

Risk Management

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Abstract- Risk Management is the term which is not only implemented for the large scale organizations but it is associated with each and every type of firm or organizations. Risk Management ensures the smooth functioning of all the events of a project. Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and impact of unfortunate events or to maximize the realization of opportunities.

INDEXED TERMS: Risk Management Planning, Risk Identification, Risk Analysis, Risk Response Planning, Risk Monitoring and Control.

I. INTRODUCTION

Risk management is the systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives. Several risk management standards have been developed including the Project Management Institute, the National Institute of Standards and Technology, actuarial societies, and ISO standards. Methods, definitions and goals vary widely according to whether the risk management method is in the context of project management, security, engineering, industrial processes, financial portfolios, actuarial assessments, or public health and safety.

Figure 1 provides an overview of the following major processes:

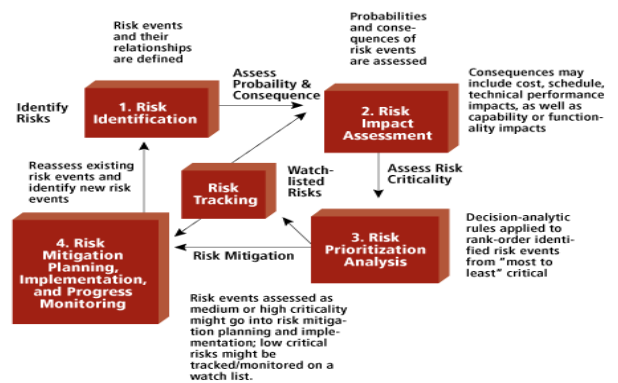
Risk Management Planning- deciding how to approach and plan the risk management activities for a project.

Risk Identification- determining which risk might affect the project and documenting the characteristics.

Risk Analysis- two methods of risk analysis are- Qualitative Risk Analysis and Quantitative Risk Analysis.

Risk Response Planning- developing procedures and techniques to enhance opportunities and reduce threats to the project's objectives.

Risk Monitoring and Control- monitoring residual risk, identifying new risks, executing risk reduction plans, and evaluating their effectiveness throughout the project life cycle.



These processes interact with each other and with the processes in the other knowledge areas. Each process generally occurs at least once in every project

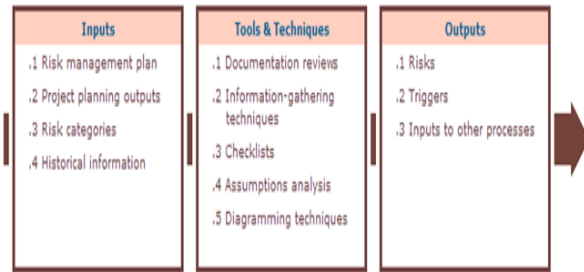
II. DETAILS RISK IDENTIFICATION

Risk identification involves determining which risks might affect the project and documenting their characteristics.

Risk identification is an iterative process. The first iteration may be performed by a part of the project team, or by the risk management team. The entire project team and primary stakeholders may make a second iteration. To achieve an unbiased analysis, persons who are not involved in the project may perform the final iteration.

There are multiple sources of risk. For risk identification, the project team should review the program scope, cost estimates, schedule (to include evaluation of the critical path), technical maturity, key performance parameters, performance challenges, stakeholder expectations vs. current plan, external and internal dependencies, implementation

challenges, integration, interoperability, supportability, supply-chain vulnerabilities, ability to handle threats, cost deviations, test event expectations, safety, security, and more. In addition, historical data from similar projects, stakeholder interviews, and risk lists provide valuable insight into areas for consideration of risk.



III. RISK ANALYSIS

Once risks have been identified, they must then be assessed as to their potential severity of impact (generally a negative impact, such as damage or loss) and to the probability of occurrence. These quantities can be either simple to measure, in the case of the value of a lost building, or impossible to know for sure in the case of the probability of an unlikely event occurring. Therefore, in the assessment process it is critical to make the best educated decisions in order to properly prioritize the implementation of the risk management plan.

IV. QUALITATIVE RISK ANALYSIS

Qualitative risk analysis is the process of assessing the impact and likelihood of identified risks. This process prioritizes risk according to their potential effect on project objectives. Qualitative risk analysis is one way to determine the importance of addressing specific risks and guiding risk responses. The time-criticality of risk-related actions may magnify the importance of a risk. An evaluation of the quality of the available information also helps modify the assessment of the risk. Qualitative risk analysis requires that the probability and consequences of the risks be evaluated using established qualitative-analysis methods and tools. Trends in the results when qualitative analysis is repeated can indicate the need for more or less risk-management action. Use of these tools helps correct biases that are often present

in a project plan. Qualitative risk analysis should be revisited during the project's life cycle to stay current with changes in the projects risks. This process can lead to further analysis in **quantitative risk analysis** or directly to risk response planning.

V. QUANTITATIVE RISK ANALYSIS

The quantitative risk analysis process aim to analyze numerically the probability of each risk and its consequence on project objectives, as well as the extent of overall project risk. This process uses techniques such as Monte Carlo simulation and decision analysis to:

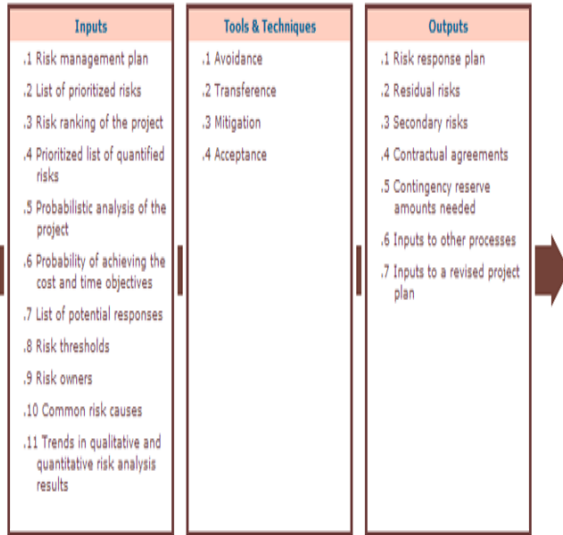
- Determine the probability of achieving a specific project objective.
- Quantify the risk exposure for the project, and determine the size of cost and schedule contingency reserves that may be needed.
- Identify risks requiring the most attention by quantifying their relative contribution to project risk.
- Identify realistic and achievable cost, schedule, or scope targets.

Quantitative risk analysis generally follows qualitative risk analysis. It requires risk **identification. The qualitative and quantitative risk analysis processes can be used separately or together.** Considerations of time and budget availability and the need for qualitative or quantitative statements about risk and impacts will determine which method(s) to use. Trends in the results when quantitative analysis is repeated can indicate the need for more or less risk management action.

VI. RISK RESPONSE PLANNING

Risk response planning is the process of developing options and determining actions to enhance opportunities and reduce threats to the project's objectives. It includes the identification and assignment of individuals or parties to take responsibility for each agreed risk response. This process ensures that identified risks are properly

addressed. The effectiveness of response planning will directly determine whether risk increases or decreases for the project. Risk response planning must be appropriate to the severity of the risk, cost effective in meeting the challenge, timely to be successful, realistic within the project context, agreed upon by all parties involved, and owned by a responsible person. Selecting the best risk response from several options is often required.



■ Risk response actions are as effective as expected, or if new responses should be developed.

■ Project assumptions are still valid.

■ Risk exposure has changed from its prior state, with analysis of trends.

■ A risk trigger has occurred.

■ Proper policies and procedures are followed.

■ Risks have occurred or arisen that were not previously indentified.

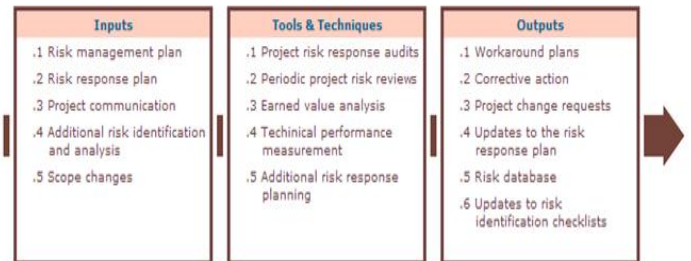
Risk control may involve choosing alternative strategies, implementing a contingency plan, taking corrective action, or deplaning the project. The risk response owner should report periodically to the project manager and the risk team leader on the effectiveness of the plan, any unanticipated effects, and any mid-course correction needed to mitigate the risk.

VII. RISK MONITORING AND CONTROLING

Risk monitoring 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.

Good risk monitoring and control processes provide information that assists with making effective decisions in advance of the risk's occurring. Communication to all project stakeholders is needed to assess periodically the acceptability of the level of risk on the project. The purpose of risk monitoring is to determine if:

■ Risk responses have been implemented as planned.



VIII. LIMITATIONS

Prioritizing the *risk management processes* too highly could keep an organization from ever completing a project or even getting started. This is especially true if other work is suspended until the risk management process is considered complete.

It is also important to keep in mind the distinction between risk and uncertainty. Risk can be measured by impacts x probability.

If risks are improperly assessed and prioritized, time can be wasted in dealing with risk of losses that are not likely to occur. Spending too much time assessing

and managing unlikely risks can divert resources that could be used more profitably. Unlikely events do occur but if the risk is unlikely enough to occur it may be better to simply retain the risk and deal with the result if the loss does in fact occur. Qualitative risk assessment is subjective and lacks consistency. The primary justification for a formal risk assessment process is legal and bureaucratic.

REFERENCES

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