Risk Management for Projects

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Section 1:
The fundamentals of risk management

What you will learn in this section:

In this section, you will learn how to:

- Define risk management.
- Recognize why it's important to set the context and objectives for the risk management process.
- Recognize why it's necessary to apply a risk management process in a project, and
- Summaries and classify each step of the risk management process by using the Risk Management Canvas.

Introduction

When people think about risk management, they often think of danger, perhaps hazard signs on a construction site or an image of a chaotic scene. These visuals convey anything but effective risk management.

The word risk can create some level of fear or anxiety, as risks typically are unknown and uncertain. In the project world, we cannot simply sit back and hope that things won't happen. I know a professor tells his students that ***hope is not a contingency plan***. As a result, we need to manage risk appropriately and starts early as possible in the project life cycle.

In reality, though, we need to change our mindset when dealing with risk. Risk is part and parcel of business and should not be feared, but rather embraced and managed. By using a measured and systematic approach to risk, such as what we will be doing over the next five sections, effective risk management builds confidence for all stakeholders involved.

Although we will be focusing on risk management in a project setting, the process that you will be engaged with over the coming weeks is relevant for any context where there is a risk, including organizations, not-for-profit enterprises, and community projects.
Enjoy the next five sections, but for now it's time to dive in.

The fallout of not addressing risk

Not every project goes according to plan. Take a moment to examine these images, and then think about what could have been done to anticipate - and even avoid - the outcomes that are evident here.

Olympic Stadium, Athens
Greece (2016)

Building construction site, Dubai
United Arab Emirates (2007)

Skagit Bridge, Washington
United States of America (2013)

An introduction to risk management

We kick start our discussion by exploring the definition of risk. Once we have a better understanding of what risk is, we will be able to develop a solid understanding of what risk management is all about.

Whether you are a project manager, an entrepreneur, a business manager, or a community organizer, your ability to identify, assess, and manage risk will have a direct impact upon the successful achievement of your objectives. Poor risk management practices often result in negative economic performance, adverse environmental impact, and diminished reputational and other societal consequences.

Risk management can be applied to a variety of different organizational contexts, ranging from the strategic, to operational levels within a profit-based organization, not-for-profit based organization, or public sector entities.

For the purposes of this course, we will adopt a view of managing risk in a project-based setting. Although we decided to adopt a project related context, the risk management principles and processes covered in this course encompass exactly the same risk management principles and processes that apply to both project-based organizations and other corporate environments. In further support at this point, you may be aware that application of the international risk management standard forms a core part of corporate governance compliance in most leading organizations.

What is risk and what is risk management?

When we hear the word risk, it is often used in a downside or negative context, such as being exposed to the threat of injury, damage, loss, or even danger. However, like a coin, risk has two sides. Risk can, therefore, be negative or risk can be positive. Positive risk is referred to as opportunity. The commonality of positive risk and negative risk is that both types of risks emanate from an uncertain future event. As such, risk is best defined as ***the uncertainty on the achievement of your stated objectives***.

Now that we have a better understanding of what risk actually is and an awareness of the relationship between risk and uncertainty, we are in a better position to now explore the concept of risk management, which was briefly mentioned in our introductory discussion. So how important is risk management? And is anyone actually paying attention to it? The answer is best illustrated by pointing to the existence of an international standard on risk management. International Standard ***IS 31000*** was adopted in 2009.

The risk standard was developed through a need to improve the management of risk in organizations throughout the world. The risk management standard governs and directs a uniform approach to managing risk in various organizational settings. Here, risk management is described as "***the systematic application of management policies, procedures, and practices to the tasks of establishing the context, identifying, analyzing, assessing, treating, monitoring, and communicating risks, with a view to reducing the negative or alternatively, enhancing the positive impact on the organization***."

Taking a closer look at the risk management definition, it is important to note the various elements that combine to form the risk management process. The process approach is important, as it requires a relationship between the elements and even more importantly, an overarching message that risk management is a continuous activity, rather than a static event or once-off activity.

If you consider the life cycle of a project, it is reasonable to assume that risk management is an activity that will need to take place continually and at every stage of a project's life cycle, due to the rate of change and levels of uncertainty associated with project delivery. Constant monitoring and controlling of these uncertainties and managing the possible risk exposure is part and parcel of ensuring successful project delivery within the triple constraints of ***schedule, cost, and quality***.

Our plan is to delve further into each stage of the risk management process over the coming sections with the aid of a conceptual risk management framework visual as our learning tool. This tool, or framework, will be referred to as ***the risk management canvas***. The key to successful risk management practice is the adoption and implementation of a robust risk management framework or regime, such as ***IS 31000***,

and insuring organization-wide application and compliance. Compliance in a project-based setting requires a commitment that the risk management process is consistently applied and that all elements are carefully considered and duly implemented at various stage throughout the project life cycle.

A common error or misconception of inexperienced project managers is the belief that, once the risk management process has been undertaken and complied with, the job is done. This seems to be a recurring theme in organizations, reducing the risk work to becoming no more than a tick-the-box compliance type exercise.

However, if you consider the project life cycle duration and complexity of projects, there are high levels of uncertainty at the outset, mostly as a result of insufficient detail. However, as a project commences, further information becomes available, changing previous assumptions, which, in turn, creates new uncertainties for you. Your natural response to the changing landscape should be to revisit and update your risk work to reflect these changing circumstances.

Risk management should therefore be viewed as a dynamic process that is designed to contribute to project or organizational success. It provides key stakeholders with greater insights into potential risks and their impact on the achievement of project objectives. In other words, the application of the risk management process demands continual review and modification, to keep up with potential challenges and risks, as well as opportunities, in order to be effective.

Please now Go to **Activity Book Page 1** to solve **Knowledge check 1: The fundamentals**

Why do we need to consider risk management?

Previously, we discussed and framed a definition for risk and risk management. For a quick recap, **risk** was defined as "***Uncertainty on the achievement of your objectives***." and **risk management** was framed as "***The systematic application of management policies, procedures, and practices to the tasks of establishing the context, identifying, and analyzing, assessing, treating, monitoring, and finally communicating risk***." Have you perhaps considered why we need risk management? Or what the purpose of risk management is?

Essentially, they are *two main drivers* why organizations devote time, money, and effort to the development and maintenance of their risk management regimes. **The first is for legislative compliance reasons**, whereby organizations in both the public and private sector domains are required to ensure effective corporate governance arrangements are in place. Having a risk management regime in place is therefore seen as a necessary component of a corporate governance framework. In addition to the legislative compliance requirement is that **risk management is now considered to be part of good management practice**, with its outcomes being used to inform management decision making.

The quality of managerial practices are gaining increasing traction by investors, financiers and stakeholders alike. In further support of good management practice, we are increasingly observing risk management in a project setting as potentially the most important activity or part of the project management planning process.

When project managers are able to consider risk to their project objectives at the outset of their project, they can then begin the process of **identifying**, **analyzing**, and **assessing**, and finally **developing appropriate responses** to these risks to proactively inform their project management team's decision making.

A key purpose of risk management is to therefore **identify potential opportunities or problems before they occur**, so that risk management activities may be planned and implemented as needed across the life cycle of the project in order to leverage opportunities and mitigate adverse impacts.

Developing an understanding early on is important as it is typically easier, less costly, and far less disruptive to make changes and review prior decisions during the earlier phases of the project.
Without effective risk management processes in place, you may move to the **execution phase** and an unforeseen risk may trigger. To deal with this type of surprise in a reactive manner, you may only then find out that your schedule is not realistic, your budget comes under pressure, or your quality is below par.
All of these resulting in your overall project objectives are being severely compromised as you try to deal with the result and impact before you.

In reviewing a number of unsuccessful projects, it has been found that projects were often rushed into the execution phase. As a result, insufficient time had been spent on proper risk management processes prior to commencing with project implementation or execution. Project risks were either not considered, or alternatively were identified and analyzed in a random brainstorming fashion without a coherent plan and process in place.
It is important to be mindful that even with thorough risk management planning in executing your project, you may still encounter unexpected or unanticipated risks that have to be dealt with on an emergency type basis. A risk planning and management framework will, however, reduce the occurrence and impact of such risks if they occur.
As previously mentioned, it is essential that the risk management process is embedded as managerial practice throughout your organization, and not simply adopted as a tick the box compliance exercise, but is used to inform and support quality decision making.

Please now Go to **Activity Book Page 2** to solve **Knowledge check 2: The fundamentals**

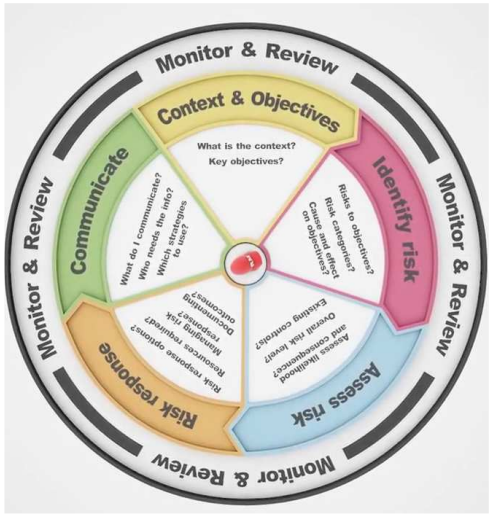
The risk management process

Risk management is always related to a specific context. In a project setting, for example, the context of risk management relates to the stages of the project management life cycle, being **initiation, planning, execution, closure,** and **monitor and review**.

The risk management process should be applied as early as possible in the project life cycle, so that risks are identified, assessed, and appropriate responses developed before moving to execution.

Risk management Canvas:

Let's now take a closer look at the risk management process. Our risk management canvas has six segments. Each segment represents a stage of risk management. The monitor and review stage is shown as a continuous activity throughout the process. We start with an overview of each stage and highlight key issues that will inform and enhance managerial decisions.



1-Context and Objectives:

The first stage of the risk management process sets the context and specifies objectives. Being the first stage, it is vital that there is absolute clarity on the context in which the risk management process is to be applied. This is followed by specifying key objectives to be achieved.
The two key questions to be addressed are:

- **First, what is the context?** Consider that the process can be applied at the strategic, operational, departmental, or functional level within an organization. In this course, we will apply the process to a project management setting. Once the context has been established, we can develop and agree on the objectives specific to our project.

- **Second, what are the key objectives?** You may recall that we defined risk as "uncertainty on the achievement of our objectives." Therefore, it stands to reason that before identifying the types of risk or uncertainty we may be faced with, we first have to determine and agree on the project-specific objectives. Once the objectives have been specified, we can move to the second stage of the process.

2-Identify Risk:

Risk identification considers the types of risks or uncertainties that may impact on achieving our set objectives. Identifying a range of possible risks takes practice and experience. Brainstorming is a common

technique that is used, and it may be beneficial for you to consider different categories or types of risk to consult with your team and other stakeholders.
Key questions you will need to consider in this stage are...

- **How will you identify risks to objectives?**
- **What categories will be used? and**
- **What are the cause and effect of risks on your objectives?**

3-Assess Risk:

Step three of the process requires us to assess the risks that we have identified in stage two. For each and every risk identified, we now have two further questions to consider.

- The first question you need to ask is, **what is the likelihood of this risk actually occurring?**
- The next question then moves to thinking about **the possible consequence to your project objectives should the risk occur.**

A combination of both the likelihood and consequence discussion then enables an initial risk assessment to be performed. A number of tools have been developed for this type of qualitative risk assessment, often referred to as the ***risk assessment matrix***. This is something that we will illustrate further in the coming sections of the course.
Key questions that you will need to consider in the risk identification stage are...

- **How will you assess likelihood and consequence of each risk?**
- **How would you determine the overall risk level? And...**
- **Are there any existing controls in place?**

4-Risk Response:

Now that we have concluded our risk assessment stage, we will need to decide how to respond to the assessed risks. For example, what type of actions do you believe you would need to adopt in order to minimize threats and maximize opportunities to your project's objectives?
The focus is therefore about finding ways of reducing the negative risks, leveraging the positive risks, or simply accepting the risks in an informed manner.

Key questions in this stage include...

- **What response options will you consider?**
- **What additional resources will you require?**
- **Who will be responsible for managing and implementing risk response? And...**
- **How will you document the outcomes?**

5-Communicating Risk

The next step, and arguably the most important step throughout the risk management process, is communicating. Communicating the identified risks and responses to your team and stakeholders underpins the successful management of the risk management process. Communication needs to occur regularly, openly, and formally, to ensure that all stakeholders are aware of the risks and planned responses. Open and honest communication further allows for all stakeholders to be involved in the risk management process and offer input where necessary.
Key questions include...

- **What do I need to communicate?**
- **To whom do I need to communicate? And...**
- **What strategies can I use to communicate?**

6- Monitor and review

The final stage of the process is that of monitor and review. As you can see, we have placed monitor and review as a continuous circular activity that occurs at each stage throughout the process. In doing so, we highlight the importance of monitoring and reviewing risk management throughout the life cycle of the project as well.
Things will change as you move through the project life cycle. Therefore, to be effective, the risk management process must remain dynamic.
Key questions you will need to consider when monitoring and reviewing the process, include...

- **What are the timelines I need to consider?**
- **How often do I review and revise the risk work undertaken?**
- **How effective is our risk management strategy?**
- **How effective is a risk identification process?**
- **How accurate and effective is risk assessment?**
- **Have risk response methods been effective?**
- **What records do I need to keep? And**
- **Are safety procedures being followed?**

To conclude, it is clear that risk management is a standardized process and, therefore, can be applied in a number of different contexts Application of the process in a project setting is not only essential, but it also requires early adoption and continuous review and updating throughout the entire project life cycle.

Please now Go to **Activity Book Page 2** to solve **Knowledge check 3: The fundamentals**

The Kunda Island scenario:

The small island of Kunda sits off the east coast of Australia. Local people lead happy lives but are weary of the highly venomous Eastern Brown Snake found on the island. Brown snake bites are extremely toxic and often result in deaths……..

Please now Go to **Activity Book Page 4** to solve **The Kunda Island scenario**

FAQ:

1. **I quite often hear the comment, "...but as a project manager we won't have enough time to stop and think about risk."**

Simple response is, you have to make time. There are risks or uncertainties associated with all projects, and these risks need to be identified and assessed, and appropriate responses developed. Experience shows us that when risks are not considered in this way, there's a greater chance of problems occurring during project execution.

2. **Commonly held belief is that risk management in projects is all about ensuring things don't go wrong on the project.**

Whilst this is certainly true, I also reinforce that with risk being defined as "uncertainty on the achievement of your objectives," there's also a chance that there may be some uncertainties that you feel may have a positive effect on your objectives. If this is the case, then ideally you would want to maximize these opportunities. Hence we see that risk management has two elements to it, **minimizing losses** and **maximizing opportunities**.

3. **"OK, I understand that risk management is important in a project context, and that it has two elements to it. But when in the life of my project should I actually start to apply the risk management process?"**

The simple answer is, as soon as possible, and definitely during the planning stage. It's crucial that you begin the risk management process before the project is executed.

Section 2: Risk identification

What you will learn in this section:

In this section, you will learn how to:

- Identify risks in achieving objectives
- Identify categories of risk, and
- Select methods to identify risks.

Context and objectives

Following the high level overview of the risk management canvas in Section 1, we started our discussion around context and objectives by introducing the brown snake story. The Kunda Island scenario will be carried through to our discussion this week as we consider what objectives should have been set in order to address the core problem at hand.

Through our discussion, it should become clear to you that if you rush through objective setting, you may well end up a long way off course, together with the actions you introduce in support of the objective.

If we return to the risk management canvas, we see that the risk management process starts with **Context and Objectives**. The purpose of this stage is to determine what exactly the context is in which our risk activity will take place, as well as the objectives that need to be set in order to meet project outcomes.

Consider that risk management is an integral part of project management, and the context and objectives of the project should align with the organization's mission and vision. Without having a clear understanding of exactly what it is you need to achieve, it is likely that any decisions made without the necessary clarity will likely have a negative impact on project outcomes.

Key questions you need to address in this stage of the process include...

- What is the context of the risk management process, and...
- What are key objectives to be achieved?

The Context and Objectives stage sets the **foundation** for the rest of the risk management process, and correctly setting these objectives will ensure that you will be in a position to identify, assess, and respond to risks appropriately. Now, let's explore the first stage in a bit more detail.

Setting the context and objectives

The first stage of the risk management process requires you to understand the context in which you are going to apply it, and to then specify your objectives. Our experience has shown that this particular stage is often ignored, resulting in project managers or risk managers immediately jumping to Risk Identification as the first step. This could prove to be detrimental to the process as a whole. So what does setting the context and objectives actually mean for the risk management process?

First, establishing the context is where formal determination or articulation is made as to where you propose to apply the risk management process. Whilst the process might be standardized in terms of the steps to be worked through, it can be applied in a variety of different organizational settings.
For example:

- A board of directors can apply the risk management process when considering and managing strategic and compliant risks. Hence, the process is applied at the **strategic level**.
- Departmental managers, in turn, can apply the same process when considering and managing operational risks. Hence, the process is applied at the **operational level**.
- Safety officers, for example, apply this process when considering and managing safety risks.

So essentially, the context in which the process is to be applied can be quite varied. In order for us to create a learning context for this course, we will be applying the risk management process in a project setting. This means it then becomes important to give consideration to specifying your project objectives. So let's take a closer look at how we may do this.

In Section 1 we defined risk as "***uncertainty on the achievement of your objectives***." For some in a project context, this may be as simple as nominating their project objectives as wanting to *deliver their project on time*, *within budget*, and *of the right quality*. However, **time**, **cost**, and **quality** objectives would be applicable to all projects. Hence, consideration needs to be given to some further specification.

SMART Objectives

A useful technique that has proved beneficial when developing objectives is via the application of the **SMART** criteria. The acronym SMART represents **Specific**, **Measurable**, **Aligned**, **Realistic**, and **Time bound**. SMART may well be a familiar concept to you, but have you considered its application in a project context?

1. Start by drafting your project objectives. Once you have listed your objectives for your project, you will then review each of the objectives and check the **S** criteria, that is, check whether you believe the objectives are specific enough. Simply stating that you will be bringing the project in on time would not be specific enough. What do you mean by "on time"? To satisfy the S criteria, that is, specific, would mean nominating the actual date of completion. The same would go for budget specification, et cetera.

2. Next up would be measurable. The **M** criteria ensures that the objective is actually measurable. Often, we see broad motherhood statements as objectives like "keeping all of our stakeholders happy." Stakeholder happiness may prove a difficult metric to measure. So this type of objective would need to be revised in order to create a measurement that can capture the point at which your objective has been achieved.

3. SMART criteria 3 is an interesting one. Many textbooks identify the **A** to represent *achievable*. However, in a project context, we would recommend the **A** be regarded as **aligned**. In other words, are your project-specific objectives aligned with the organization's overall values and objectives?

4. We then move on to **R**, which is the check to ensure that your objectives specified are realistic. Objectives that are not realistic cannot be met and will result in project failure.

5. The last criteria is **T**, which creates a time bound component within which the project will be delivered.

So in essence, rather than rushing into risk identification, we would strongly recommend that you spend sufficient time trying to develop solid project objectives. Start by drafting what you believe your objectives to be, and then as you apply the SMART characteristics, you may find that your objective setting and specification improves.

Kunda Island problem

Returning to our Kunda Island council's brown snake scenario from Section 1, is it possible to craft an objective that addresses the defined problem and also meets the SMART criteria?

Let's start by identifying the exact nature of the council problem. We are told that council is concerned over the increasing number of snakebite fatalities on the island. This is considered the core problem, and our project objective should also reflect that.

For example, setting the objective as: **"reducing the number of fatalities as a result of brown snake bites"** addresses the core issue and is a clear and specific objective. Although **specific**, we need to add the remaining **SMART** filters to make this more robust, and as such, we need to indicate *what level of snake bite reduction we want to achieve in order for it to be* **measurable**. Thereafter, we need to consider whether the objective **aligns** with council policy and, finally, whether the objective is **realistic** within the given time frame. A smarter objective might now be set as**: "reducing the number of fatalities due to brown snake bites by 30 per cent within the next 12 months"**.

Having set this as the revised objective, let's now return to the Kunda Council boardroom and observe whether the revised objective changes the proposed actions suggested by council members. The next section will demonstrate how setting the wrong project objective can lead to a series of actions that might take you further away from achieving your true outcomes.

The Kunda Island scenario: Clarifying objectives

Back at the council meeting, Frudo has just advised the governor that suggested actions by council do not address the core problem... that is, **reducing snakebite fatalities**. The governor asks Frudo to help set a new objective for the group.

The governor asks the group to participate in a brainstorming session with a view to exploring options to achieve the new objective. Council members propose a list of actions, such as :

- Introducing educational programs to avoid snakes,
- Launching a public awareness campaign to be vigilant,
- Encouraging the use of protective safety equipment,
- running basic medical aid training courses to treat snakebites, and
- Improving access to anti-venom.

Let's now compare the different actions suggested by council... first before... ...and then after Frudo clarified the objective.

Can you see the difference? Take time to clarify your project objective in order to implement actions that will support your overall project outcomes.

Please now Go to **Activity Book Page 5** to solve **Knowledge check 1: Risk Identification**

Risk identification

Once we understand the context and have clarity on our objectives, we can then move to the next stage of the risk management process, being risk identification. Identifying potential risks within a project can be time consuming, since it involves you as the project or risk manager engaging and communicating with your team and stakeholders to do your best to anticipate a range of potential risks.

Key questions you will need to consider in the risk identification stage of the process are...

- What approach will you take to identify risks to your objectives?
- What risk categorization approach will you use to help identify potential risks? And...
- Considering the identified risks, what might the possible cause and effect of these be on your objectives?

Clear and methodical risk identification lays the foundation for a proper analysis and assessment of risk and developing an appropriate risk response. Let's now take a closer look at identifying and categorizing risks.

Risk identification in achieving objectives

In Section 1, we introduced the concept of risk management and the importance of managing risk throughout the project lifecycle. We reinforced the importance of risk management as a process, and introduced you to the risk management canvas framework, which captures the stages of the risk management process.

This week we will discuss the process of identifying risks associated with your project. The concept of risk identification may seem quite easy and straightforward. However, if this is rushed and a process is not followed in identifying risks for your project, it can contribute to lost opportunities or failure of the process as a whole. **So what do we mean when we say that you need to identify risks for your project?**

Risk identification goes beyond pinpointing a few key risks that may occur in your project. Rather, it is a systematic and detailed approach to ensuring that as many risks as possible are identified with the collaboration of stakeholders to ensure that they can be analyzed and responded to appropriately. Identifying risk is an organized approach that will help you consider the potential risks of your project.

When identifying risk, you need to be thorough, which requires you to provide a clear and in-depth description of the potential risk, and how it might impact on the project.

For example, on a construction project to say that the risk is a "**collapsing wall**" is substantially different from describing the risk as "**the wall may collapse, leading to possible injury and/or delay in the schedule**." Do you see the difference between the two descriptions? The first is more of a statement, whereas the second provides a more detailed description in terms of **cause** and **effect** relationship.

A key failing of project managers in risk identification is often the lack of description in terms of the cause-effect linkage. It is often recorded in a schedule of risks as a cost, as opposed to potential occurrence of an event, and the consequences of that risk.
Let us now determine how we go about identifying the risk. Risks needs to be identified in the early phases of the project, before the project concept has been finalized. In the early phases, it is important that you not only identify all of the potential risks, but the **sources** of the risks as well.

Let's take our building construction example. A potential risk is that t*he building plans have not been approved, and this will delay the commencement of the project*. The **source** of the risk would likely be *the architects*, as it is their responsibility to ensure that plans are submitted and approved by the necessary authorities prior to construction commencing. So where do we get information regarding the potential risks of a project?

To ensure that you have identified and considered all potential risks, a good strategy is to draw on all key **internal** and **external stakeholders**, and obtain information from them as well as possible solutions to the risk.

Risk identification is a skill that improves through experience and practice. It is recommended to allow sufficient time to engage with a range of people with a view to gain their insights and benefit from their learning experiences into uncovering potential risk areas in your project.
It is also possible to predict a risk based on experience from similar projects, and the cost impact of such a risk event occurring.

Always remember that no two projects are exactly the same, as conditions can change depending on the project location and environment. These variables will result in different types and severity, and impact of risks.

Also bear in mind that risks aren't always immediately apparent, and therefore, risk identification is a continuous monitoring activity, and a review of risks should take place throughout all stages of the project lifecycle.

Categories of risk identification

In the previous section, we discussed that projects carry a variety of risks which need to be identified, monitored, reviewed, and updated throughout the project lifecycle. One of the main responsibilities of the project manager is to manage these risks and reduce the impact on the project. Risk identification is the second stage of the risk management process, and is an essential activity of project management. As such, you need to consider a broad range of risks that may affect your project.

To assist with this activity, it may be useful to use a **categorization tool** to ensure that you consider and capture various categories of risk. Risk categories should reflect common types or sources of risk within a project, industry, or application area, and should be used during the risk identification discussion.

One tool that is commonly used for categorizing risk is known as the **PESTLE** framework. **PESTLE** is an acronym, and represents **political, economic, social, technological, legal,** and **environmental** dimensions of risk.

P – Political
E – Economic
S – Social
T – Technological
L – Legal
E – Environmental

So as a trigger, for example, you might commence with your risk identification session by asking:

- Do we think we have any **political** risks? Let's look at our project through the political lens and see if we can identify these types of risks.
- Next, we asked the same question of **economics**, and risks that may impact the economics of the project.
- By covering the risk categories, you should hopefully end up with a much broader coverage than itemizing risks randomly as they come to mind.
- Our experience in dealing with highly technical organizations is that there is often an over-emphasis on possible **technical risks**. This is fine, as long as other risk categories are given the same level of attention.

Let's take a closer look at each of these categories.

Political:

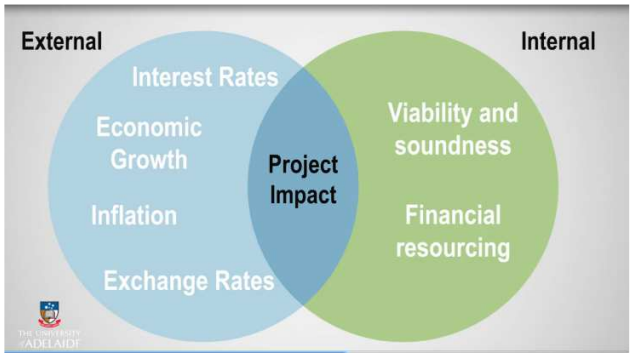
We will begin by considering political factors that may present risks for the project. Generally, when we refer to political factors, we consider the political category to include **tax policy**, **trade restrictions**, **employment laws**, and **political stability**.
These are factors **external** to the business, which cannot be controlled, but can impact on your project or business. How you respond to changes in any political factors will determine how you will manage the risk.

If, for example, your project or business activities are reliant on the importation of goods, and trade restrictions are subsequently imposed, this will present a significant risk that will need to be responded to.

Can you think of a political factor that has perhaps impacted on your project or business? What was the response to that particular situation?

Economic:

The second factor that might present risks to your project or business is economic. **External economic factors** include **interest rates**, **economic growth**, i**nflation**, and **exchange rates**.
Economic factors could change over the life cycle of a project and definitely over the life of a business. These changes represent a risk and need to be managed and responded to as they come up.



For example, inflation may require a project manager to re-look the pricing of resourcing and contracting, particularly for a large, complex project. An item like inflation can also force a business to increase prices of products which the market cannot absorb.
These risks need to be identified as soon as possible so that the project manager has sufficient information and contingent resources to respond to such external factors that may impact the project.

With the awareness of external economic factors that could likely impact on a project, **internal economic factors** would also need to be considered. Internal economic factors include **the viability and soundness of the project or business**, and the consideration of financial resourcing required to execute the project effectively.
For example, has the project manager appropriately considered all the resources required to ensure successful execution of the project?

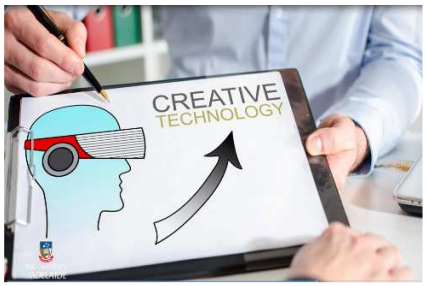
Social:

Next, social factors need to be considered in the risk identification process. Social factors refer to the social or cultural environment in which the project is executed, or in which the business operates. Social factors include **demographics**, **culture**, **lifestyle, wealth**, and **social class** within a particular environment, and how these impact the successful execution of the project. A change in any social factor is likely to impact the project or business.

As an example, a large construction company has been given the go-ahead to build office complexes near a conservation area. However, the demographics of people living in the surrounding area consist of conservationists and eco-warriors. This represents a risk to the completion of the project because of activities and possible protests that this part of the population may undertake to oppose the construction.

Technological

Next we consider technological factors. These include all those activities affected by new technology or the access to technology. Today we see rapid changes in technology, and this needs to be considered in a project or business setting. Depending on the type of business or project, and the duration of the project, changes in technology can have a significant impact.



I am sure that we have all had experiences where technology has become outdated, and it is therefore important to adapt and keep up to date with technology in order to avoid any negative impacts on the project or business.

Legal:

The next category that needs to be considered is legal. This factor takes into consideration all legal aspects, such as l**egislation**, **regulatory bodies**, **employment law**, and **health and safety regulations**, and how these govern the activities of a project or business.

Changes in any of the legal factors, or failure to adhere to the law, will put the project at significant risk with severe consequences. The only way to deal with legal factors is to remain compliant at all costs.

Environmental:

The final category that needs to be considered is environmental. Environmental factors include impact of **adverse weather**, **laws regarding pollution and recycling**, **use of green or eco-friendly products**, and **sustainability**.

There is a growing awareness and concern about the potential impact projects and businesses have on the environment. Governments are penalizing businesses for polluting, and customers are switching brands to companies that apply environmentally sustainable practices.

To conclude, identifying risks, and potential risks, is key to effective risk management. This step cannot be bypassed or done at a later stage of the project. Although we have outlined PESTLE as main risk categories that you might consider in your project, there may be other categories that you and your project stakeholders would like to add that are specific to your project or industry.

Please now Go to **Activity Book Page 5** to solve **Knowledge check 2: Risk Identification**

Select and use methods to identify risks

In the previous section, we reviewed various categories of risk, focusing particularly on the PESTLE acronym. The political, economic, social, technological, legal, and environmental factors that can create risks for your project or business. In this session, we are going to focus on tools and techniques you can use to help you identify risk.

It is likely that you may have been in a position before where the process of identifying risks could have been a bit overwhelming. Sometimes it's an issue of not knowing where to begin. In this session, we are going to explore key steps that you can undertake for effective identification of risks.

The first step that should be taken is that of information gathering. This may be somewhat laborious, but it is an absolute necessity. Researching and obtaining the information of your project, the industry within which your project resides, as well as information on stakeholders, resources, and contractors is absolutely essential. It is better to have too much information to work with rather than too little, resulting in risks not being adequately identified.

You can obtain information from industry specialists, prior project files, meetings with stakeholders and contractors, and even internet searches. This should be done rigorously and methodically to ensure you acquire all the information relevant to your project. So now that you have the information, what happens next?

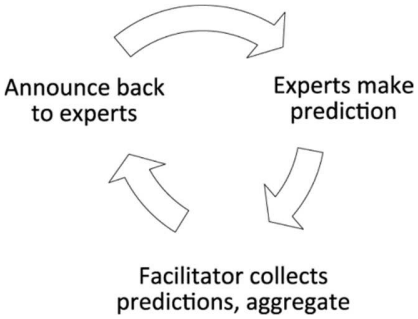
The next step of the process is to begin identifying risks. There are several ways in which we can identify risks:

Brainstorming:

The most common, which is **brainstorming**. The objective of brainstorming is to generate a comprehensive list of possible risks that will be addressed later in risk analysis and assessment processes. This process includes identifying any risk at this point, even if it seems unnecessary or irrelevant. This is where our earlier discussion regarding risk categories or classification schemes such as **PESTLE** can be most beneficial.
The project team and stakeholders usually perform brainstorming. Under your leadership as the project manager, sources of risk are identified and posted for all to examine during a meeting. Risk descriptions in terms of **cause** and **effect** need to be sharpened.

Delphi technique

A further technique that can be used is known as the **Delphi technique**. The Delphi technique is a way to reach consensus through the use of experts on a particular subject area, such as project risk. Project risk experts are identified, but participate anonymously. A facilitator uses a questionnaire to obtain ideas about important project risks. The responses are submitted and are then circulated for further comment. Consensus on the main project risks may be reached in a few rounds of this process. The Delphi technique helps reduce bias in the data and keeps any person from having undue influence on the outcome.



Expert Advice:

Interviews with subject matter experts might also be used to identify risks. As the project manager, you might meet with appropriate individuals and brief them on your project and provide information, including the work breakdown structure and the list of assumptions. The interviewees identify risks they may see on the project documents based on their own experience.

Checklists:

You might also want to consider using **checklists** to enable you to identify risks for your project. Checklists for risk identification can be developed based on historical information and knowledge that has been accumulated from similar previous projects and from other sources of information.

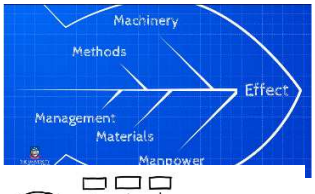
One advantage of using a checklist is that risk identification is quick and simple. One disadvantage of using checklists is that it is impossible to build an exhaustive checklist of risks and the user may effectively be limited to the categories in the list.

The checklist should itemize all types of possible risk to the project. It is important to review the checklist as a formal step of every project closing procedure to improve the list of potential risks and to improve the description of those risks.

Diagraming Techniques:

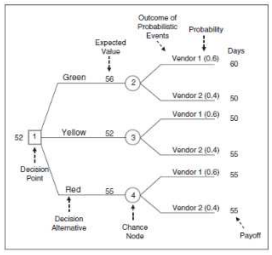
It might also be useful for you to consider using **diagramming techniques** to help you identify risks. The main diagramming techniques that project managers may use to identify risks are:

- **Cause and effect diagram**, which is also known as the **Ishikawa** or **fishbone diagram**. The Ishikawa diagram is a visual tool that categorizes the potential causes of a problem to identify its root cause.

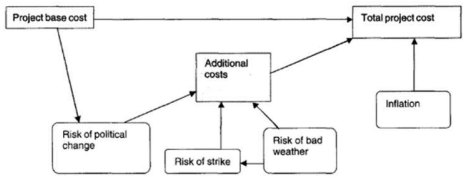


- **The system or process flowchart**. This diagram enables project managers to show how various elements of a system or project interrelate to one another.

- **A decision tree** which is a graphical tool for analyzing project situations that involve uncertainty or risk. Reflecting the decision process, the tree displays sequential decisions in the form of branches of a tree, from left to right, originating from an initial decision point and extending to the end outcomes. The path through the branches represents the sequence of separate decisions and chance events that occur. Decisions are evaluated by calculating the expected value and probabilities of each path



- The Fourth popular diagrammatic tool that can be used is the **influence diagram**, also known as the decision diagram. The influence diagram is a graphical representation of a problem showing causal influences, time ordering of events, and other relationships among variables and outcomes.



As you can see, risk identification is an intensive process. It is important for you to systematically work through identifying risks for your project to ensure you have all the correct information. Hopefully, it should now be clear to you that an ad hoc haphazard approach to identifying risks would very well result in the omission of important information. Consequences of such approaches are problems and excessive costs throughout the life cycle that have not been properly accounted for.

Please now Go to **Activity Book Page 6** to solve **Knowledge check 3: Risk Identification**

Please now Go to **Activity Book Page 7** to solve **Decision Tree Problem.**

Case study: Western Savannah:

This a case study that we will refer throughout this course

Please now Go to **Activity Book Page 8** to read the **Case Study: Western Savannah**

Please now Go to **Activity Book Page 6** to solve **Knowledge check 4: Risk Identification**

FAQ:

1. "Who is responsible for identifying risks?"

This is a good question, and the answer also depends on the size and context of the project. Generally speaking, for a **small project**, the project manager might identify risk and develop the risk register. He or she might get input from the project sponsor or senior manager and colleagues, or from a small group of key stakeholders. For a **medium-to-large project**, the risks are identified by the project manager, project team members, business owners, and external stakeholders. This is done through formal meetings and brainstorming sessions with all involved.

When managing large, complex projects, it is advisable to use an outside facilitator. Preparation might include an environmental scan and seeking views of key stakeholders and industry specialists.

2. Are there any documentation needs to be completed when identifying risks?

Identified risks are usually documented in the risk register. At this early stage of risk identification, key information needs to be included in **the risk register**, including a description of the risk, causes and consequences of risk, and the existing internal controls that may reduce the likelihood or consequences of risks.

It is also essential when identifying a risk to consider the key elements, the factors that may contribute to a risk occurring or increasing, the likelihood of a risk occurring, and the outcome or impact of an event.

3. "Are there any risk identification tools that I can use to help me in a large project?"

There are various software tools that you can investigate and use. Although I am unable to endorse any, it is worth you having a look to see whether there is something online that can assist you in identifying risks, particularly for a large, complex project.

Section 3: Risk assessment

What you will learn in this section:

In this section, you will learn how to:

- Recognize the process of undertaking a risk assessment of identified risks
- Select risk controls through risk assessment
- Use a risk matrix to respond to identified risks
- Clarify risks to stakeholders, and
- Use contingencies to deal with risk.

The Risk Assessment Canvas

We begin this section by looking at the third stage of the risk management process, which is known as risk assessment. The quality of your risk assessment work will be dependent on the input from the previous two stages. If you haven't set proper objectives and identified the range of possible risks, then your risk assessment is likely to be of limited value. So the lesson here is not to rush through the process, but to spend the time in the initial stages to make your risk management process a robust one.

In the risk assessment stage, you will need to consider two key dimensions for each of your identified risks:

1. The first consideration requires an analysis and assessment of the **likelihood** or **possibility** of the risk occurring.
2. The second consideration is what the **consequence** or **impact** may be on you achieving your project objectives, were those risks to occur.

A combination of both likelihood and consequence discussion will enable an initial risk assessment to be formed. A common tool used for this type of qualitative risk assessment is **the risk assessment matrix**.

Key questions that you will need to consider in the assessment stage include...

1. How will you assess both likelihood and consequence of each identified risk?
2. How will you determine the overall risk level, and are there any controls already in place, and if so, how effective are they?

The risk register

In Section 2, we discussed the importance of thorough risk identification in a project. You were given an opportunity to use a brainstorming tool to generate a list of possible risks related to the Western Savannah case study. Risk identification is the first step to compile the risk register. We will be integrating your learning through building a risk register for the case study project over the remainder of the course. We will be exploring what a risk register contains and the type of information that you would need to include.

The risk register, also known as **the risk log**, is a formal master document that records all your risk management work, such as identified risks, their likely consequence or impact, and any steps that need to be taken to respond to the risks. The most effective way to record and present risk register information is as a **table**, **spreadsheet**, or **database**. As a project or risk manager, you should view the risk register as the key management tool for you and your team to manage your project risks.

The layout of the risk register typically follows the stages of the risk management process. For example:

- By doing the **Section 2 activities**, you started by clarifying your **project objectives**, and then you identified the risk for your project, using a **PESTLE-type** template.
- Once you have this information, you can enter these risks in your risk register by describing the risk and assigning a PESTLE risk **category**.
- It's also advised that each risk is given a unique **identification number**, so that the risk can be assigned and tracked throughout the project.
- The next component that needs to be added to the risk register is **the analysis and the assessment** that you will make in relation to each recorded risk.
- The remaining elements of the risk register will contain information relating to your specific risk **response** to the assessed risks, together with a nomination of **who** has been assigned ownership and responsibility to manage that specific risk.

When you are developing your risk register, bear in mind that it is not just about listing the identified risks and response actions. A well-designed and robust risk register serves as a core project management tool to actively and continually engage with risks with a view to improve the quality of overall risk management in your project. Let's now start creating our risk register by populating the initial sections in the next application activity.

Please now Go to **Activity Book Page 14** to solve **Complete the risk register: Part 1**

Likelihood and consequence

Having gone through a formal process for identifying risks, we have seen that the next step in the process is to assess, or what some term evaluate, these identified risks. In the Western Savannah case completed in Section 2, you placed the identified risks in the risk register, which means you are now ready to begin the process of assessing those risks.

The aim of the risk assessment stage of the process is to gain an understanding of the nature of each risk and to determine the level of risk that you are going to assign to it. Risk assessment is therefore concerned with assessing both the **likelihood** and the **consequence** of individual risks within your project, which then enables a level of risk to be obtained. So what do we mean by likelihood and consequence of risk?

Likelihood can be defined as ***the probability of a risk event occurring***. Once the likelihood has been considered, attention should then turn to the consequences should this risk occur? This means you should set the likelihood consideration aside for the moment and try to imagine what would happen should the risk actually trigger.

Let's look at a simple example to illustrate both the likelihood and consequence considerations:

- Take a commercial airline company that undertakes extensive and continuous risk management assessments.
- As a company, they would want to ensure the safety of customers and crew on all operating flights.
- Through a risk identification process, two major risks can easily be identified for each flight:
    1. One is the risk of a late departure due to a technical issue.
    2. The second identified risk is that of a plane crashing due to a technical issue.
- Whilst the risk of the plane being late for departure may be deemed to be likely to occur, the consequences may be deemed to be quite small, hence a lower risk level.
- Even though the risk of a plane crash may be deemed as low likelihood of occurrence, we would anticipate catastrophic consequences should it occur. Hence, this would be assessed at a higher risk level.
- So clearly, both risks would end up with different risk levels attached. This is important for decision-making purposes.

Essentially, in assessing risks, you are seeking to gain insights into the chances or likelihood of each identified risk occurring. By this, we mean a **low, moderate**, or **high** chance of occurrence. Once you have considered the likelihood, then you need to put this aside and make a bold assumption that the risk has actually occurred. Then your focus is in trying to **anticipate the possible consequences** to your project objectives as a result of its occurrence. So when assessing your risks, you are considering...

- What are the chances of occurrence?
- What are the consequences of occurrence? And
- What, then, is the assessed level of risk?

Through risk assessment, you are focusing in on analyzing those risks and how they are likely to impact on project completion. The assessment phase of the risk management process draws upon the information generated through risk identification and setting the context and objectives.

All information deemed from this process should be recorded in the risk register to give us a solid foundation upon which to build the risk assessment criteria, which we will discuss in the next section.

So to conclude, risk assessment forms the third phase of the risk management process. The most important takeaway at this point is that this step should follow closely and is integrated with the two previous phases, setting the context and objectives, and risk identification.

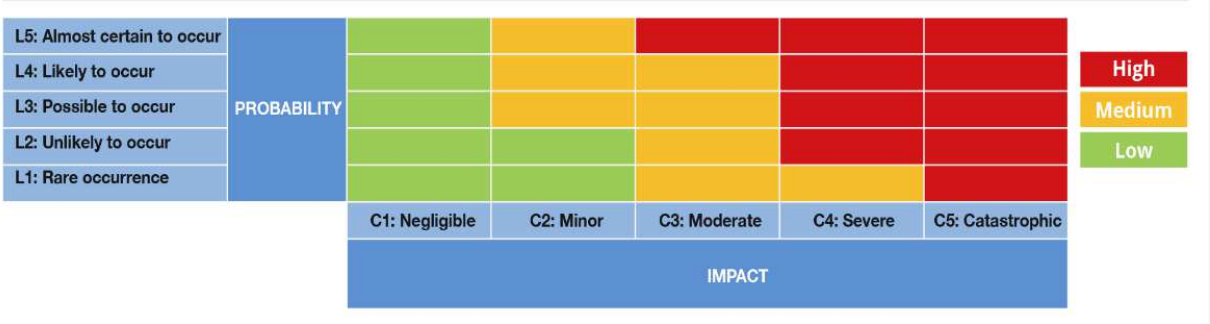
We would now like you to think about the Western Savannah case. How might you categories the likelihood and consequence of each of the risks already identified in the second week's activity?

Please now Go to **Activity Book Page 16** to solve **Knowledge check 1**

The risk assessment matrix

In our previous discussion, we explored the likelihood and consequence of risk and considered the relationship between these two elements. A popular tool used in projects to manage risk is the risk assessment matrix.

Let's contextualize risk assessment by using the airline company example, and consider how we use the risk assessment matrix as a tool to assist in determining the assessed level of risk.



The risk assessment matrix provides a visual representation of the likelihood and consequence of each risk presented in the form of a table, which enables a **qualitative** determination of risk on a rating scale of **high**, **medium**, or **low**. Based on the likelihood and consequence considerations, there are typically **five potential ratings** for you to select from. These ratings will then intersect in the form of a matrix to form your risk assessment.

The likelihood component could be ranked according to descending numbers:

5. Selecting number five indicates that the identified risk event is **almost certain** to occur.
4. Number four indicates that the event is **likely** to occur, in other words, there is a **high probability**.
3. Number three shows that the event is **possible**.
2. Number two denotes that it is **unlikely** that the event will occur, and
1. Number one indicates that it is **rare** that the event will occur.

Similarly, for the consequence element of risk, you will need to determine the number based on a five point descending number scale:

5. By choosing number five, you determine that the consequence of an event is **catastrophic**, resulting in few, if any, of the project objectives being reached, or where fatalities are possible.
4. Number four represents a **major** consequence of an event, which means that most of the objectives are effected with at least one severely affected.
3. Number three indicates a **moderate** consequence a result of an event, whereby some objectives may be affected, but with some effort, they can still be achieved.
2. Number two denotes **minor** consequences or impact, whereby the risk or event can be easily remedied, and
1. Number one indicates that the event is **negligible**, with very little impact or consequence.

As part of your risk assessment process, you will now plot your identified risks or events in the areas assessed, as most appropriate.

If we return to our airline example, the first risk was identified as the late departure of a flight as a result of a technical issue. This will be assessed as **likely** to occur with a **low** or **medium** consequence, as you can observe in the matrix.

Let's now reflect on the second identified risk, which is a plane crash, which will be **low** likelihood, but with high and **catastrophic** consequences.

Once you have determined the likelihood and consequence, and applied the events to your risk matrix, you will have a clear indication of the ratings of your identified risks as either **high**, **medium**, or **low**.

When considering your project, what risk are you prepared to **accept** as part of the project? Think about Westin Savannah case for a minute. What are the risks that should be accepted? Your next step is to determine what level of risks you are willing to accept in your project. This is known as the **risk appetite**,

or **risk tolerance**, of the project or organization. In other words, the matrix visually represents the level of risk the project or risk manager is prepared to accept.

ALARP:

A widely used principle for determining criteria for acceptable risks is the **ALARP** principle. An acronym that determines risks should be **As Low As Reasonably Practicable**. Risk levels, and the cost associated with mitigating the risk, are considered through applying this principle.

The ALARP principle recognizes that there are three broad categories of risks.

- First, **negligible risk**, these are broadly accepted by most people as they go about their everyday lives.
- Second, **tolerable risk**, we would rather not have this risk, but it is tolerable in view of the benefits obtained by accepting it. The cost in inconvenience or in money is balanced against the scale of risk, and a compromise is accepted, and finally,
- **Unacceptable risk**, the risk level is so high that we are not prepared to tolerate it. The losses far outweigh any possible benefits in the situation.

So determining criteria to evaluate or assess risks is extremely important. These parameters will further define the process of how you go about assessing the identified risks and ensuring you respond to them appropriately. The risk matrix is an accessible tool to rank and priorities your risks, and to gain a clearer understanding of the likelihood and consequences of the risk that you have identified, and it presents an easy to interpret visual for your project stakeholders..

Assess Risk Quantitatively

Quantitative risk assessment numerically analyzes the probability of each risk, its consequences on project objectives, and the extent of overall project risk. It can be used separately or together with qualitative assessment. The process begins from the results of the earlier risk identification step. For each of the identified risks, you need to quantify the probability of occurrence by asking, “What is the probability that this risk will happen?” “Ninety percent,” the team decides.

This means that there is a 10 percent probability that the risk will not occur. Clearly, the probability that the risk will occur plus the probability that it will not occur equals 1. Assessing the probability is no more than an estimate based on solid historical information from similar experiences in past projects or considerate opinion of experts. The next step is to determine the risk impact. “What will happen if this risk occurs?” is the question that should be asked. While the impact may be expressed in almost any units, from percentage of lost market share to loss of revenue, the real emphasis here is to estimate schedule or cost severity of the risk. For example, if the highest priority project objective is schedule, then the risk event status would be calculated in terms of time.

$$\begin{aligned} \textit{Risk Event Status} &= \textit{Risk Probability} \times \textit{Impact} \\ &= 90\% \times 60\,\textit{days} \\ &= 54\,\textit{days} \end{aligned}$$

In this example, the potential schedule impact for a particular risk event has been determined to be 60 days, with a 90% probability of occurring at this point in time. The current risk event status is therefore 54 days, which is the current risk exposure for this event.

When the status is calculated for all risk events, the natural question is: Which risks are really vital and deserve attention and which are trivial? To answer this question, we will use principles similar to those on the issue of severity in qualitative assessment.

First, establish numerical intervals of **severity** that determine whether a risk event status is critical (potential showstoppers), **near-critical** (soon to be potential showstoppers), or **noncritical** (minor risks).

For example, in a smaller project, the risk event status exceeding 15 days was critical, between 7 and 14 days near-critical, and below 7 days noncritical.

Second, respond to the highest-ranked risks, down to an agreed level.

Tips and Traps to consider

Now that you have worked through the process of determining the likelihood and consequence of each risk, there are a couple of points for you to consider when you are undertaking this part of the risk management process:

- Determine the likelihood and consequence of each risk, but be realistic. It is suggested to draw on the expertise and experiences of others to determine the appropriate level of assessment of the identified risks, if required.
- As a visual, the risk matrix can provide an overview of the variation of likelihood and consequence of each risk, and determine priority risk responses. A warning sign for you should be when the risk matrix shows that all of the risks are high, or a combination of high or medium. In either of those cases, you will need to reconsider the project objectives, and carefully think about how you will respond to each risk.

Please now Go to **Activity Book Page 16** to solve **Complete the risk register: Part 2**

Gross risk vs residual risk:

Having developed an understanding as to how to use the risk assessment matrix to determine the level of risk - that is high, medium, or low - for each of your identified risks, we now need to ensure that we understand the difference between the terms gross risk and residual risk.

If, for example, certain controls or actions are already in place for some of the assessed risks in order to reduce or treat those risks, then you would need to take this into consideration and determine what the revised level of risk is, hence the term **residual risk** or **the risk that reminds** or is left over. If there are no controls in place and, therefore, the risk assessment is being done for the first time, then you will be making decisions concerning the **original** or **gross risk**. So **gross risk** is *the assessed risk level achieved and assumes that there are no controls or treatment actions already in place*.

Taking the airline company example, if a higher risk assessment had been determined for the risk of an airline crash, the airline may have put in place a proactive and highly effective maintenance regime for their fleet of planes. Assuming this is the case and this maintenance regime is in place and working effectively,

then the original risk level may have been reduced and a new risk level assigned. This is known as the residual risk.

Residual risk, therefore, *is the risk that remains after taking controls or treatment actions into account*. The residual risk will tell you whether you need to be concerned about your existing situation in your project. If you determine that the residual risk is high, you may need to take extra measures.

In our airplane example, you could consider the following questions: Is there an effective maintenance regime in place, are all planes maintained in accordance with this regime, and have the pilots and other crew had sufficient training?

Remember, that **the risk cannot be eliminated completely** and controls are designed to treat or reduce the risk to an acceptable level. We discussed this acceptable level before, and referred to it as the **risk appetite**, which is generally understood to be *the amount of risk a project manager will accept in meeting the project's objectives*.

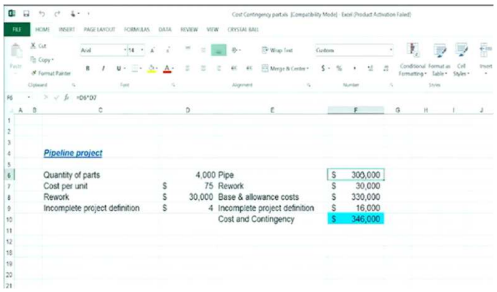
In defining the risk appetite, the project manager should ensure that the appetite aligns to the risk **culture**, **purpose**, **vision**, and **values** of the organization, and the **environment** in which the project is being undertaken. You should now be able to see why it is important to understand about gross risk and residual risk.

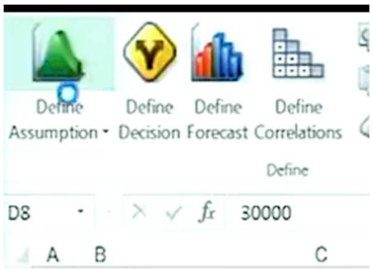
So considering our Western Savannah case, for the risks that you have assessed, do you think that these would be gross or residual risks? What might you have to further consider before finalizing your risk assessment?

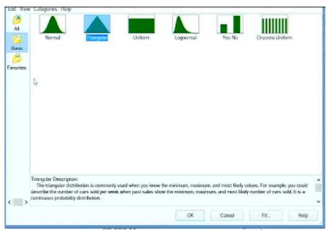
Monte Carlo Simulation:

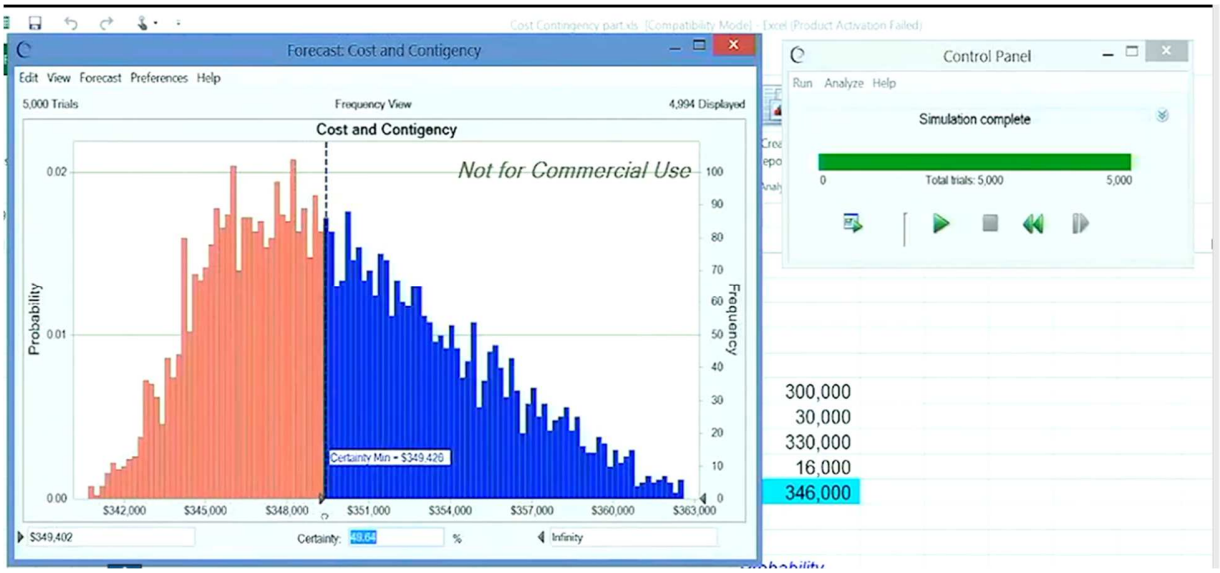
Although we are applying qualitative risk assessment during this course, it may be useful to provide an illustration of how quantitative assessment is undertaken using basic statistical simulation.

You may hear some project and risk managers talking about how they have used a Monte Carlo simulation and arrived at some 'hard numbers'. To make the concept of quantitative assessment clearer, let's consider some what-if scenarios:







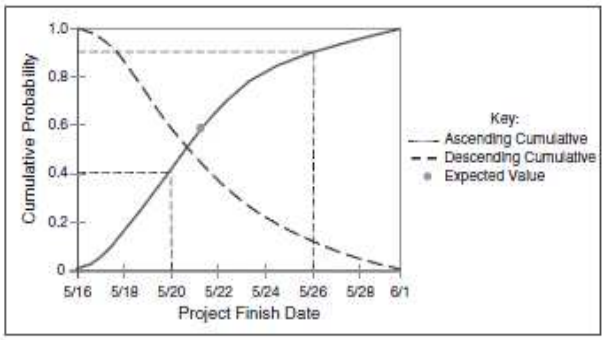


So through this simple project example, you can say that Monte Carlo simulation is a way of taking some variables and doing a large range of trials simultaneously. This may be useful if you are confident enough to include a number against each of your risks, building some variance around these risk variables, and then do some modelling using the software.

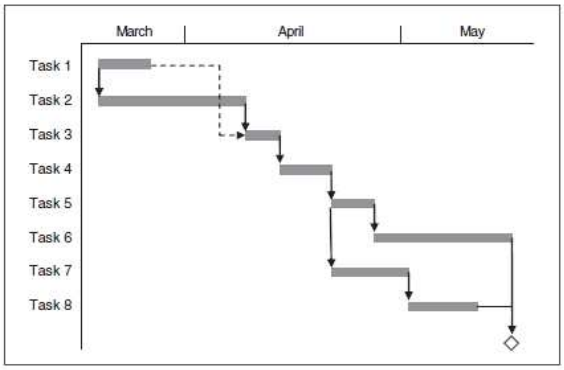
As we always say though, the outputs from the simulation modelling are only as good as the inputs that you use. If you put rubbish into the model, you will receive rubbish at the other end. So if you are going to use this type of quantitative assessment, you need to be comfortable that you have captured and fully understand the variables that you are including in the modelling, as well as the assumptions that you are using.

Monte Carlo Analysis:

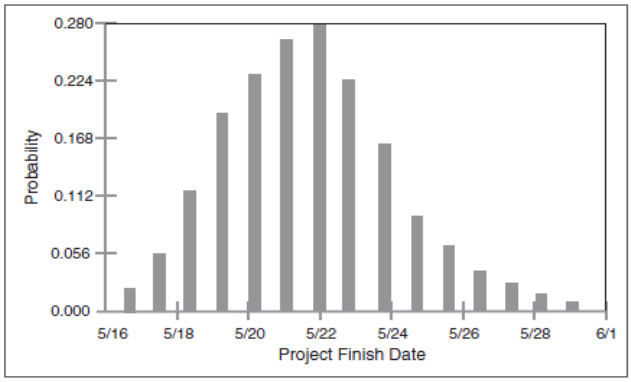
Monte Carlo analysis is effective in determining the impact of identified risks by running mathematical simulations to identify a range of outcomes associated with various confidence levels relating to probability of success. The simulation furnishes the project manager a range of possible outcomes and the probability they will occur for any choice of action. This process provides a valuable tool to compensate for the impact of critical risk events by determining the amount of risk reserve needed to increase the probability.



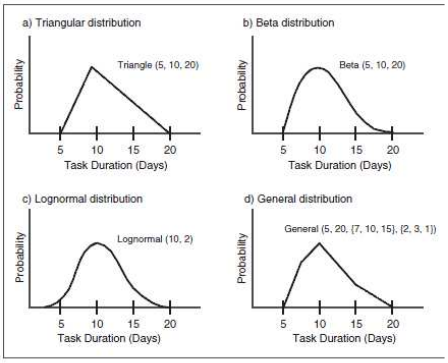
Cumulative Distribution of Project Duration Produced in Monte Carlo Analysis



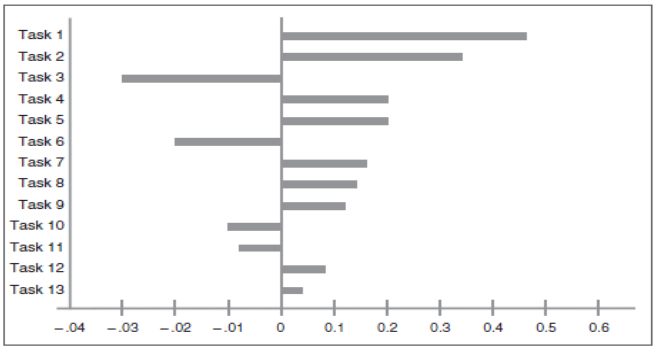
Example of the Time-Scaled Arrow Diagram for Risk Analysis with Monte Carlo



Frequency Distribution Histogram of Project Duration



Frequently Used Distribution



An Example Tornado Chart

The results of the schedule risk analysis must be interpreted in a way that clearly provides answers to the questions the analysis was initiated to answer. For that reason, it is beneficial to follow four principles for schedule risk analysis:

1. Focus on the problem.
2. Keep statistics to a minimum.
3. Use graphs whenever appropriate.
4. Understand the model's (e.g., time-scaled arrow diagram chart) assumptions.

Risk Management Software:

There are many software that can help you in the project analysis qualitative or quantitative. We will explore just two of them here.

RiskyProject Professional:

From Intaver Institute (www.intaver.com) . RiskyProject Professional is comprehensive project risk analysis and management software, allows users to perform Monte Carlo simulations of project cost and schedule using discrete risks event and uncertainties. Cost and schedule risk analysis allows users to create realistic "risk adjusted" cost and schedule estimates to complete their projects.

@Risk

@RISK (pronounced "at risk") from PALISADE (www.palisade.com) performs risk analysis using Monte Carlo simulation to show you many possible outcomes in your spreadsheet model—and tells you how likely they are to occur. It mathematically and objectively computes and tracks many different possible future scenarios, then tells you the probabilities and risks associated with each different one. This means you can judge which risks to take and which ones to avoid, allowing for the best decision making under uncertainty.

Please now Go to **Activity Book Page 17** to solve **Knowledge check 2**

Bringing it all together:

We began this section looking at the risk register and its importance and necessity as part of the risk management process. The activities you have engaged with in Section 2 and Section 3 form part of the risk register, as will the activities in the remaining weeks.

With your project objectives in mind, the risk register begins with the identification of risks, and then categorizing those risks using an identification tool. We use **PESTLE** to help us identify risks in the Western Savannah case study. There are many other classification schemes that you could adopt to assist you with this stage of the process.

We then highlighted the importance of engaging your project team and stakeholders in formal meetings and brainstorming processes to ensure that all risks are properly identified and described.

Armed with robust information on the risks you identified, you are able to then assess those risks. Determining the likelihood and consequences of each of those risks underpins the risk assessment process. With an understanding of the likelihood and consequences of those risks, you are in a position to plot the identified risks according to the risk assessment matrix, and determine the overall risk level by using the risk assessment matrix as you have done in the activity in this section.

This is deemed to be a qualitative risk assessment. Simply put, this enables your risk levels to be described as either high, medium, or low. In a larger or more complex project, you may find that both a qualitative and quantitative analysis will need to be undertaken.

Quantitative risk assessment is the process of providing numerical or statistical estimates of the overall effect of risks on the project objectives when all risks are considered simultaneously. The numerical estimates are usually in terms of schedule and cost. The prioritized list of risks created in the qualitative assessment process is further updated in the quantitative assessment process based on the probabilistic estimates.

Remember, a risk assessment is one of the most important tasks in the successful delivery of a project. Be it a small or large project, it is likely to save you time, money, and reputation further down the line. If you are prepared for a risk, even if you can't avoid it, you may be able to manage it. A proactive project manager will always rely on having solid risk assessment skills. Once the information has been determined, the second component of your risk register can then be completed.

By now, everything is in place for you to consider how you might respond to the assessed risks in Section 4.

FAQ:

1. How often do I do a risk assessment?

This is a good question because we have looked at risk management as a process with specific stages that occur one after the other. However, during a medium or a long-term project, it is likely that some contractors or stakeholders may leave the project for any particular reason. It is also possible that new equipment may be required over the course of the project.

The rule of thumb is that a risk assessment **should take place every time there is a significant change in the project or in your business operations**.

2. Why do I need to record a risk assessment?

It is a legal requirement to record and document your risk assessment. A clear and well-recorded risk assessment helps to show that you've done what the law requires. Recording a risk assessment helps to make sure any important hazards aren't overlooked, as well as helping to avoid any unnecessary repetition in the assessment process.

A record also serves as a reminder of the priority hazards, standards to be maintained, and what action has been taken or still needs to be taken.

3. Are there any documentation needs to be completed when identifying risks?

Identified risks are usually documented in the risk register. At this early stage of risk identification, specific information needs to be included in the risk register regarding risk identification, including a description of the risk, the costs and consequences of the risks, and the existing internal controls that may reduce the likelihood or consequences of the risks.

Remember that it is also essential for you to consider the factors that may contribute to a risk occurring or increasing, the likelihood of risk occurring, and the outcomes or impact of an event.

4. What is meant by developing risk criteria?

Risk criteria need to be identified by the project manager. The risk criteria reflects the objectives and context for the risk assessment. Adequate consideration should be given to the time and resources available, stakeholder views and perceptions, and the applicable legal and regulatory requirements. The risk criteria chosen should be continuously reviewed.

When defining risk criteria for assessments be sure to consider the categories of risks, the nature and type of the costs and consequences that can occur and how they will be measured, how likelihood will be defined - for example:

- qualitatively or as a quantitative probability
- the time frame,
- how the level of risk is to be determined,
- the level at which risk becomes acceptable or tolerable, and
- Whether combinations of multiple risks should be taken into account, and if so, how and which combination should be considered.

Section 4: Risk response

What you will learn in this section:

In this section, you will learn how to:

- Identify methods of responding to risk.

The risk response canvas

We begin section 4 by reviewing the next phase of our risk management canvas. Risk response is the fourth stage in the application of the risk management process. The purpose of having done your risk assessment is for you to now decide how you will respond to each risk.

You will need to decide on what actions, if any, you may want to implement to minimize losses or maximize opportunities in your projects. This involves finding ways of eliminating, reducing, or controlling the level of each assessed risk. Remember that we will also seek to leverage our positive risks.

Key questions to explore in this stage include:

- What response options will you consider for each of the assessed risks?
- What additional resources will you require to implement your preferred risk response?
- Who will be responsible for managing and implementing the risk response?
- And how will you document the outcomes from the risk identification, risk assessment, and risk response stages?

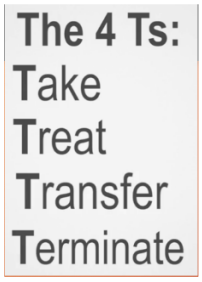
What is risk response and the 4Ts?

Once you've assessed your risks, you need to consider what you believe the most appropriate response to be. Conducting a brainstorming-type activity might be useful to generate appropriate responses to which assess risk, by ensuring time and evidence- based decisions part of the process.

When we consider risk response, we are developing response options and determining from these options what the preferred course of action might be to enhance opportunities and reduce threats to the project's objectives.

As with all other processes throughout the risk management cycle, risk responses need to be planned. Decisions on risk responses should be tested and alternative scenarios considered.

In this course, we will use four categories of risk response known as the **4 T's**, which are **Take**, **Treat**, **Transfer**, and **Terminate**. The 4 T's create your response options of taking the risk, treating the risk, transferring the risk, or terminating the risk.



Now, let's explore each of these responses in turn. As we discuss each of these responses, consider which of these responses might be most appropriate to the risks you identified and assessed in the Western Savannah case in sections 2 and 3.

Take

The first option available to you is to take the risk. If your decision is to take on a risk within your project, you are agreeing to accept the gross risk. This means that you are not going to put into place any specific actions and that your risk appetite is such that you acknowledge the risk and feel comfortable enough to move ahead in an informed way.

Treat

The second response option is to treat the risk. Treating the risk indicates that you will be putting into place actions or controls that are aimed at reducing that risk. This is often referred to as "mitigating the risk." It is an awareness that the risk cannot be avoided, but there are things that can change or put into place to alleviate its impact on the project. Treating the risk might involve improving structures within your project or organization, or implementing processes and procedures such as developing a stakeholder management plan.

Transfer

The third response option is to transfer the risk. It might be possible for you to transfer an identified risk in full or in part to someone else. As a project manager, if you decide to transfer a risk, you are assigning responsibility of that risk to another party, such as a contractor or agency, who will then become responsible for dealing with it so that it does not impact on your project outcomes.
Whilst it might sound like an attractive option, this needs to be carefully thought through. In projects, we have found that this option is only effective if the other party is willing to accept the risk and is better equipped to manage it than the project manager.

Terminate

The fourth response option that you can consider is to terminate the risk, which means that you have decided to eliminate the risk completely. This can be done by changing an inherently risky process or practice to remove the risk or, for example, changing the project scope.
If an item presents a risk and can be changed or removed without it materially affecting the business, then removing the risk should be the first option considered rather than attempting to take trade or transfer it.

You are also able to combine risk response options. Actions taken by project managers are often a combination of take and treat, and to a lesser extent transfer and terminate options. Regardless of which response action you decide to implement, every process needs a starting point and options should be viewed in a structured manner. This will make the decision making process easier and more readily justifiable.

Whether you choose to take, treat, transfer, or terminate a given risk will depend on specific needs, issues, and circumstances of your project. Remember, before any response is decided on, you need to carefully consider the costs. Risk responses do not happen in a haphazard manner and must be carefully aligned with the project outcomes, the value, and overall project priority. Furthermore, risk responses must consider the impact that the risk could have on the project to ensure that risk response efforts are both efficient and effective.

Planning a risk response: Treatment and Transfer

We have recently considered the 4 T's that outline possible risk response options. The four available options are to either Take, Treat, Transfer, or Terminate, the risk. While we take and terminate options are usually easier to understand. Let's now turn our attention to the treat and transfer options.

During the discussion, it might also be useful for you to reference the risks assessed in the Western Savannah case. If, for example, you are considering risk treatment as your preferred option, you would also need to consider: **cost versus benefit**, **resourcing availability**, and **schedule related issues** before you decide on this course of action.

Treat

If you do decide to treat the risk, you will need to gather more information by asking the following questions:

1. First, what is the initial action and costs involved for your chosen treatment strategy?
2. Second, what benefits might the treatment provide and what is its likelihood of success?
3. Finally, what resources might be required to ensure effective treatment of the risk, and its impact on the schedule and budget of acquiring and using those resources?

Once your information gathering is complete, you will then plan a risk treatment process. To do this effectively, you will need to determine **the level of treatment plan** based on **the level of each assessed risk**. Risk treatment plans will vary depending on whether you have assessed the risk as **high**, **medium**, or **low**. For example, a risk with a high rating must have a treatment plan, while a risk with a low rating may not require a treatment plan.

Effective risk treatment relies on attaining commitment from key stakeholders and developing realistic objectives and timelines for implementation, so that the impact on the project objectives is minimized.

Another important aspect that you will need to carefully document is the treatment plan, which outlines your approach to treating the risk. Within this plan, it is advised that any relationships or interdependencies with other risks should also be highlighted. You will need to specify a **date** or a **trigger** when risk treatment will commence and when it will conclude. The time frame should be realistic and appropriate.

Given the information on the Western Savannah case study, what might suitable time frames be to treat identified risks, considering the hotel and related infrastructure is to be completed within two years?

So in summary then, when implementing the treatment plan ensure that adequate resources are available and define a time frame, responsibilities, and a method for monitoring progress against the treatment plan.

Physically check the treatment implemented reduces the residual risk level, and in order of priority, undertake ongoing remedial measures to reduce the risk.

Transfer

Let's now review the second response option which is transferring risks. Making the decision to transfer an identified risk means you are shifting the burden of the risk so to speak on to someone else.

As a project or risk manager, you may practically transfer risk in several different ways. One option is making use of an outsourcing strategy, which means engaging another organization or contractor to take over the particular activity. Service organizations or subcontractors with a specialized focus will usually have their own forms of risk assurance and controls. Bear in mind, transferring risk only works for you if the contractor is in a **better position** to manage the risk than what you are.

Another quite popular option, particularly for finance-oriented folk, is taking out **insurance** coverage. Insurance is probably the most common method of risk transfer from organizations to specialized insurance companies against unforeseen events. Currency insurance would also include hedging against currency fluctuations by buying forward exchange cover contracts. There are a range of insurance options available to you, and you need to assess each option to make sure you have the right type and level of coverage.

As with all the steps in the risk management process, it is important that you keep **detailed records** of what decisions you have made about:

- treating risks,
- the given context,
- what actions need to be performed by whom, and
- What deadlines or criteria you have set for ensuring they are done properly and on time.

Please now Go to **Activity Book Page 18** to solve **Knowledge Check 1: Risk Response**

Risk ownership and assigning risks

In the previous section, we discussed the importance of implementing plans to appropriately respond to identify risks that are likely to impact on the objectives and outcomes of your project. Let's now continue our development of the risk register by identifying risk ownership, therefore assigning roles and responsibilities to risk owners.

Risk ownership is incremental in ensuring an identified risk is managed, monitored, and controlled throughout the risk management process, which makes it a dynamic and continual process.

It should be noted that risks that are not owned are often not managed. Clarity about ownership and personal responsibilities is important to process effectiveness. So what do you need to consider when assigning risks to an owner?

When you are assigning a risk, the most appropriate person takes on the responsibility of monitoring that risk. For example, it would be unwise to assign a risk that requires IT specialization to someone who does not know anything about IT service, software, or other relevant technology.

When selecting the risk owner, you can consider the following questions to ensure that your decision is fit for purpose:

- Firstly, who best understands the triggers, the risk, and the impact or consequence of an identified risk?
- Secondly, who is best suited and has the resources and authority to monitor the risk?
- Thirdly, will the identified owner have experience in responding to an identified risk? And finally,
- Does the selected risk owner have any experience in the risk management process?

The risk owner should be capable of managing the risk and have the knowledge, resources, and authority to deal with the risk.

Once you have selected the risk owner, he or she should be added to the risk register.
The risk owner:

- determines which risks require mitigation and contingency plans,
- generates the risk mitigation and contingency strategies, and
- performs a cost benefit analysis of the proposed strategies

The responsibilities of risk owners include:

- the assessment of their risk and subsequent response, and
- Reporting to you, the project manager, on a regular and continual basis so that you are aware of the status of any risk at any given time during the risk management process and project life cycle.

Risks should be discussed as part of the weekly progress or status meeting during which the risk owners will provide updates on the respective, identified risks.

Please now Go to **Activity Book Page 19** to solve **Complete the risk register: Part 3**

Tips and Traps to consider

Now that you have worked through the process of responding to the identified risks, there are a couple of points for you to consider and be aware of when you are undertaking this part of the process:

- Take care in selecting the appropriate response for each identified risk. In some instances, where the likelihood and consequence are high, the best option might be for you to transfer the risk entirely to a third party, such as a specialized contractor.
- Ensure that the risk owners are aware of, or involved in, determining the risk responses as they are, ultimately, responsible for ensuring that the risk is responded to appropriately.

Risk register challenges

Now that your risk register has been completed, consider some of the key challenges that are often faced by risk managers to ensure the risk register remains dynamic and informs project management decision-making:

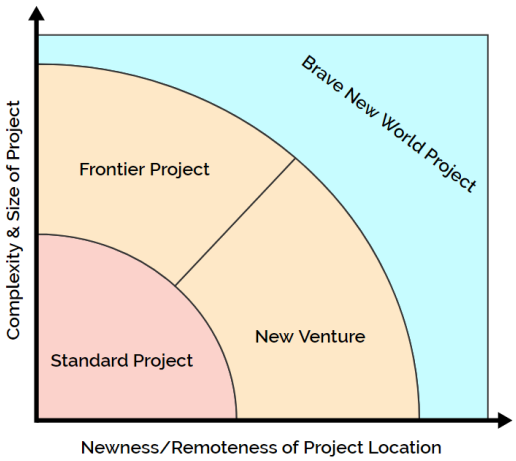
1. A risk register that may appear complete, but does not contain sufficient information on identification, assessment and response to inform the project manager's decision-making.
2. You need to keep the risk register up to date as it is likely that over the entire journey of a project, from initiation to closure, things will change.
3. If there are changes within your project team, review who you have assigned as a risk owner to a risk contained in the risk register
4. A risk register that contains too many items may become too cluttered and difficult to manage
5. A risk register should only contain risks (uncertainties) that are to be managed and NOT issues or events that have occurred. If an event has actually occurred, then this will still need to be managed. The key difference though is that because the event has occurred, there is no longer any uncertainty, hence it will need to be taken out of the risk register and placed in an action or operational plan, and
6. The risk register contains risks that you have assessed and developed appropriate responses to. A question that needs to be considered is "What would be the impact on your project if a number

of risks actually ‘triggered’ at the same time during the execution stage of the project?” It is likely that the cumulative effect would be much greater than the individual effect. As a result, this would need to be monitored closely during project execution.

Project Types - Early-stage project risk profiling

In our discussions around the risk management process, some of you might have wondered whether the process is to be applied to the depth and extent of it, regardless of project size. And even though we've said during our previous sessions that the process is applicable across different projects, one has to bring in a component of fit for purpose.

To get a fit for purpose feel of your project, and before you set out on doing your risk management work, it's ideal to get a higher level feel as to what the profile of your project is like. Is an extra extremely high risk? Is it a lower risk project? Is it something we've done before and, therefore, it might present fewer risks to us? What might the situation be?



So I thought what we could do is to have a look at a graph which gives us a visual representation looking at exactly those components... the size of our project and the newness of our project.

Standard Project

A Standard Project is deemed to be a type of project that you have managed before, you have seen it many times over and it is within your existing capabilities to manage. Lessons learnt from previous Standard Projects would be very beneficial as arguably risks would be well-known and sufficiently managed, hence Standard Projects are considered to have lower uncertainty. Therefore, you may not need to undertake as much risk management work for these types of projects.

New Frontier or New Venture Project

In a New Frontier or New Venture Project, you have determined that the project is either one that you have not managed before OR undertaken in a location environment in which you have never been before. Lessons learnt from Standard Projects may be of some benefit, however the uncertainty profile is higher, hence you would need to undertake more risk management work for these types of projects. For example, in a Frontier Project, technical risks could be significant, whereas in a New Venture Project, non-technical risks could be more prominent.

Brave New World Projects

As we have seen, the Western Savannah case is a Brave New World Project. We now know that we are about to take on a project that we have not seen or managed before in a location or environment that we

are unfamiliar with. Lessons learnt from Standard Projects may not provide much benefit, hence we would recommend a robust application of the risk management process to these types of projects. This type of project is deemed to have the highest level of uncertainty, therefore sufficient time and effort needs to be given to managing this uncertainty, in order to achieve a successful project outcome.

Bringing the risk register together

Through the assessment activities completed in sections 2, 3, and 4, you have now had practice in compiling a risk register for our Western Savannah case. The risk register provides us with a list of risks identified, stated clearly and assessed relative to their importance of meeting projects' objectives. The risk register further records a risk response and the details of the risk owner, including his or her responsibilities to manage the risks. Let's now make sure to tie the individual components together so that you can view the risk register development in its entirety.

Identify risks

Before we started with our development of our risk register in Section 2, we needed to clarify our project objectives. With this taken care of, we then identified and categorized our risks. In the process of risk identification, risks were discussed and described using a **cause** and **effect** statement structure.

As an example, thinking about the Western Savannah case, you might introduce a risk discussion with a phrase like, "*Because of heavy seasonal rains, the main access road may wash away, which will have an impact on deliveries of supplies to the site, which will then negatively impact on a project schedule*."

A process of distinguishing the risk from its cause and impact is important in then being able to assess the risk appropriately.

Assess the risk

In Section 3, we further progressed development of our risk register by undertaking a risk assessment using the risks identified earlier in the Western Savannah case. In developing a robust approach to the assessment process, the dimensions of both **likelihood** and **consequence** were considered and captured in the risk assessment matrix, with a view to categories the risks as **high**, **medium**, or **low**.

Because risk tolerance varies between people and organizations, we need to ensure that all definitions adopted in the risk assessment process are understood by all stakeholders so that they can distinguish high impact from low impact risks. To ensure this, your risk register must be robust in its input and clarity in terms of definitions and descriptions for each of those inputs.

Risk response

We then expanded the risk register in Section 4 to include risk responses to each of the identified risks. Every risk is assigned to a person who is given ownership of an identified risk or risks. The risk owner is then responsible for planning a response using available resources or acquiring additional resources. It is the responsibility of the risk owner to ensure that the action is **identified**, **planned**, **implemented**, and **monitored**.

In some projects, risk responses are discussed but never implemented. Risk responses should be **planned**, **budgeted**, **staffed**, **scheduled**, and **managed** like any other important project activity. Risk responses need to be **specific** and **actionable**, **appropriate** to the risk and likely to be **effective**.

What other benefits can you think of that the creation and maintenance of a risk register provide to you and your projects?

The risk register serves as a central repository for the risk information. Its key function is to provide stakeholders with significant information on the main risks faced within the project. It also gives stakeholders a clear view of the status of each risk at any point in time and is a key reason why risks should be continuously monitored and reviewed, and the risk register updated.

A risk register, as part of the risk management plan, will help you and your stakeholders to understand the nature of the risks faced within your project, become aware of the extent of those risks, identify both the level of risk that you are willing to accept, and report the risk status at any point in time.

The risk register will help you record the type of risk and how it could likely affect the project, the likelihood of the risk occurring and its potential impact to the project, risk priority actions implemented to prevent the risk from occurring, and risk response actions taken in case the risk does occur.

You should now be in the position to progress to Section 5 to consider the communication and monitoring and review of risks.

FAQ:

1. Should I treat or mitigate all risk assessed?

I like to answer this by having the students consider if there are any alternative options that they can think of in terms of risk response. This normally generates a lot of discussion that is concluded by "No, not all risks need to be mitigated or treated." It may be best for actions to be put into place in order to reduce or lower the risk of exposure. However, in other cases, it might be more beneficial to transfer the risk to another party, terminate the risk altogether, or simply take on the risk.

I find that every effective way of summarizing risk response options is to use the 4T's that is: **Treat**, **Transfer**, **Terminate**, or **Take**.

2. How can I respond to a risk that creates an opportunity?

This is a great question as we have focused on how to respond to risk which is likely to have a more negative impact. There are a couple of ways to leverage positive risk or opportunities identified.

First, you can **exploit** the positive risk. The aim is to ensure that the opportunity is realized. The exploit strategy seeks to eliminate the uncertainty associated with a particular upside risk by making the opportunity definitely happen. Exploit is an aggressive response strategy best reserved for those golden opportunities having high probability and impacts.

Another strategy to leverage risk opportunities is to **share the risk**. This means that you allocate the risk ownership of an opportunity to another party who is best able to maximize its probability of occurrence, and increase the potential benefit if it does occur.

Transferring threats and sharing opportunities are similar in that a third party is used. But those to whom threats are transferred take on the liability, and those to whom opportunities are allocated should be allowed to share the potential benefits.

Section 5: Risk monitor and review

What you will learn in this section:

In this section, you will learn how to:

- Recognize the importance of a monitor and review process
- Use a monitor and review process
- Integrate a monitor and review process that sets targets
- Obtain and use feedback for continuous improvement, and
- Select steps for continuous improvement.

Risk management canvas on communication

Now that we have identified, assessed, and developed a risk response, we need to communicate our risk management strategy to the relevant project stakeholders. The next stage of the risk management process is communication.

Communicating the identified risks, risk assessments, and risk responses you developed in your risk register to the relevant stakeholders is the most important activity in executing a successful risk management strategy.

Communication needs to occur regularly, openly, and formally to ensure that all stakeholders are aware of the risks and response strategies. Open and honest communication further allows for all stakeholders to contribute to the risk management process and creates a culture of awareness and engagement in the risk management process.

Key considerations you now need to deal with are...

- What do I need to communicate?
- To whom do I need to communicate ?and
- What strategies can I use to communicate effectively and expediently?

Reporting to internal and external stakeholders

Good communication underpins an effective risk management strategy. Bear in mind that implementing the various risk response activities involves a range of project stakeholders, and does not rely solely on you as the project manager.

Risk management also involves applying a range of managerial skills. Remember that you will get much more commitment from people if you allow them to participate in your processes. When people co-create things, they usually feel that they have been heard, and their buy-in ensures positive engagement and accountability.

Effective communication in reporting ensures that those responsible for implementing risk management actions understand the context and basis on which decisions are made, and the reasons why particular treatment options have been selected.

In some projects, we may have hundreds of risks in our risk register. The dilemma is **what** we need to report, **when** we need to report, and to **whom**. We cannot send hundreds of risk response and mitigation update activities to all stakeholders every week.

So what information would enable effective risk reporting?

- Firstly, identify key risks in the project.
- Secondly, explain why these risks are critical.
- Thirdly, explain risk responses for critical risks,
- And lastly, identify any emerging critical risks as they arise.

Internal stakeholders

Communication and reporting involves both internal and external organizational stakeholders. The internal stakeholders would be you, your project team, and the management structure of the organization within which your project is delivered.

A structured process of communication and reporting needs to be in place to ensure that communication takes place regularly. Additionally, a reporting structure ensures that all internal stakeholders are informed and up to date on risks and risk treatment throughout the project lifecycle.

External stakeholders

As the project or risk manager, you also have the responsibility of reporting to your external stakeholders or agencies that are involved in or have an interest in your project. External reporting is a compliance and corporate governance issue and should follow a formal structured approach.

You would typically filter the information to external stakeholders based on their interest and influence in the project. Formal and frequent risk reporting to your stakeholders is an important part of being able to demonstrate the effectiveness of your risk management processes. In addition, structured reporting sends a message of good governance to external stakeholders, raising their level of confidence in the organization.

As a risk manager, you will develop a formal communication and reporting structure and protocols as part of your risk management plan. The structure will identify levels of authority, accountability, and responsibility that must be followed when reporting, detailing **who** communicates **what** to whom and **when**.

Reporting should inform whether assigned risks relevant to an area of responsibility are being adequately and appropriately managed. Having formal structured reporting processes and procedures as part of your risk management plan enables you to confirm that your risk management framework is effective and that relevant stakeholders are responsible and accountable for implementing effective risk management.

Communicating and reporting risk activities

Our previous discussion considered the importance of establishing formal communication and reporting structures to both internal and external stakeholders. If you are delivering a project within an organizational setting, communication and reporting structures might already be in place. As a project or risk manager it is worth reviewing the existing communication procedures, and if necessary, developing your own project communication procedures to be fit for purpose.

There are many possible channels of communicating risk management to your stakeholders.
These may include...

- meetings,
- teleconferences,
- risk workshops,
- distribution of written reports,
- online communication and
- Collaboration systems, graphics and visuals such as dashboards, and newsletters.
-

Conducting regular face-to-face or online meetings or workshops, should not be underrated, and remain the most effective forms of communication. Getting everyone in the room is possibly the best way to start a risk management discussion. Meetings held at regular intervals should aim to keep key stakeholders informed of ongoing risk exposures, and provide an opportunity to positively contribute to reduce such exposures.

Bear in mind that meetings are time consuming and costly, so you need to decide which meeting should be in person, and which can be over the internet. If it is impossible to get all key stakeholders to meet regularly, you will need to consider other modes of communication and reporting to ensure all stakeholders are updated regularly.

An important aspect to all types of meetings, is to ensure that any points discussed or decisions made are formerly documented in order to become part of project documentation. Providing a written account of the risk decision may also help to dispel future misunderstandings about the context and reasoning behind those decisions. Documents can be distributed and delivered via mail or courier, email, or uploaded on a shared online repository. You should include the results, or at least a summary, of all brainstorming sessions, and decisions made at meetings so that everyone is kept informed of what's going on.

A collaborative approach to communication is likely to provide several benefits, including...

- establishing the context and objectives of the risk process,
- ensuring the interests of all stakeholders are understood and considered,
- allowing for risks to be adequately identified across categories,
- bringing together different areas of functional expertise when assessing or analyzing risks,
- ensuring different and sometimes opposing views are appropriately considered when defining risk appetite criteria, and in evaluating risks, and finally,
- Securing broad support for a treatment plan.

Communication does not start and finish with a single meeting to explain the risk management process. You have to continue to communicate what you are doing, and why you are doing it at every stage of the risk management process.

Please now Go to **Activity Book Page 20** to solve **Knowledge Check 1: Risk monitor and review**

Risk management canvas on communication

Being an effective risk manager requires you to develop a set of core skills to help you identify, assess, and respond to risks. The manner in which you communicate and engage with your internal and external stakeholders, as well as your ability to lead, plan, and make decisions, are integral to managing risk.

The next activity will assess five competencies of successful risk managers...

- Planning,
- Problem solving,
- Communicating,
- Analytical skills, and
- Process skills.

This activity requires you to respond to five statements for each dimension. Consider how you might deal with each statement, and then rank your responses using the scale provided. Remember, there are no incorrect responses, and your responses are not viewable by other participants.

So let's consider by way of an example. Under the planning dimension, a statement might be, "**you are comfortable in planning to precision to ensure things run smoothly**". Using the five-point scale ranked completely disagree, disagree, neutral, agree, and completely agree, select the option that you most closely associate with. Once you have entered all your responses, you will be provided with a graphic identifying areas of strength and areas that would benefit from further development.

This is an interesting activity to get to know a little bit more about yourself and identifying your areas of focus in your development as a project manager.

Risk canvas on Monitor and review

We have arrived at the final stage of the risk management process. When we developed our risk management canvas learning tool, we wanted to represent the Monitor & Review stage as a continuous circular illustration. The objective with this representation is to highlight the dynamic nature of the monitor and review activity. Not only do we monitor and review risk at each stage of the risk management process, but also with regard to acknowledging changes throughout the project's lifecycle.

There are a number of questions that you can ask to determine the robustness of the monitoring and review activities in your project. These questions are designed to challenge the status quo and might include:

- How often do we review and revise the quality of risk work undertaken?
- Do we maintain sufficient record keeping to document and track risks?
- How effective is our risk management strategy to manage and control risks?
- Are risks treatment and mitigation measures working the way they are supposed to?
- How effective is our categorization tool at identifying a range of potential risks?
- How accurate is our risk assessment process in assigning appropriate risk ratings?
- Have risk response decisions been effective? and
- Are health and safety procedures being followed?

Monitor and review as a continuous process

As our risk management canvas illustrates, monitor and review is a continuous practice that should occur at every stage of the risk management process. Monitor and review should be planned and involve regular checking. Results should be recorded and reported internally and be an input to the review and continuous improvement of your own risk management processes.

When you begin the process of managing risk with clear and concise outcomes and what those outcomes will look like, you will then be in a position to monitor and review to ensure those outcomes are met successfully. As this has planning implications, thinking about how you might go about monitoring and reviewing risks of your project or within your organization needs to occur from the outset to ensure activities are fit for purpose.

Successful monitoring and review on a continual basis delivers timely and relevant information. It allows you to track progress towards project outcomes and adjust any stage if necessary. Tracking progress in a deliberate and systematic manner at regular intervals during assessment and treatment of risk further supports you in reaching your project objectives.

Regular review of risk assessment, risk response, and communication with the risk owner enables progress and meeting expectations at critical milestones. Reviewing provides a snapshot of where the risk treatment of any given risk is at and focuses on operational issues, structures, and procedures throughout. Through extensive and continuous monitoring and reviewing, you can determine the success of the treatment of any risk and whether any of the risks have affected project objectives and outcomes.

The next point to consider is your own understanding of the objectives set for risk management. If you are not clear on the objectives from the outset, the remaining steps may become ineffective.
Understanding your objectives is an essential phase in the risk management process. Therefore, it is essential to continually review to ensure your objectives remain valid.

A further point to reflect when monitoring and reviewing is how you are going to involve your internal and external stakeholders. Creating a culture within your project where monitoring and reviewing are critical informs evidence based decision making about risk assessment and risk response. Involving your stakeholders in this activity demonstrates that you value their expertise, evaluations, and findings, which inform your decisions on how you manage risk.

The risk management plan

Over the last five weeks, you have been immersed in the importance of having a risk management framework in place in your project or organization. We have provided an easy-to-use visual framework or canvas around the international risk management standard, IS 31000, which was issued in 2009.

The knowledge, understanding, and application of content in this course has been built around the stages of the risk management process. You have participated through hands-on activities by using a range of tools and templates.

To this end, you have learnt about:

- objective setting through our Kunda Island activity,
- you've undertaken risk identification by applying brainstorming techniques,
- you've used a risk categorization scheme, such as PESTLE,
- you've assessed risk using the risk assessment matrix, and
- Applied various risk responses by using the four Ts of risk response strategy.
- You've then assigned risk to owners and decided on who to communicate the risks to.

Risk register

While using these tools and templates and processes as inputs, you have developed a risk register that could be used in any risk management context.

As discussed in Section 3, the risk register is a formal document that contains information on how risk identification, risk assessment, and risk response are to be managed by the risk owners. The risk owners, subsequently, report level of risk progress to the project or risk manager to evaluate whether further remedial interventions are required.

Risk management plan

The risk register forms the foundation of overall risk management strategy and is usually sufficient to manage risk for small to medium-sized projects. However, in larger and more complex projects, the risk register will be a core component that feeds into developing a strategic document we call the risk management plan.

So what is contained in the risk management plan?

The risk management plan is a formal document that outlines proposed risk management approaches for your project. Usually it is included as an annexure to the project management plan. However, for larger or more complex projects, it is maintained as a separate document.

The risk management plan is dependent on the development of the risk register and captures overarching strategic approaches to the entire risk management process.

A risk management plan would typically include...

- the process which will be used to identify, analyze, and treat risks throughout the life of the project together with estimated costings,
- the process for transferring approved risk costings into the project budget,
- the process of transferring risk mitigation strategies into the project work breakdown structure,
- how often the risk register will be reviewed,
- the review process and who will be involved in the review,
- who will be responsible for which aspects of risk management,
- how risk status will be reported and to whom, and
- a snapshot of major risks, current risk levels, planned response strategies and costings, together with who will be responsible for implementing these strategies.

A risk management plan is developed to ensure levels of risk and uncertainty are properly managed so that the project is successfully completed and project objectives are achieved.

It enables risk owners to manage their risks by defining the approach to which they will be contained and the likely cost of mitigation strategies. It is a formally documented plan for managing and reducing the risks identified before and during the project and provides the project sponsor and any other senior management with a reporting framework illustrating risk status and reporting.

Developing a risk management plan ensures that the communication of risk management issues engages key stakeholders and provides mechanisms for obtaining feedback and taking remedial action where appropriate.

Additional information on the document version, project manager, project team, and steering committee is usually included in the risk management plan. Inclusion of information about your team and possible subteams is imperative as part of the risk management plan. This includes information about the areas of discipline and specialization to ensure they are held accountable according to the principles, processes, and methods stipulated in the risk management plan.

A risk management plan would be appropriate to our Western Savannah case study. The project is sufficiently large, has a level of complexity, and several external stakeholders demanding risk compliance frameworks to be in place. A risk management plan would be considered an essential control tool to manage the completion of this project.

Please now Go to **Activity Book Page 21** to solve **Knowledge Check 2: Risk monitor and review**

FAQ:

Summary

It may be useful to tie it all together with a high level course summary, briefly touching on some of the key aspects.

We started Section 1 by pointing out that risk management is a central part of governance in all organizational context, such as the public sector, private sector, or not-for-profit organizations. The risk management process and risk principles covered in this course can be readily applied as part of a broader risk management regime, as well as managing risk in and around projects. In this course we contextualized application of the risk management process to our project based setting.

It is important to note that although our Western Savannah case study is currently in the planning stage, risk management is an ongoing activity throughout the life cycle of a project.

To visually support this principle we presented the monitor and review stage of the process on the outer circle of our risk management canvas as a single continuous stage. We have referenced that risk management is equally applicable throughout the initiation, planning, execution, and closure phases of the life cycle.

We have also identified that there is likely to be greater uncertainty in the initiation and planning stages. And in theory, the risks should reduce as we gather more clarity on project scope and deliverables. As such, we observed an inverse relationship between risk and uncertainty.

By the time we are ready to execute or implement the project, we should therefore have greater certainty and lower residual risk than earlier on in the project life cycle.

It should be noted here that the approach taken with this risk management course aligns with the eighth element of the Project Management Body of Knowledge, otherwise known as PMBOK.

As a project manager, it is therefore important to be aware as to which phase of your project you are currently managing, as the level of clarity of your scope will determine your risk together with the context of your project. If your project is undertaken in known conditions with known technology, it can be considered to be a standard project and the risks are likely to be far lower, than executing a project in a remote region requiring new technology.

As a skilled project or risk manager you will need to gain experience and develop an intuitive feel for all variables that may impact your project. This course has provided you with a visual framework around the management of risk that you can take back to your workplace, to serve as an aide-memoire for embedding a risk culture in your projects.

By systematically stepping through the risk management canvas stages you have learned to

- set the context,
- identify and categories risk,
- assess likelihood and impact compile a risk assessment matrix,
- select a risk response,
- assign a risk owner,
- apply mitigation actions, and
- Implement a communication and reporting structure around risk response activities.

You undertook all of these activities using the Western Savannah case study, and ultimately produced a complete risk register, which will serve as the primary tool to manage risk in your project.

In the final section, you discovered how the risk register would form a core part of the risk management plan for larger, more complex projects.

All in all, you had a very productive five sections. Before we conclude, just a final word of encouragement to continue your educational and personal development goals.