques
 - d. SWOT
 - e. Expert judgment
3. Outputs: Risk Register

Risk Breakdown Structure

1. Groups and categorizes risks
2. Identifies Response (Mitigation)

Risk Breakdown Structure

Legend:

1. RA: Risk Avoidance
2. RS: Risk Sharing
3. RR: Risk Reduction
4. RT: Risk Transfer

Risk Register

1. List of identified Risks
2. List of potential Responses
3. Over the life of the project will add:
 - a. Updates to probabilities of the risk occurring
 - b. Information on occurrences, if any
 - c. Information on actual responses and the success or lack of success of those responses

Qualitative Risk Analysis

1. Should always be done
2. Considers what are the risks, what can be done about them
3. Categorization of risks
4. Urgency of risks
 - a. May vary through the project;
 - i. Most concern for imminent risks
 - ii. at some point a risk may no longer be an issue
5. Updates the risk register:
 - a. New information about risk probability and impacts
 - b. New rankings or scores
 - c. New assumptions

Probability and Impact Matrix

1. Place identified risks on the matrix
2. The closer to top-right, more important to try to identify how to move down and/or to the left.

Quantitative Risk Analysis

1. Quantitative Risk Analysis attempts to use published data to quantify the risks:
 - a. Industry data about probabilities
 - b. Data about typical costs
2. Uses a variety of tools
 - a. Data gathering
 - b. Sensitivity Analysis
 - c. Expected monetary value analysis
 - d. Modeling and simulation
 - e. Expert judgment
3. May be expensive; usually is cost-justified for large, complex projects
4. May NOT be cost-justified on smaller projects
5. Would also update the risk register with the new information

In-class activity

(Below)

Controlling Risks

1. Throughout the project, the project manager must continue to update the risk register, as new risks are identified, and the project retires consideration of risks that are no longer possible
2. Risk reassessments and risk audits can be used to monitor and control the risk management processes
3. There are costs associated with the contingency reserve, so if it can be identified that some portion of this reserve can be released, it is a benefit to the organization and to the project

Project Change Management

1. Identification of a risk or occurrence of a risk may create a need for a Project Change.
2. Change Management is part of the Project Integration Management knowledge group.
3. Reminder of a typical change management process:
 - a. Identify a change request
 - b. Consider the impacts and costs (may have a committee for this)
 - c. Make a decision
 - d. Identify what plans must be updated
 - e. Inform affected stakeholders of the decision
 - f. Proceed
4. The PMO may have forms and template procedures available for project use

Risk throughout the project

1. The levels of risk change throughout the project
2. The risk-over-time profile may be typical to certain project types:
 - a. Early for projects that use new technology
 - b. Late for politically sensitive projects
 - c. During procurement where this is a large portion of the budget

Risk Management - Summary

1. Project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost and quality
2. A risk may have
 - a. one or more causes
 - b. one or more impacts
3. Risk Management Processes
 - a. Plan Risk Management
 - b. Identify Risks
 - c. Perform Qualitative Risk Analysis
 - d. Perform Quantitative Risk Analysis
 - e. Plan Risk Responses
 - f. Control Risks

Project Risk Management

1. Risk Management Process in the Planning Process Group
 - a. Plan Risk Management
 - b. Identify Risks
 - c. Perform Qualitative Risk Analysis
 - d. Perform Quantitative Risk Analysis
 - e. Plan Risk Responses
2. Risk Management Processes in the Monitoring and Controlling Process Group
 - a. Control Risks

In-class activity

1. Consider a major proposed project locally, the replacement of the Patullo Bridge
2. With your group, identify at least ten things that could happen to impact the success of a bridge replacement project. Place each of the ten items on your Probability and Impact Matrix
3. On another colour of post-it, identify things that could be done about the risk. Draw an arrow toward "reduced probability" or "reduced impact" or both
4. Be ready to explain to the instructor or to members of another group, and at that point, if your explanation is accepted, you may MOVE your risk to the left or DOWN
5. Get a group member to take a photo of your matrix to post to the class website

Here are ten potential factors that could impact the success of a bridge replacement project for the Patullo Bridge:

1. Budgetary Constraints
2. Stakeholder Opposition
3. Environmental Regulations
4. Unforeseen Site Conditions
5. Construction Delays
6. Design Errors or Changes
7. Permitting and Approval Process
8. Public Safety Concerns
9. Material Shortages
10. Labor Shortages

Now, let's place each of these items on a Probability and Impact Matrix:

		Probability	
		High	Low
Impact	High	1	2
	Low	3	4

Next, we will identify potential actions to mitigate the risks and reduce their probability or impact:

1. Budgetary Constraints: Develop a thorough cost estimation and contingency plan, seek additional funding sources, or consider alternative financing options to reduce the impact.
2. Stakeholder Opposition: Conduct extensive stakeholder engagement and communication, address concerns proactively, and incorporate feedback into the project design to reduce both the probability and impact.
3. Environmental Regulations: Collaborate with environmental agencies early on, conduct comprehensive environmental assessments, and develop strategies to minimize the project's environmental impact to reduce both probability and impact.
4. Unforeseen Site Conditions: Conduct thorough site surveys and investigations, incorporate contingency plans for different scenarios, and establish a robust risk management process to minimize both probability and impact.
5. Construction Delays: Develop a realistic project timeline, implement efficient project management practices, and address potential bottlenecks or conflicts promptly to reduce both probability and impact.
6. Design Errors or Changes: Engage experienced design professionals, conduct thorough design reviews, and establish a change management process to minimize both probability and impact.
7. Permitting and Approval Process: Start the process early, maintain open communication with regulatory agencies, and proactively address potential issues or delays to reduce both probability and impact.

8. **Public Safety Concerns:** Implement comprehensive safety protocols, conduct regular inspections, and engage with the public to address their safety concerns, reducing both probability and impact.
9. **Material Shortages:** Diversify the supply chain, maintain regular communication with suppliers, and identify alternative materials to reduce both probability and impact.
10. **Labor Shortages:** Develop a robust labor recruitment and retention strategy, collaborate with local unions and training programs, and implement efficient workforce management practices to reduce both probability and impact.

After discussing these actions and their potential to mitigate risks, you can move each risk accordingly on the matrix, either to the left (reduced impact) or down (reduced probability).