What Is Risk?

Risk Analysis is very essential for software testing.

In software testing, risk analysis is the process of identifying risks in applications and prioritizing them to test.

Risk Analysis attempts to identify all the risks and then quantify the severity/probablity of the risks.

Risk identification and management are the main concerns in every software project. Effective analysis of software risks will help to effective planning and assignments of work

Some of the risks could be:

1. New Hardware.
2. New Technology.
3. New Automation Tool.
4. Sequence of code delivery.
5. Availability of application test resources.
6. Tight timelines
7. Undefined project scope
8. Insufficient resources
9. Continuously changing requirements
10. Natural disasters

Risk can appear at any time. QA testers must consequently be able to handle risk in an efficient and timely manner. Tight development schedules not only demand quick attention to risk, but also require timely risk management that ensures effectively-executed solutions to unanticipated issues, preventing a dethroned or delayed project.

IMP-In Software Testing some unavoidable risk might takes place like:

- Change in requirements or incomplete requirements.
- Time allocation for testing.
- Developers delaying to deliver the build for testing.

- Urgency from client for delivery.

- A high number of test builds,
- Insufficient regression time
- Unavailable prerequisites
- Incomplete validation

Categories Of Risks/Risk Identification/Risk Specify/Risk Identify

#1) Schedule Risk: Project schedule get slip when project tasks and schedule release risks are not addressed properly.

Schedule risks mainly affect a project and finally on company economy and may lead to project failure.

Schedules often slip due to the following reasons:

- Wrong time estimation
- Resources are not tracked properly. All resources like staff, systems, skills of individuals, etc.
- Failure to identify complex functionalities and time required to develop those functionalities.
- Unexpected project scope expansions.

#2) Budget Risk:Required investment is inaccurately anticipated, including:

- Wrong budget estimation-Certain required items excluded from the estimation of costs
- Cost overruns-Unanticipated expenses, or inaccurate estimation, have cause unanticipated expenses
- Project scope expansion- The project scope is expanded

#3) Operational Risks: Risks of loss due to improper process implementation failed system or some external events risks. Causes of Operational Risks:

- Failure to address priority conflicts
- Failure to resolve the responsibilities
- Insufficient resources

- No proper subject training
- No resource planning
- No communication in the team.

#4) Technical Risks: Technical risks generally lead to failure of functionality and performance.

Causes of Technical Risks are:

- Continuous changing requirements
- The product is complex to implement.
- Difficult project modules integration.

#5) Programmatic Risks: These are the external risks beyond the operational limits.

These are all uncertain risks are outside the control of the program. These external events can be:

- Running out of the fund.
- Market development
- Changing customer product strategy and priority
- Government rule changes.

<u>The Risk Management process occurs twice, during:</u>

1. Test Planning
2. Test Case Design(end) or sometimes in the Test Execution phase

Test execution is one of the most important phases of any project, the results from this phase determines the quality and enables decision for the management for go-nogo,"

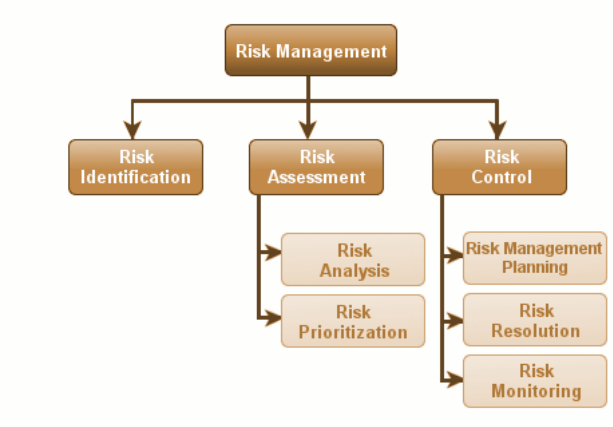
"The objective of risk management is to reduce different risks

Risk Management Process

The generic process for Risk Management involves 3 important stages:

1. Risk Identification
2. Risk Impact Analysis
3. Risk Mitigation

Mitigate risk through planning/Risk management process diagram



Risk identification

As it is said, the first step to solving a problem is identifying it.

This stage involves making a list of everything that might potentially come up and disrupt the normal flow of events.

The main outcome of this step is a list of risks.

This risk-based testing step is commonly led by the QA lead/Manager/representative. However, the lead alone will not be able to come up with the entire list- the entire QA team's input makes a huge impact.

We can say this is a collective activity led by the QA lead.

Also, the risks that are identified during the Test planning phase are more 'managerial' in orientation- meaning, we are going to look at anything that might impact the QA project's schedule, effort, budget, infrastructure changes, etc.

The focus here is not the AUT, but the way the QA phase will go on.

Risk Assessment/Risk Impact Analysis

Risk Analysis in Software Testing: All the risks are quantified and prioritized in this step. Every risk's probability (the chance of occurrence) and impact (amount of loss that it would cause when this risk materializes) are determined systematically.

Impact Is defined by - High – medium-low, values are assigned to both the probability and impact of each risk.

The risks with "high" probability and "High" impact are taken care of first and then the order follows.

This stage usually involves the analysis and prioritization of the risks, i.e. possible outcomes of each identified risk

Based on the degree of impact, possessed by each risk, they are devided mostly on 'High', 'Medium' and 'low'. And based on their impact they are prioritize i.e. High risks are considered as top priority whereas the low risk is regarded for the bottom most priority.

Risk impact analysis table: example

Risk Identification	Prob.	Impact
SCHEDULE Testing schedule is tight. If the start of the testing execution is delayed due to design tasks, the test cannot be extended beyond the UAT scheduled start date.	High	High
RESOURCES Not enough resources, resources on boarding too late (process takes around 15 days.	Medium	High
DEFECTS Defects are found at a late stage of the cycle or at a late cycle; defects discovered late are most likely be due to unclear specifications and are time consuming to resolve.	Medium	High
SCOPE Scope completely defined but req change.	Medium	Medium
Natural disasters	Low	Low/Medium
Non-availability of Independent Test environment and accessibility	Medium	High

Risk Mitigation Techniques:

Process is to find solutions to plan how to handle each one of these risk.

These plans/risk can differ from company to company, project to project and even person

During this stage, risks are managed, controlled and mitigated, based on their priority so as to achieve the desired results. It is generally divided into three activities which may be seen below.

Risk Management Planning: It involves a proper and effective plan to deal with the each identified risk.Mostly done with meetings.

Risk Resolution:It refers to the execution of the plans, outlined during the risk management planning stage so as to either remove or fix identified risks.

Risk Monitoring: It involves, regular monitoring and tracking, the development progress, in the direction, of resolving risk issues, which may include revaluation of the risks, their likelihood to occur, etc.

Here as per the Risk identification and Impact ,now we can minimize/control/mitigate the risk as shown below-

Risk Identification	Prob.	Impact	Mitigation Plan/Control
SCHEDULE Testing schedule is tight. If the start of the testing execution is delayed due to design tasks, the test cannot be extended beyond the UAT scheduled start date.	High	High	• The testing team can control the preparation tasks (in advance) and the early communication with involved parties. • Some buffer has been added to the schedule for contingencies, although not as much as best practices advise.
RESOURCES Not enough resources, resources on boarding too late (process takes around 15 days.	Medium	High	Holidays and vacation have been estimated and built into the schedule; deviations from the estimation could derive in delays in the testing.
DEFECTS Defects are found at a late stage of the cycle or at a late cycle; defects discovered late are most likely be due to unclear specifications and are time consuming to resolve.	Medium	High	Defect management plan is in place to ensure prompt communication and fixing of issues.
SCOPE Scope completely defined but req change.	Medium	Medium	Scope is well defined but the changes are in the functionality are not yet finalized or keep on changing.
Natural disasters	Low	Low/Medium	Teams and responsibilities have been spread to two different geographic areas. In a catastrophic event in one of the areas, there will resources in the other areas needed to continue (although at a slower pace) the testing activities.
Non-availability of Independent Test environment and accessibility	Medium	High	Due to non availability of the environment, the schedule gets impacted and will lead to delayed start of Test execution.

ID	Date raised	Risk description	Likelihood of the risk occuring	Impact if the risk occurs	Mitigating action *Actions to mitigate the risk e.g. reduce the likelihood.*
1	[enter date]	Project purpose and need is not well-defined.	Medium	High	Complete a business case if not already provided and ensure purpose is well defined on Project Charter and PID.
2	[enter date]	Project design and deliverable definition is incomplete.	Low	High	Define the scope in detail via design workshops with input from subject matter experts.
3	[enter date]	Project schedule is not clearly defined or understood	Low	Medium	Hold scheduling workshops with the project team so they understand the plan and likelihood fo missed tasks is reduced.