# ICT Project Management

***Disclaimer***

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# Unit 1: Introduction

## 1.1 Project, Program, Portfolio and System

### Project:

A project can be considered to be any series of activities / tasks that:

- Have a specific objective to be completed within certain specifications
- Have defined start and end dates
- Have funding limits (if applicable) and
- Consume resources (i.e. money, time, equipment).

Any undertaking with a defined objective by which completion is identified. In practice, most projects depend on finite or limited resources by which objectives are to be accomplished.
- ***Project Management Institute (PMI, USA)***

***ICTProject*** means, project for acquiring, sourcing or improving ICTinfrastructure or systems for undertaking e-Government initiatives.

- ✗ ICT (for development (ICTD)) projects are often mistakenly thought of as a set of activities requiring hardware, networking systems, software and applications with the end goal of introducing technological changes.

- ✓ In fact, however, there is a substantial amount of human activity in these projects, and each project is or should be anchored on the larger goals of the organization.
- ✓ In large and complex ICTD programs, the acquisition of ICT applications is only one of the tasks or subprojects.
- ✓ ICTD projects are not standalone activities but part of an integrated whole (i.e. a program, a component, a strategy or a strategic plan)

### Program

Group of related projects managed in a coordinated manner to obtain benefits not available from managing them individually. **- PMI**

- As a project, a program is temporary, so when the related projects are complete, the program is complete.

**Program management** is the process of overseeing multiple related or unrelated projects that strive toward the same objectives and are best managed as a group / team to work together to enable the enterprise to prioritize and fund the programs that drive the most value.

**Portfolio:**

The centralized management of a collection of projects and programs to bridge the gap between strategy and implementation, and achieve strategic objectives. -**PMI**

**Portfolio Management** is the analysis and optimization of the costs, resources, technologies and processes for all the projects within a portfolio.

Portfolio Management highlights questions like:

- ✓ Do I have the necessary resources and budgets to initiate a new project?
- ✓ Are there other projects that can be modeled?
- ✓ Are there any current projects that may interfere with this new project?
- ✓ Do we need to adjust stakeholder expectations?
- ✓ Does this project align with our enterprise objectives?

An organization may have one portfolio, which would then consist of all projects, programs, and operational work within the company. It may also establish several portfolios for project selection and ongoing investment decisions.

## 1.2 Project Objectives and Goals:

**Objectives** can be defined as lower-level statements that define tangible, specific projects and deliverables.

**Goals** can be defined as high-level statements that define what a project is trying to achieve.

**What is the difference?**

A project objective is short-term, practical achievements whereas a project goal is long-term achievements a company wants to reach.

Example:

**Project Goal**: Reduce traffic road accidents.

**Project Objective:**

- Educate people and make sure they are aware of traffic rules.
- Deploy more police officers on signals to regulate traffic.
- Compare data and see whether this tactic reduces road accidents.

**Goal**: Expand access to library and electronic information resources among the general public and staff members.

**Objective**:

- Replace the library's web server and software.

- Then, form a web committee that consists of representatives from every department, develop marketing materials to promote the site and aim to increase website traffic

**SMART Goals:**

SMART is an acronym that stands for

- **S**pecific,
- **M**easurable,
- **A**ttainable / Achievable,
- **R**elevant / Realistic and
- **T**ime-based / Time -Bounded.

**Specific:**

- ✓ Be as clear and specific as possible with what you want to achieve.
- ✓ The more narrow your goal, the more you'll understand the steps necessary to achieve it.

Example: I want to earn a *position to manage a development team for a tech company*.

**Measurable:**

- ✓ Define what evidence will prove you are making progress and reevaluate when necessary.

**Example:** I will apply to *three* position for the manager of a development team at Tech Company.

**Attainable / Achievable:**

- ✓ Make sure you can reasonably accomplish your goal within a certain timeframe.

Example: I will update my resume with qualifications, so I can apply three open position for the manager of a development team at Tech Company.

**Relevant:**

- ✓ Your goals should align with your values and larger, long term goals.
- ✓ If a goal doesn't contribute toward your broader objectives, you might rethink it.
- ✓ Ask yourself why the goal is important to you, how achieving it will help you and how it will contribute toward your long-term goals.

**Example:** *To achieve my goal of being in leadership*, I will update my resume with relevant qualifications so I can apply to three open positions for the manager of a development team at a tech company.

**Time Bounded:**

- ✓ Set a realistic, ambitious end date for task prioritization and motivation.
- ✓ What is your goal time frame?

**Example**: To achieve goal of being in relationship, I will update my resume with relevant qualifications so I can apply to three open position for the manager of a development team at a tech startup *this week*.

## 1.3 Classification of Projects

IT projects are classified as

1. Small Projects (1-3 weeks)
2. Medium Projects (3-6 weeks)
3. Large Projects (6-12 weeks)
4. Super Projects (13 weeks or more)

Projects are classified based on their complexity and resource requirements.

- ✓ For example, a very complex project requiring all available resources (e.g. the implementation of a ERP module) will likely require 12+ weeks, where as a much smaller project may take only 1 week.
- ✓ The maximum number of projects that can be scheduled during each quarter must not exceed 12 weeks.
- ✓ The exception will be "Super Projects" in which case the project must be fully vetted to understand what resources will be required (internal vs. external) and for what duration.

## 1.4. Project Constraints

Project constraints are the limiting factors that can affect a project's quality of execution. They're usually different for each project, depending on the industry and requirements.

**3 main constraints:**

1. Time
2. cost
3. scope

**Other Constrains**

1. Quality
2. Benefits
3. Risk
4. Resource


**Figure**: The triple constraints of project management (also called Project management triangle or the iron triangle).

- Scope, cost, and time are called the ***iron triangle*** because these three constraints can be difficult to maneuver around each other while maintaining project quality

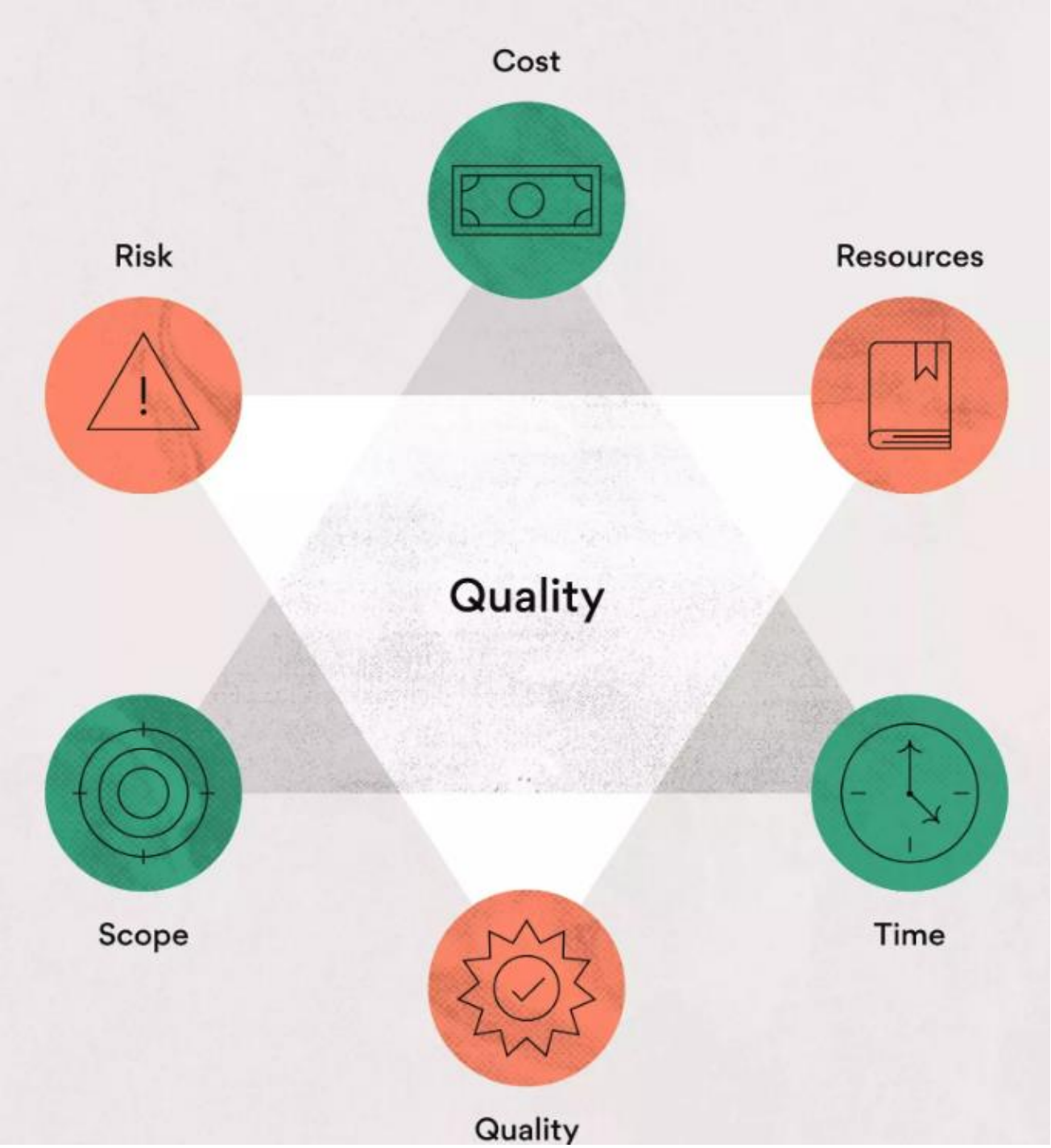



Figure: Project Constraints (image Source: asana)

- ✓ Quality is slightly apart from the other three project constraints appearing inside the triangle because it is almost always affected by any change to the other three.

- ✓ At the same time, changing quality expectations will most certainly impact the project's time, scope, and cost.

Several possible constraints can affect a project, but ***three of them are extremely important*** to consider for project work.

1. **Time**:
   - ✓ Delivering a project on time is usually a crucial measure of its success, as any delay typically involves higher costs and the need to revisit any plans that the project's stakeholders have after its completion.

     Example: The team must complete a new app before its debut at an upcoming conference.

2. **Cost:**
   - ✓ A project's overall cost is another major constraint.
   - ✓ Cost constraints include the project budget as a whole and anything of financial value required for your project.
   - ✓ cost constraint include:
     - Project cost
     - Team member salaries
     - Cost of equipment
     - Cost of facilities
     - Repair costs
     - Material costs

     **Example:** The budget includes money for research, development, and testing.

3. **Scope:**
   - ✓ Project scope refers to a project's magnitude in terms of quality, detail, and deliverables.
   - ✓ Time and cost are dependencies of project scope, because as the project scope grows, the project will require more time and cost to complete.

   **Example:** A company may expect a project team to deliver a new data management system along with an employee training manual.

   - ✓ Discussions of scope often focus on what problems the project may solve for a person, company or organization.

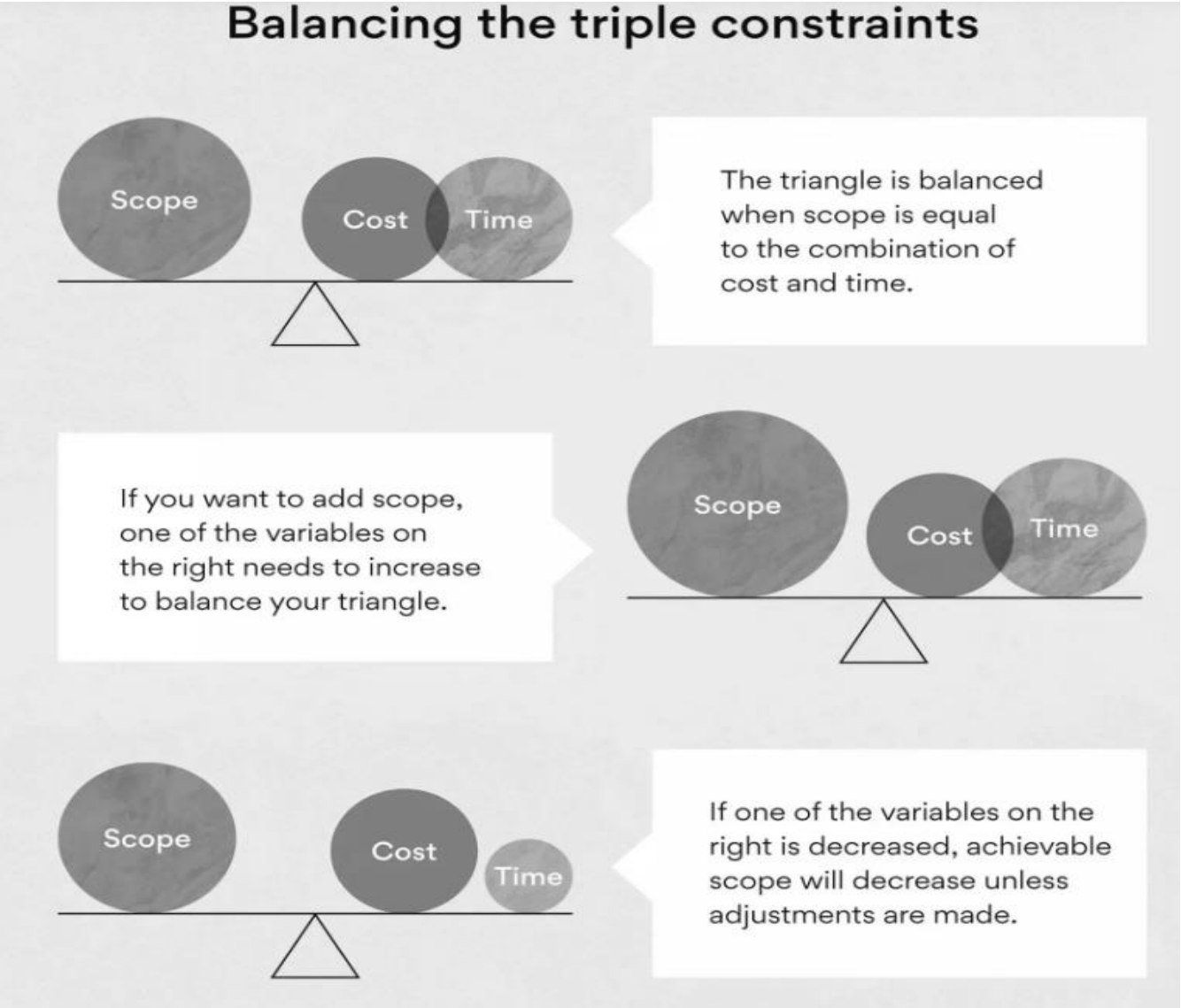
***Additional project constraints*** can affect work and planning for many project types:

- **Quality:**

  - ✓ Related to scope, the quality constraint requires project teams to complete successful work that meets all expectations.
  - ✓ **Example:** The app must perform without bugs on all platforms.

- **Risks:**
    - ✓ The risk constraint requires a manager to consider any possible failures during project work and how they could affect stakeholders.
    - ✓ **Example:** Risks include schedule delays, hardware and memory failures, and difficulties formatting the app on multiple platforms.

- **Resources**:
    - ✓ Similar to cost, this constraint involves planning the required resources for a project and considering what's possible with resource allocation.
    - ✓ **Example**: This project requires one lead and three junior developers, a UX designer, all necessary software, and up-to-date hardware.



## 1.5 Project Management and Its Advantages:

- ✓ Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.
- ✓ Project management is accomplished through the appropriate application and integration of the
  project management processes identified for the project.
- ✓ Project management enables organizations to execute projects effectively and efficiently.

**Advantages of Project Management:**

Effective project management helps individuals, groups, and public and private organizations to:

- ✓ Meet business objectives
- ✓ Satisfy stakeholder expectations
- ✓ Be more predictable
- ✓ Increase chances of success
- ✓ Deliver the right products at the right time
- ✓ Resolve problems and issues
- ✓ Respond to risks in a timely manner
- ✓ Optimize the use of organizational resources
- ✓ Identify, recover, or terminate failing projects
- ✓ Manage constraints (e.g., scope, quality, schedule, costs, resources)
- ✓ Balance the influence of constraints on the project (e.g., increased scope may increase cost or schedule)
- ✓ Manage change in a better manner

**Limitation of Project Management**:

- × High Costs
- × Increased Complexity:
  Project management is a complex process with multiple stages.
- × Increase Communication Overhead
- × Lack of Creativity:
  Sometimes, project management leaves little or no room for creativity.

## 1.6 Project Management Body of Knowledge (PMBOK)

- ✓ The Project Management Body of Knowledge is a set of standard terminology and guidelines (a body of knowledge) for project management.
- ✓ The PMBOK Guide is published by the Project Management Institute (PMI) and recognized as a standard by the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).
- ✓ Its sixth edition was released in 2017.

- ✓ The PMBOK Guide defines 49 processes, which describe a set of tools and techniques to turn a set of required inputs into a set of expected outputs, with the goal to achieve a pre-specified result.
- ✓ Some example processes are 'Estimate Activity Durations' or 'Plan Human Resource Management'
- ✓ These 49 processes are on the one hand grouped into 5 Process Groups, which define categories of processes that show a strong resemblance with the different stages in the project life cycle.
- ✓ These ***five process groups*** are:

    - Initiating
    - Planning
    - Executing
    - Monitoring and Controlling
    - Closing

- ✓ Additionally, PMBOK also organizes these 49 processes into 10 Knowledge Areas. It defines a Knowledge Area as representing a "complete set of concepts, terms and activities that make up a professional field, project management field, or area of specialization".
- ✓ These ***10 Knowledge Areas*** are:

    - Project Integration Management
    - Project Scope management
    - Project Schedule Management
    - Project Cost Management
    - Project Quality Management
    - Project Resource Management
    - Project Communications Management
    - Project Risk Management
    - Project Procurement Management
    - Project Stakeholder Management

- ✓ Together, the Process Groups and Knowledge Areas form a matrix containing the 49 processes.
- ✓ PMBOK has a rather descriptive nature, i.e. extensively describing different aspects of project management.
- ✓ One of the main strengths of PMBOK is that it provides a comprehensive range of ***useful tools*** and techniques (***119 in total***).

# 1.7 Project Environment

- ✓ A project environment is all the internal and external forces that exert on your project management.
- ✓ These are things from inside and outside the project that can impact your schedule, budget, team morale and much more.
- ✓ The project manager must understand the project environment and proactively plan to manage the factors that might influence the project.

Environment can be broadly classified into

1. Internal environment, and
2. External environment.

**Internal Environment**

- ✓ Each business organization has an internal environment, which includes all the elements within the organization's boundaries.
- ✓ They are part of the organization itself.
- ✓ The internal environment consists of the organization's owners, board of directors, employees, physical environment, and culture.
- ✓ Owners are those who have property rights claims on the organization.
- ✓ The board of directors, elected by stockholders, is responsible for overseeing a firm's top managers.
- ✓ Individual employees and the labor unions they sometimes join are other important parts of the internal environment
- ✓ The major components of the internal environment are
  - Employees
  - Shareholders and Board of Directors
  - Culture

**External Environment**

- ✓ External environment can be defined as all elements outside an organization that are relevant to its operation.
- ✓ This environmental context becomes more clear if the external environment is further divided into two distinct segments.
  1. General environment
  2. Task environment.

**General Environment**

- ✓ The general environment consists of interrelated forces that can be categorized ***into four*** elements.
    - Economic Environment
    - Socio-Culture Environment
    - Political Legal Environment
    - Technological Environment

**Task Environment**

- ✓ The task environment consists of specific dimensions of the organization's surroundings that are very likely to influence the organization
- ✓ The task environment puts indirect pressures on Project management through the institutional processes of following elements.
    - Customers
    - Suppliers
    - Competitors
    - Financial Institution
    - Government
    - Media

## 1.8 Skill Requirement of Project Manager

- ✓ The project manager plays a critical role in the leadership of a project team in order to achieve the project's objectives.
- ✓ This role is clearly visible throughout the project.
- ✓ Skill requirement of project manager refer to the core abilities that are necessary to successfully bring a project from start to finish.

Some of the top skills every project manager should have:

1. Communication:
    - ✓ Strong communication skills to be able to convey messages to clients and team members.
    - ✓ Share their vision, goals, ideas and issues.
2. Leadership:
    - ✓ critical for project managers
    - ✓ To oversee and coordinate tasks as well as motivate and encourage the team and define the road map to successfully complete the project
3. Organization:
4. Negotiation
    - ✓ Must be effective at negotiating terms with suppliers, clients and other stakeholders.
5. Team management
6. Time management
7. Risk management

8. Problem-solving
9. Budget management
10. Motivation
11. Technical writing

    - ✓ Involves taking high-level details and explaining them in a way that's clear and easy to understand

12. Adaptability

    - ✓ Adjust to changes in your environment. Project managers must be able to adapt to upcoming product trends, new technology, user demographics and more.

13. Technical skills

    - ✓ Having hands-on experience with the latest technology allows to increase the speed of your team's productivity

14. Reporting skills
15. Active listening

    - ✓ An important part of effective communication that allows project managers to connect with team members, develop better relationships with clients and manage the expectations of key stakeholders

16. Research skills
17. Interpersonal skills

    - ✓ Self-confidence, relationship management and collaboration skills.

18. Project management methodologies
19. Policy knowledge
20. Conflict management

    - ✓ For fixing stalled workflows, project discrepancies or addressing other internal or external setbacks.

## 1.9 Roles and Responsibilities of Project Manager

Project Managers play the lead role in

- Planning,
- executing,
- monitoring,
- controlling, and
- Closing projects.

They're expected to

- deliver a project on time,
- within the budget, and brief while keeping everyone in the know and happy

Key Roles and Responsibilities are

1. **Activity and resource planning**

   - ✓ Planning is instrumental in meeting project deadlines, and many projects fail due to poor planning.
   - ✓ First and foremost, good project managers define the project's scope and determine available resources.
   - ✓ Good project managers know how to realistically set time estimates and evaluate the team's or teams' capabilities.
   - ✓ Then create a clear and concise plan to both execute the project and monitor its progress.
   - ✓ Projects are naturally unpredictable, so good project managers know how to make adjustments along the way as needed before the project reaches its final stages.

2. **Organizing and Motivating a project Team**

   - ✓ Good project managers don't get their teams bogged down with elaborate spreadsheets, long checklists, and whiteboards. Instead, they put their team front and center.
   - ✓ There is no other way than leading by example. If you are doing your part correctly, always supporting your team, and having a fair and healthy approach with them, motivation should never be a problem.

3. **Controlling Time Management**

   - ✓ Clients usually judge a project's success or failure on whether it has been delivered on time. Therefore, meeting deadlines are non-negotiable. Good project managers know how to set realistic deadlines, and how to communicate them consistently to their teams.

4. **Cost estimating and developing the budget**

- ✓ Good project managers knows how to keep a project within its set budget.
- ✓ Even if a project meets a client's expectations and is delivered on time, it will still be a failure if it goes wildly over budget.
- ✓ Good project managers frequently review the budget and plan ahead to avoid massive budget overruns.

**5. Ensuring customer satisfaction**

- ✓ In the end, a project is only a success if the customer is happy.
- ✓ One of the key responsibilities of every project manager is to minimize uncertainty, avoid any unwanted surprises, and involve their clients in the project as much as is reasonably possible.
- ✓ Good project managers know how to maintain effective communication and keep the company's clients up-to-date.

**6. Analyzing and managing project risk**

- ✓ The bigger the project is, the more likely there are to be hurdles and pitfalls that weren't part of the initial plan.
- ✓ Good project managers identifies and evaluate potential risks before the project begins. They know how to then avoid risks or at least minimize their impact.
- ✓ You have to go in expecting that things won't be as you had planned, and things won't be as easy as first expected. Goals, conditions, and circumstances will change

**7. Monitoring progress**

- ✓ During the initial stages, project managers and their teams have a clear vision and high hopes of producing the desired result.
- ✓ However, the path to the finish line is never without some bumps along the way. When things don't go according to a plan, a project manager needs to monitor and analyze both expenditures and team performance and to always efficiently take corrective measures.

**8. Managing reports and necessary documentation**

- ✓ Project managers knows how essential final reports and proper documentation are.
- ✓ Good project managers can present comprehensive reports documenting that all project requirements were fulfilled, as well as the projects' history, including what was done, who was involved, and what could be done better in the future.

## 1.10 Project Management Institute's Framework and International certification

- ✓ PMI is a non-profit organization which aims to bring standardization in the field of project management.
- ✓ The framework defines the principles of ethics and code of conduct for professionals.
- ✓ It focuses on continuous improvement, knowledge sharing and building network.
- ✓ It defines project management as a group of 10 knowledge areas, 5 process groups and 47 processes with well-defined inputs, tools, techniques and output.

**Note**: knowledge area and process group are described in PMBOK above. See there.

**Certification:**

- ✓ One of the certifications provided by PMI is the Project Management Professional (PMP)® Certification.
- ✓ To achieve this certification, individuals must satisfy all educational and experiential requirements established by PMI and must demonstrate an acceptable and valid level of understanding and knowledge about project management that is tested by the Project Management Professional Certification Examination.
- ✓ There are 8 PMI certifications
    - Project Management Professional (PMP)®
    - Certified Associate in Project Management (CAPM)®
    - Program Management Professional (PgMP)®
    - Portfolio Management Professional (PfMP)®
    - PMI Agile Certified Practitioner (PMI-ACP)®
    - PMI Professional in Business Analysis (PMI-PBA)®
    - PMI Risk Management Professional (PMI-RMP)®
    - PMI Scheduling Professional (PMI-SP)®

**End of Unit 1 **