

Unit-5

Risk Management

Risk Management

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.

Risk Management is the process of identifying and migrating risk.

Risk management is defined as "the systematic application of management practices, policies, and procedures for identifying, analyzing, controlling and monitoring risk.

Why is it important?

1. Risk affects all aspects of your project-your budget, your schedule, your scope, the agreed level of quality, and so on.
2. Increase probability of positive event.
3. Reduce the occurrence of negative events.

How do we manage risk?

To manage risk, we use the risk management process

1. Identify the Risk
2. Analyze the Risk
3. Evaluate the Risk
4. Treat the Risk
5. Monitor and Review the Risk

Five Steps of Risk Management Process



Risk management planning

Analysis and decision making to implement risk management according to size and complexity of the project.

Understand the general level of risk your project faces

Stakeholders will be involved in planning risk management.

Risk Management Plan should include:

1. Schedule Risk
2. Cost Risk
3. Quality Risk
4. Scope Risk
5. Resource Risk
6. Customer Satisfaction Risk

Risk Identification

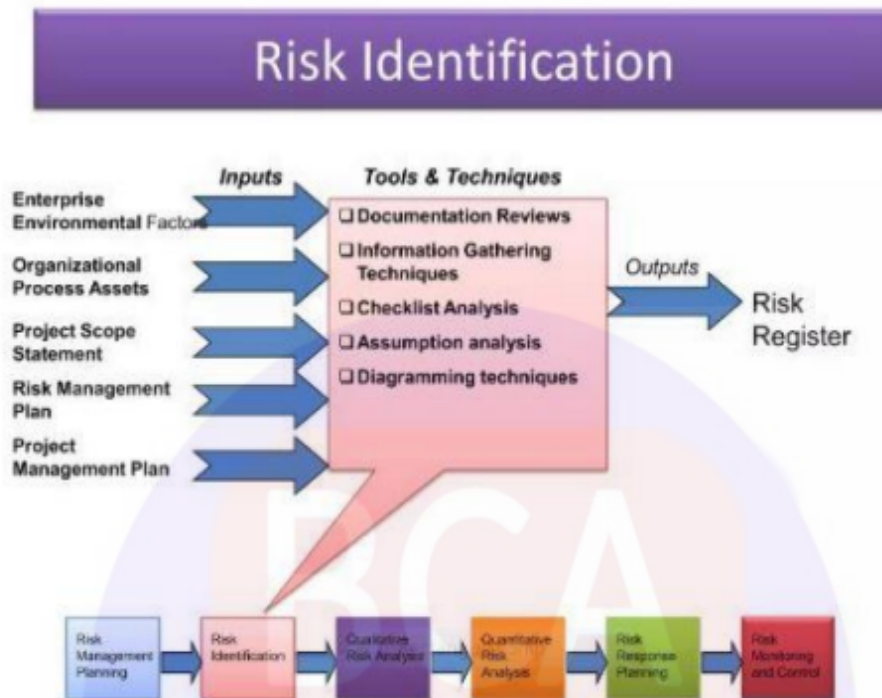
Identify individual risks that might affect your project by making a list

Which risk has more probability of affecting the project?

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Use wide variety of inputs, tools, and technique to identify all the risks to the project.

Performed ➡ Throughout the life of the project.



Risk Planning

Risk planning in software project management involves identifying potential risks that could impact the success of a project, assessing their likelihood and potential impact, and developing strategies to mitigate or manage those risks effectively. It aims to anticipate and prepare for any uncertainties that could arise during the project lifecycle, helping to minimize negative impacts and maximize the chances of project success.

Advantages:

1. Proactive problem-solving
2. Informed decision-making
3. Stakeholder confidence
4. Cost and time savings

Disadvantages:

1. Resource-intensive

2. Risk overemphasis
3. Unrealistic expectations
4. Risk aversion

Key steps in risk planning for software projects:

1. Identify risks.
2. Analyze risks.
3. Plan risk responses.
4. Develop contingency plans.
5. Monitor and control risks.
6. Communicate and report.

Risk Evaluation and Management

Risk evaluation and management in software project management involves assessing potential risks that could affect the project's success, determining their likelihood and impact, and developing strategies to mitigate or manage them effectively. It aims to proactively identify and address uncertainties to minimize negative impacts and maximize the project's chances of success.

Advantages:

1. Better project outcomes
2. Informed decision-making
3. Stakeholder confidence
4. Cost and time savings

Disadvantages:

1. Resource-intensive
2. Risk overemphasis
3. Unrealistic expectations
4. Risk aversion

Risk evaluation and management are intertwined processes that are crucial for navigating the uncertainties and ensuring the success of your software project. Let's break down each part:

Risk Evaluation:

- **Focus:** Identifies, analyzes, and prioritizes potential risks that could affect the project.
- **Steps:**
 - **Risk Identification:** Brainstorm and gather information to list potential threats to various aspects (technical, schedule, budget, etc.).
 - **Risk Analysis:** Assess the likelihood of each risk occurring and its potential impact on project objectives. This can involve qualitative methods like risk scoring matrices or quantitative analysis using historical data.
 - **Risk Prioritization:** Rank risks based on their severity and probability to focus on the most critical ones first.

Risk Management:

- **Focus:** Develops and implements strategies to address prioritized risks.
- **Steps:**
 - **Risk Response Planning:** For each high-priority risk, define a plan outlining actions to mitigate, avoid, transfer, or accept the risk.
 - **Risk Response Implementation:** Assign responsibilities, deadlines, and resources to execute the chosen response strategies.
 - **Risk Monitoring and Control:** Regularly track the status of risks, their likelihood, and potential impact. Update risk plans as needed and communicate changes to stakeholders.

Categories of Risk

1. Project Risk
2. Technical Risk
3. Business Risk

1. Project Risk

A project risk is any unforeseen thing that might or might not occur during a project. A risk isn't necessarily negative; it's just an event where the outcome is uncertain. As such, a project risk can have either a negative or positive effect on the project's objectives.

Most common Project Risk

- a. **Cost Risk:** It is the risk that the project will cost more than the budget allocated for it. the most common project risk, cost risk is due to poor budget planning, inaccurate cost estimating
- b. **Schedule Risk:** Schedule risk is the risk that activities will take longer than expected, and is typically the result of poor planning. It's closely related to cost risk, because slippages in schedule typically increase costs and also delay the outcome of the project.
- c. **Performance Risk:** Performance risk is the risk that the project will fail to produce results consistent with project specifications. A project team can deliver the project within budget and schedule and still fail to produce the results and benefits.

2. Technical Risk:

- 1) Threaten the quality and timeliness of the software to be produced.
- 2) If the technical risk become a reality, implementation may become difficult or impossible.
- 3) Some reasons for technical risks

- Frequent changes in requirement
- Less use of future technologies
- Less number of skilled employees
- High complexity in implementation
- Improper integration of modules

4. Business Risk:

- 1) Business risks are uncertain factors, internal or external, that threaten the financial health of an organization.
- 2) Examples of external business risks would be natural disasters or cyber-attacks. Internal business risks are threats that come from within the company, such as falling out of compliance, having too much debt, or labor disputes.
- 3) Top business risk is:
 - **Market risk:** Building an excellent product or system that no one really wants.
 - **Sales risk:** Building a product that the sales force does not understand how to sell.
 - **Management Risk:** losing the support of senior management due to change in focus or change.

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Risk Analysis

Begin putting this list of risks in a risk register-a chart that lays out each risk, followed by information like priority level and mitigation plans

Helps to identify and manage potential problem

Using the matrix, the project manager can categorize the risk into four categories as Low, Medium, High and Critical

The probability of occurrence and the impact on the project are the two parameters used for placing the risk in the matrix categories.

The categorization of risk can be done on the percentage basis, very low (75%), here percentage resemble either its probability of occurrence in a project or its impact on the project.

Probability	4	Medium	Critical
	3		
	2	Low	High
	1		
		1	2
		3	4
		Impact	

Framework for Dealing with Risk (Risk Management framework)

- The Risk Management Framework is a template and guideline used by companies to identify, eliminate and minimize risks.
- It was originally developed by the National Institute of Standards and Technology to help protect the information systems of the United States government.
- An effective risk management framework seeks to protect an organization's capital base and earnings without hindering growth.
- Adopting a risk management framework that incorporates best practices into the firm's risk culture can be the foundation of a company's financial future.

5 Component of RMF

When developing a risk management framework, at least five critical components must be considered.

1. **Risk identification**

Identifying potential risks that could impact the project. Examples include technical challenges, schedule delays, budget overruns, and resource constraints.

2. **Risk measurement and assessment**

Analyzing the likelihood and impact of each identified risk. Techniques include risk scoring matrices, historical data analysis, and expert judgment.

3. **Risk mitigation (Minimization)**

Developing and implementing actions to reduce the likelihood or impact of risks. Strategies include avoidance, mitigation, transference, and acceptance.

4. **Risk reporting and monitoring**

Regularly tracking the status of risks and communicating updates to stakeholders. Tools include risk registers, dashboards, and reports.

5. **Risk governance**

Establishing clear roles, responsibilities, and processes for managing risks. Oversight and approval of risk management activities.

Risk Management Framework Steps

1. **Prep:** Define project, roles, and communication plan.
2. **Identify:** Brainstorm, categorize, and gather data on potential risks.
3. **Analyze:** Assess likelihood and impact of each risk, prioritize them.
4. **Respond:** Develop plans to mitigate, transfer, avoid, or accept key risks.
5. **Implement & Monitor:** Implement plans, track risk status, adjust as needed.
6. **Report & Communicate:** Share risk information with stakeholders regularly.
7. **Improve:** Learn from experience and refine the framework for future projects.

Evaluating Risk to the Schedule

Evaluating risk to the schedule in software project management involves a systematic process to assess potential threats that could affect project timelines. Here's a concise overview:

1. **Risk Identification:** Identify factors that could impact the project schedule, such as scope changes, resource constraints, dependencies, or technical challenges.
2. **Risk Analysis:** Assess the identified risks by considering their probability of occurrence and the potential impact on the project schedule. This involves analyzing the severity of each risk and its potential consequences on project milestones.
3. **Quantitative Analysis:** Utilize quantitative techniques, such as Monte Carlo simulations or PERT analysis, to quantify the impact of identified risks on the project schedule. This provides a more accurate assessment of schedule uncertainty and helps prioritize risk response efforts.
4. **Risk Response Planning:** Develop strategies to mitigate or manage schedule risks. This may involve allocating additional resources, adjusting task dependencies, or implementing contingency plans to address potential schedule delays.
5. **Monitoring and Control:** Continuously monitor the project schedule for deviations and assess the effectiveness of risk response strategies. Regular progress tracking and milestone reviews help ensure proactive risk management throughout the project lifecycle.
6. **Communication:** Communicate schedule-related risks and mitigation efforts to stakeholders, including project sponsors, team members, and clients. Transparent communication fosters collaboration and ensures alignment on schedule expectations and risk management priorities.

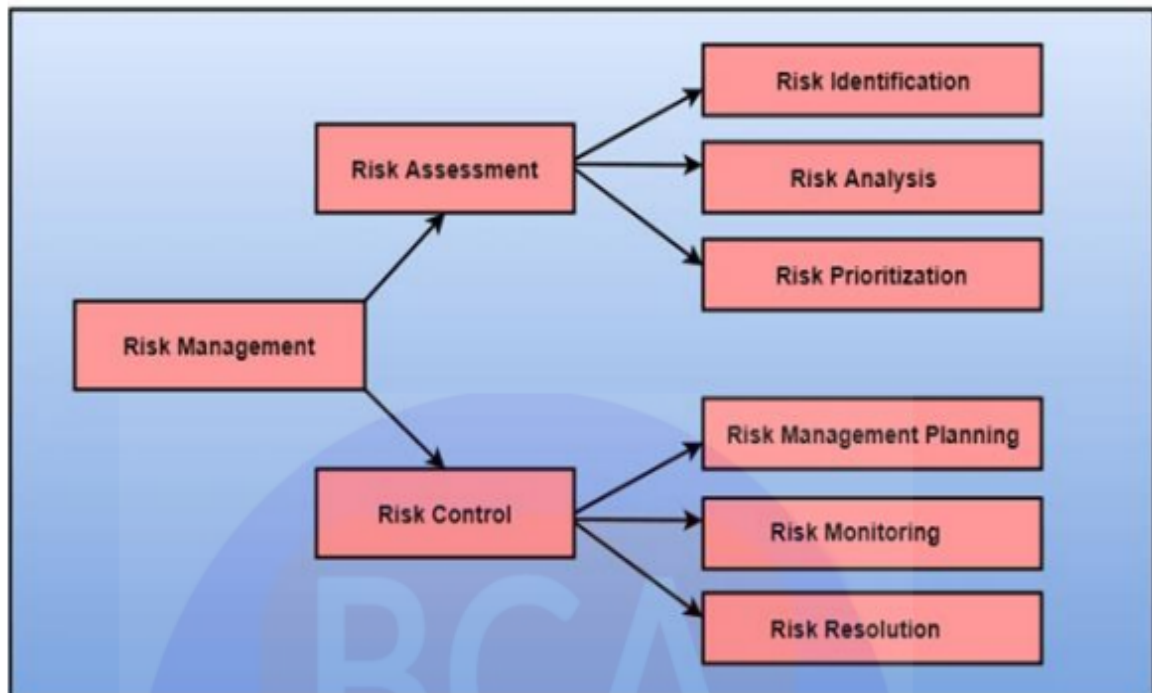
How to Use the Risk Assessment?

The Risk Assessment values are determined by multiplying the scores for the Probability and Severity values together.

The higher the risk assessment, the greater the overall risk for the project.

This method helps balance the weight of severity and probability

Risk Management Activities



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