

PROJECT MANAGEMENT AND FINANCE



UNIT - 2

PROJECT FEASIBILITY STUDIES

CONTENT

- Opportunity studies
- General opportunity studies
- Specific opportunity studies
- Pre-feasibility studies
- Functional studies or support studies
- Feasibility study
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- Project Life Cycle
- Project constraints

FEASIBILITY STUDY

A feasibility study is used **to determine the viability of an idea**, such as ensuring a project is legally and technically feasible as well as economically justifiable.

PROJECT FEASIBILITY STUDY

- The **project feasibility study** is a document containing a detailed description of the project, followed by a set of different feasibility areas.
- These are aspects of the project that will drive the success or failure of the project.
- This study will provide the necessary information so that you can decide whether or not your project will begin or whether it has a shot at success.

Various stages in the project feasibility studies

a) Opportunity studies

b) Pre-feasibility studies

c) Techno-economic feasibility studies

Techno-economic analysis is a research agenda that examine technology development and research project in terms of costs, benefits, risks, uncertainties, and time frames in order to assess and evaluate economic consequences of a new hopeful technology. It makes a part of wider economic thought called techno-economic model.

Opportunity Studies..

The opportunity studies help in spotting investment opportunities or project ideas, which can be subjected to further detailed scrutiny, if initially found viable.

- Availability of **requisite natural resources**
- The pattern of **agricultural activity and scope for agro-based industries**;
- Categories of consumer products that have prospects of **growing demand** in response to population growth or improvements in standard of living;
- Scope and areas for **import** substitution;
- Manufacturing lines that have been found to be successful by other entrepreneurs;
- Possible **inter linkages with other industries** in the country or abroad;
- Scope for **forward or backward integration** with The prevailing and expected investment climate in the country;
- The industrial policies in trend;
- The availability and the cost aspects of factors of production;
- Opportunities for **export**.

Opportunity Studies...

(a) General Opportunity Studies

<i>Area Studies</i>	Identifying locations that require development and investment initiatives, such as backward areas, export zones, etc.
<i>Sub-Sectoral Studies</i>	The focus of attention being sub sectoral areas, such as consumer durables, construction materials, etc.
<i>Resource-Based Studies</i>	These involve a survey of the availability of natural resources that can be processed for making immediate or final products.

b) Specific Project Opportunity Studies

The specific opportunity study enables the project idea to graduate into an investment proposition.

Government policies, incentives and other supports are aspects on which information would be needed as they have a bearing on the profitable functioning of the project.

Since the study confines itself to aggregates and summary data for a quick understanding of the investment prospects, it should not be very expensive.

Pre-Feasibility Studies

- Pre-feasibility study is a preliminary study undertaken to determine, analyze, and select the best business scenarios.
- In this study, we assume we have more than one business scenarios, then we want to know which one is the best, both technically and financially.
- In pre-feasibility we select the best idea among several ideas. It will be hard and takes time if we explore each scenario deeply.

Market size and plant capacity	Overheads
Material inputs	Manpower
Location and site	Project implementation
Project engineering	Financial analysis

Functional Studies or Support Studies

- These are confined to selected aspects of the project being contemplated, and may be found necessary by way of support for prefeasibility or feasibility studies.
- Particularly in the case of large projects with multi-division, multi-product characteristics.

Market studies	Capacity studies
Materials input studies	Equipment selection studies
Location studies	Laboratory and pilot plant tests

Components of Project Feasibility Studies

- | | |
|-----------------------------------|---|
| 1. Project background and history | 14. Plant site, within the location |
| 2. Demand and market study | 15. Local conditions |
| 3. Demand projections | 16. Layout and physical coverage of project |
| 4. Forecasting techniques | 17. Technology and equipment |
| 5. Export projections | 18. Civil engineering |
| 6. Market penetration | 19. Plant organization |
| 7. Sensitivity analysis | 20. Overhead costs |
| 8. Sales forecast and marketing | 21. Labour |
| 9. Production programme | 22. Staff |
| 10. Plant capacity | 23. Implementation scheduling |
| 11. Materials and inputs | 24. Financial evaluation |
| 12. Supply programme | 25. Economic evaluation |
| 13. Project location | |

DETAILED PROJECT REPORT (DPR)

- Detailed Project Report(DPR) is one which contains the complete details of the project and it is required to be submitted **to banks and financial institutions** for obtaining the financial assistance.
- Usually, all the contents of techno-economic feasibility studies will be covered in the DPR.
- **A complete document for investment decision making, approval.**
- **A base document for planning the project and implementing the project.**
- It would be **necessary for detailed project report to firm up the proposal for the capital cost as well as the various facilities.** It includes:

Examination of technological parameters.

Description of the technology to be used.

Broad technical specification.

Evaluation of the existing resources.

Schedule plan.

General layout.

Volume of work.

Feasibility-cum Detailed Project Report (FDPR)

1. Availability of raw materials and tie up (MOU document)/ willingness certification
2. Availability of land and tie up (Lease document)/ willingness certification
3. Organization type and structure like (Entrepreneur/ Proprietary, Private limited, Entrepreneur/ Public limited, Co-operative, NGO etc.)
4. Brief project description
5. Tie up with technology, equipment suppliers
6. Financial analysis and profitability study.
7. Incentives, concessions expected from other Government and public bodies for demonstration and future multiplications.
8. Initial contribution in terms of finance, technology development, technical and equipment tie up by the promoter and user agency (mention separately).
9. Organizations to operate and maintain the demonstration project.
10. Organization to replicate the project in a specific region or throughout India.
11. Fulfillment of statutory requirements (like PCB clearance, environmental clearance/ safety, etc.

MANAGING PROJECT RESOURCE FLOW

Resources are commonly thought of as sources of supply or support, such as money, people, materials, technology, and space.

Two Primary types of resources

- Human resources
- Capital resources



(a) Human Resources

- It is personnel pool available to an organization.
- Appropriate human resources assure an organization that the right number and kind of people are available at the right time and place so that organizational needs can be met.
- Human Resources include all project stakeholders, such as customers, project team members, support staff, project suppliers and end users.
- Most effective use of people(employees) to achieve organizational and individual goals.
- The person that manages Human resources is called Human Resource Manager or Personnel Manager.

The role of a HRM is:
Acquiring Human Resources
Maintaining Human Resources.



(b) Capital Resources:

- Capital Resources can be defined as the tools and infrastructure used to produce other goods and services.
- While the range of assets that can be considered to be a capital resource is very broad, it is important to note that not all assets are capital resources.
- There are a few basic qualifications that govern what assets can properly be referred to as a capital resource.
- One of the basic criteria for an asset to be considered a capital resource relates to the long-term and short-term use of the asset in the production of goods and services.



RESOURCE MANAGEMENT

Resource managers are responsible for assigning the right people to the right projects at the right time. They manage employees currently in the workplace and determine hiring needs based on each project's requirements.

3 different types of resources

Three types of economic resources, and they are also referred to as "factors of production".

- 1.Natural Resources,
- 2.Human Resources,
- 3.Capital Resources.

FACTORS TO BE NOTED DURING RESOURCE MANAGEMENT

Know Your Scope	<ul style="list-style-type: none">• Is it a big or small project, long or short?• Can make the right decision on what resources
Identify Resources	<ul style="list-style-type: none">• you have to see who's currently available, what equipment you're going to need or purchase and where are you going to perform the tasks for this project, and is that space available.
Don't Procrastinate	<ul style="list-style-type: none">• Waiting until something has gone awry means you have to scramble to get it back on track, if that's even possible
Think Holistically	<ul style="list-style-type: none">• This isn't merely checking your estimates against actual progress in the project, though that is important, too.
Track Time	<ul style="list-style-type: none">• With a dashboard tool, you can see whether your resources are properly allocated and, if not, easily reschedule them.
Use Tools	<ul style="list-style-type: none">• Speaking of tools, project management software is a great asset to managing your resources more productively.
Don't Over-allocate	<ul style="list-style-type: none">• Re-examine your resource plan and make use it allocated the resources you have for the project evenly.
Be Realistic	<ul style="list-style-type: none">• it's good practice to be prepared for issues that might arise in your project
Have a Routine	<ul style="list-style-type: none">• set up regular check-ins, say a specific day and time every week, to go through your resources
Know Your Resources	<ul style="list-style-type: none">• How well you manage and optimize resources will determine how much revenue you bring in and the overall profitability

Important Factors that determine how well professional services firms manage their resources:

- *Having clear and thorough understanding of the project plan, and the role it play*
- *Developing a resource schedule/plan derived from the project plan*
- *Optimizing resources after the project is underway*
- *Qualifying your efforts - measuring utilization and realization*
- *The role software plays in effectively managing project resources*

Factors that determine how well professional services firms manage their resources/Effective Project Resource Management:

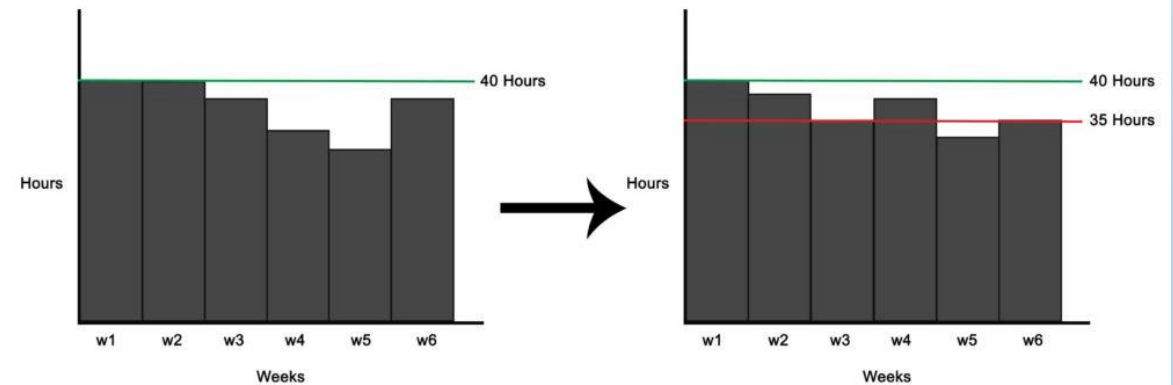
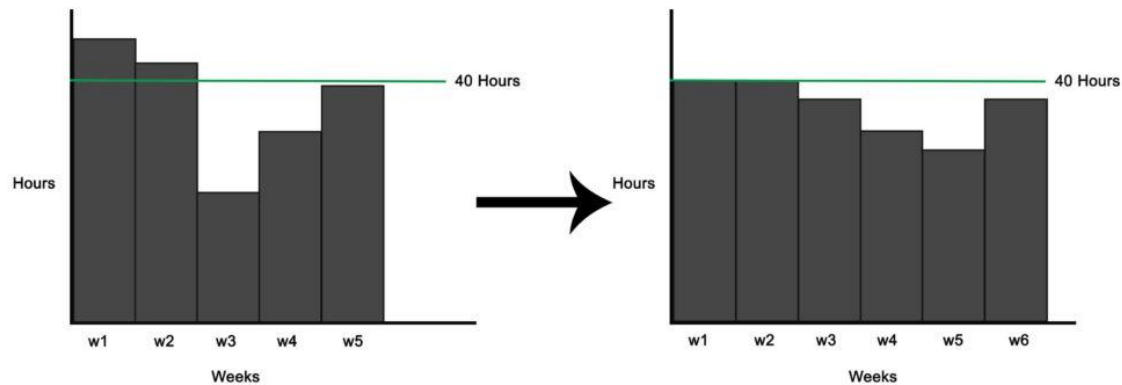
S. No.	FACTORS	
1	Budget of the project	Having a baseline budget amount allows project managers to have greater control over the resources assigned to the project
2	Timeframe for completion	The date committed to delivering a project plays a big role as well.
3	Tasks required to complete the project	a.) all of the tasks required to complete the project, b.) how long you expect each task to take to complete (task duration c.) the priority of the tasks, d.) the dependency of tasks as they relate to each other and e.) constraints and restrictions for tasks, such as deadlines, budgets, and the skill sets of your resources.
4	Resource Scheduling/Resource Planning	to complete their projects in the most efficient way possible, in order to maximize project profitability, by evaluating internal resources

Factors that determine how well professional services firms manage their resources/Effective Project Resource Management:

S. No.	FACTORS	
5	Evaluating your on-going projects	How many of them are on-track or ahead of schedule? Are any of them at risk of not being completed on time, or going over budget? If you discover that some of your projects are at risk, now is the time to make the necessary adjustments
6	Understanding your people resources	When creating a resource schedule for a project you must know a resource's skillset, as well as their experience and billable rate
7	Resource capacity and demand	<p>The demand of a resource in terms of a project is the amount of time required to complete a project task. Resource capacity, on the other hand, refers to what that resource can handle as far as skillset and available time.</p> <p>For example, in order to complete a specific project task, it may take a resource 10 hours a week for the next 3 weeks. This is demand. However, this resource, due to being scheduled on other projects, only has 8 hours a week available. This is the resource's capacity</p>
8	Resource Optimization	resource optimization will allow you to adjust to these changes accordingly without risking your goal of completing the project efficiently, with maximum profitability.

Factors that determine how well professional services firms manage their resources/Effective Project Resource Management:

S. No.	FACTORS	
9	Changes in capacity and demand	Throughout the lifecycle of a project, capacity and demand will change for resources. Two common ways of dealing with resource constraints <i>are resource leveling and resource smoothing.</i>
	(a) Resource leveling	You use resource leveling when you have limited resources and you may extend the schedule.
	(b) Resource smoothing	You use resource smoothing when you have to optimize the resources and you cannot extend the schedule. Resource smoothing is applied after resource leveling, and does not have an affect on the project completion date.



Resource optimization - balancing the future

The most important optimization technique has to do with finding a balance between maximum project profitability and maximum investment into growing your resources

Calculating resource utilization

- The first step in calculating utilization and realization is establishing a baseline number for the total hours a resource has available to work.
- The most common number used in professional services firms is 2080 hours in a year (40 hours a week x 52 weeks in a year = 2080 hours). That being said, every organization is different. Some companies factor in their company holidays and/or vacation time, and start with a baseline of 2000.
- The baseline number itself isn't as important as just being consistent - once you decide on a baseline number for total hours, it is important to use that same baseline when calculating realization and utilization for all employees in order to get the most accurate measurements.
- After establishing a baseline, you can begin to calculate utilization for a resource. The goal is ultimately to have 100% resource utilization.

$$\text{Utilization rate} = \text{Hours Worked} / \text{Hours Available to Work}$$

Julie a full-time employee, was available to work 2080 hours last year, in total she ended up working 2080 hours. Julie was 100% utilized.

Resource optimization - balancing the future

Calculating Resource Realization

- Calculating resource realization requires you to know how many of a resource's hours were billable, and how many of those hours were actually billed to a client.
- The total billable hours will be the new baseline; you can divide the hours billed for a resource by the baseline to determine realization rate.

Realization rate = Billed Hours (hours billed to the customer) / Total Billable Hours

- Continuing on the example above, Julie worked 2080 hours but only 1456 of them were billable. Of those 1456 billable hours, 1224 hours were billed to customers and resulted in revenue.
- Julie was 84% realized (1224 billed hours / 1456 total billable hours).

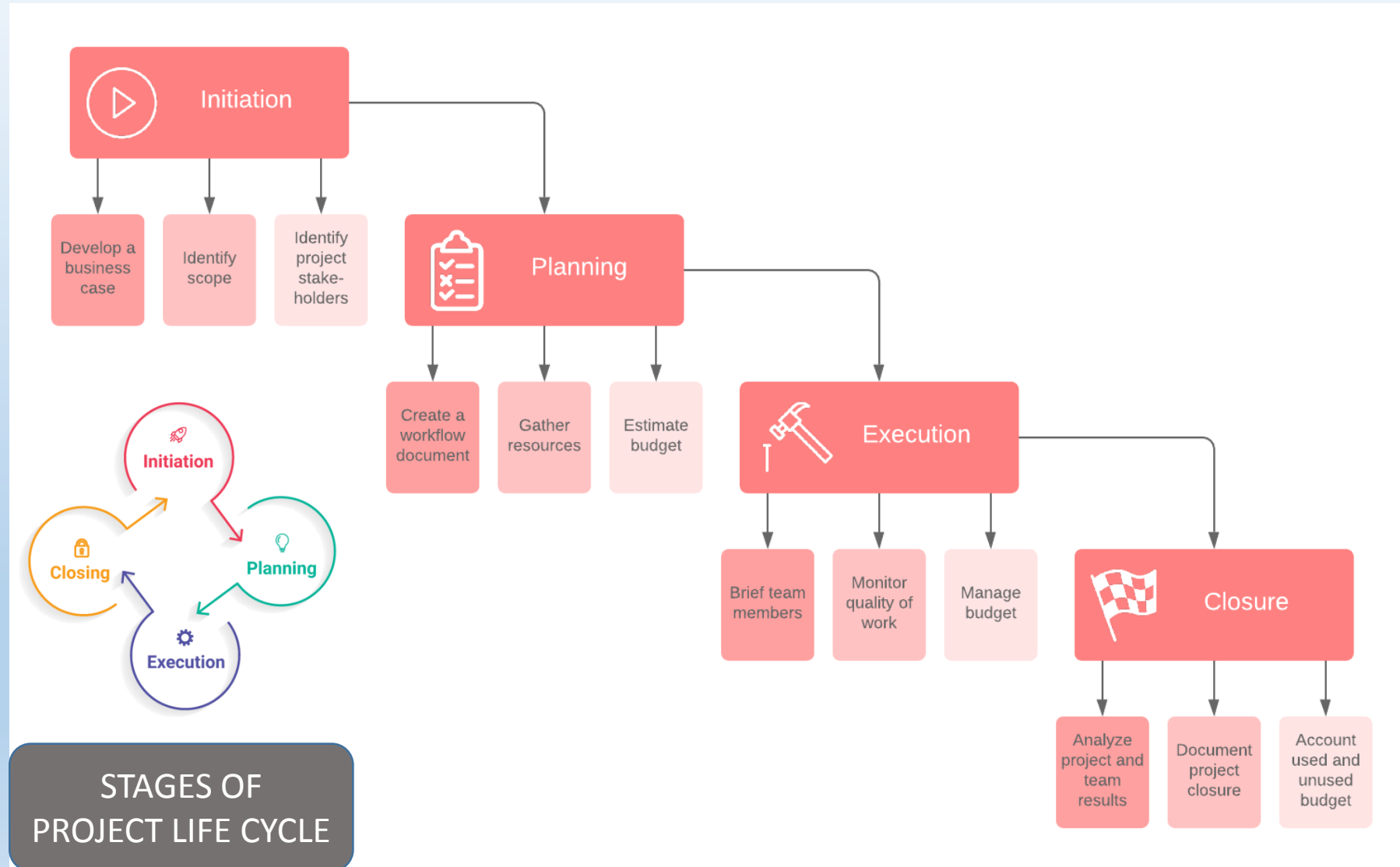
PROJECT LIFE CYCLE:

- The project manager and project team have one shared goal: **to carry out the work of the project for the purpose of meeting the project's objectives. Every project has a beginning, a middle period during which activities move the project toward completion, and an ending (either successful or unsuccessful).**

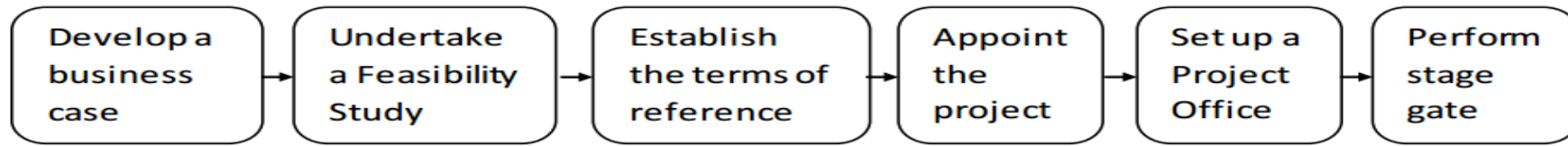
Project life cycles generally define:

- What technical work should be done in each phase
- Who should be involved in each phase (e.g., resources that need to be involved with requirements and design)
- Cost and staffing levels are low at the start, higher toward the end, and drop rapidly as the project draws to a conclusion.
- The probability of successfully completing the project is lowest, and hence risk and uncertainty are highest, at the start of the project.
- The ability of the stakeholders to influence the final characteristics of the project's product and the final cost of the project is highest at the start and gets progressively lower as the project continues. A major contributor to this phenomenon is that the cost of changes and error correction generally increases as the project continues.
- Only three phases are always certain to be performed; **conceptualization, intermediate phase(s), and closure.**
- Cost and staffing level is defined for every single phase.
- Project may have sub-project(s) and sub-projects may have their own project life cycle.

STAGES OF PROJECT LIFE CYCLE:



1. Project Initiation



The Project Initiation activities

Develop a business case:

- A detailed description of the problem or opportunity;
- The Project Management Life Cycle
- A list of the alternative solutions available;
- An analysis of the business benefits, costs, risks and issues;
- A description of the preferred solution;
- A summarized plan for implementation.

Undertake a feasibility study

The feasibility study will also investigate whether the forecast costs are reasonable, the solution is achievable, the risks are acceptable and the identified issues are avoidable.

Establish the terms of reference

- The terms of reference define the vision, objectives, scope and deliverables for the new project.
- They also describe the organization structure and activities, resources and funding required for undertaking the project.
- Any risks, issues, planning assumptions and constraints are also identified.

Appoint the project team:

- The project manager creates a detailed job description for each role in the project team, and recruits people into each role based on their relevant skills and experience

Set up a project office

- Equipment, such as office furniture, etc
- Communications infrastructure, such as telephones, computer network, e mail, Internet
- Documentation, such as a project methodology, standards, processes, forms and registers;
- Tools, such as accounting, project planning and risk modeling software.

Perform a phase review

This is basically a checkpoint to ensure that the project has achieved its objectives as planned.

1. Create a project plan:

A 'work breakdown structure' (WBS) is identified which includes a hierarchical set of phases, activities and tasks to be undertaken to complete the project.

- Type of resource required, such as labor, equipment and materials;
- Quantity of each type of resource required;
- Roles, responsibilities and skill sets of all human resource required;
- Specifications of all equipment resource required;
- Items and quantities of material resource required.

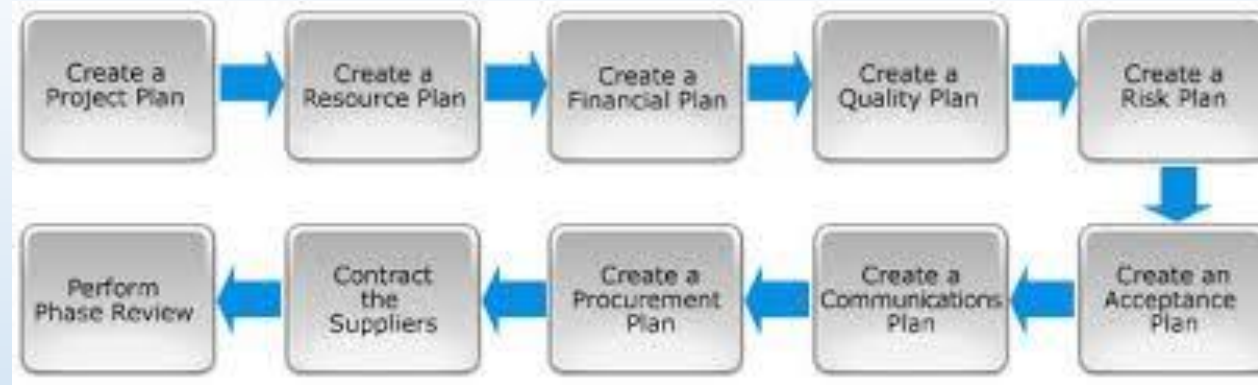
2. Create a Resource and financial plan

: A Resource and financial plan is created to identify the total quantity of money required to undertake each phase in the project (in other words, the budget).

3. Create a quality plan

- Defines the term 'quality' for the project.
- Lists clear and unambiguous quality targets for each deliverable. Each quality target provides a set of criteria and standards to be achieved to meet the expectations of the customer.
- Provides a plan of activities to assure the customer that the quality targets will be met (in other words, a quality assurance plan).
- Identifies the techniques used to control the actual quality level of each deliverable as it is built (in other words, a quality control plan).

2. Project Planning



4. Create a risk plan

- This plan also identifies the actions required to prevent each risk from occurring, as well as reduce the impact of the risk should it eventuate.

5. Create an acceptance plan

By clarifying the completion criteria for each deliverable and providing a schedule of acceptance reviews.

6. Create a communications plan

The communications plan identifies the types of information to be distributed to stakeholders, the methods of distributing the information, the frequency of distribution, and responsibilities

7. Create a procurement plan

- The procurement plan provides a detailed description of the products (that is, goods and services) to be acquired from suppliers
- the process for the selection of a preferred supplier (the tender process), and the ordering and delivery of the products (the procurement process)

8. Contact the suppliers

- A formal tender process is undertaken to identify a short list of capable suppliers
- a contract is agreed between the project team and the supplier for the delivery

9. Perform a phase review

- This is a checkpoint to ensure that the project has achieved its objectives as planned.

3. Project Execution

Build the deliverables

Activities may be undertaken in a 'waterfall' fashion, where each activity is completed in sequence until the final deliverable is produced

Monitor and control

the project manager implements a series of management processes to monitor and control the activities.

Time Management

- timesheet form.
- process of recording and controlling time

Cost management

- the process by which costs/expenses incurred on the project are formally identified, approved and paid.

Quality management

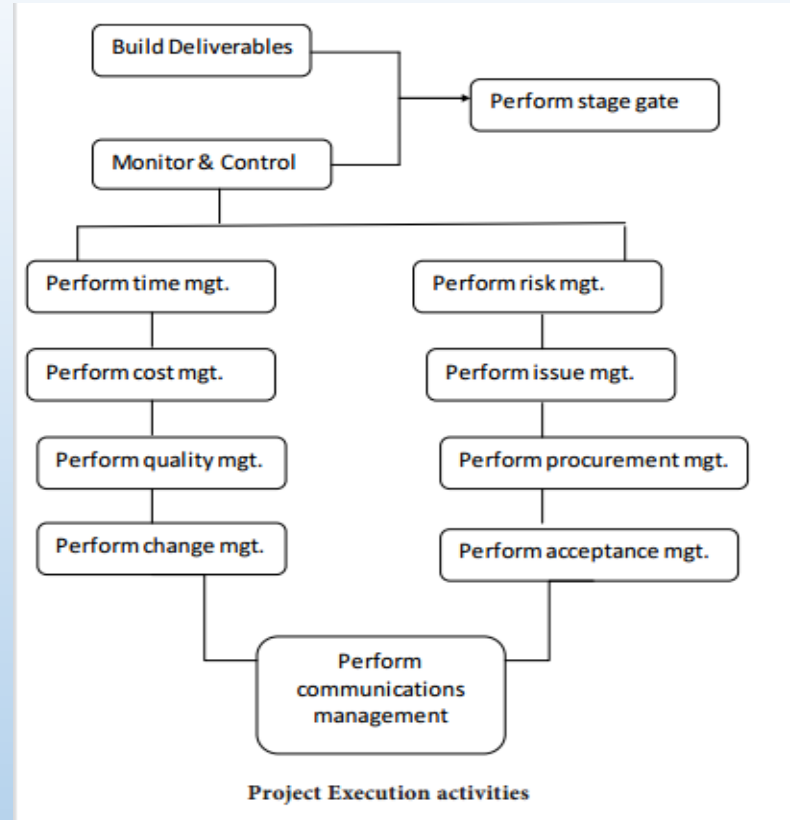
- Quality is defined as the extent to which the final deliverable conforms to the customer requirements. Quality management is the process by which quality is assured and controlled for the project, using quality assurance and quality control techniques
- - Quality Review form

Change management

- Change management is the process by which changes to the project scope, deliverables, timescales or resources are formally requested, evaluated and approved prior to implementation.

Risk management

- process by which risks to the project are formally identified, quantified and managed. -Risk Register



Issue management

- method by which issues currently affecting the ability of the project to produce the required deliverable are formally managed.

Procurement management

- process of sourcing products from an external supplier. Purchase orders.

Acceptance management

- process of gaining customer acceptance for deliverables produced by the project. Acceptance forms

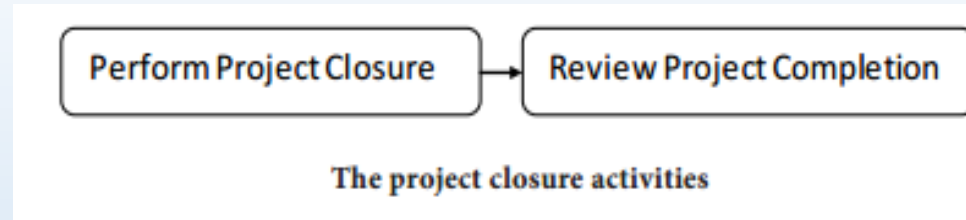
Communications management

- the process by which formal communications messages are identified, created, reviewed and communicated within a project.
- project status report.
- Each communications message released is captured in a communications register

Perform a phase review

- At the end of the execution phase, a phase review is performed. This is a checkpoint to ensure that the project has achieved its objectives as planned.

4. Project Closure



Perform project closure

- Determining whether all of the project completion criteria have been met;
- Identifying any outstanding project activities, risks or issues;
- Handing over all project deliverables and documentation to the customer;
- Canceling supplier contracts and releasing project resources to the business;
- Communicating the closure of the project to all stakeholders and interested parties.

Review project completion

To determine how well it performed, the following types of questions are answered:

- Did it result in the benefits defined in the business case?
- Did it achieve the objectives outlined in the terms of reference?
- Did it operate within the scope of the terms of reference? Did the deliverables meet the criteria defined in the quality plan?
- Was it delivered within the schedule outlined in the project plan?
- Was it delivered within the budget outlined in the financial plan?

PROJECT CONSTRAINTS

To prioritize and define the scope of the application deployment(resources into actions) project, gather information about the constraints of your project.

Resources: Identify the equipment, software, staff, and space that are available for the project.

Time: Identify the date by which the application deployment project must be completed, and how the application testing process fits into the larger deployment project.

Organizational issues: If the project will not involve the entire organization, identify which groups in your organization will be affected by it. Additionally, determine if a particular group in the organization needs the new operating system sooner than others. If so, you might decide to perform a staged rollout.

Access to developers:

- Identify applications that were developed in-house or especially for your organization. Access to the developers of these applications is critical during the testing and issue resolution phases of the project. Such access also can be an invaluable aid with retail applications.
- The primary impact of project constraints is the likelihood of delaying the completion of the project.

There are three types of project constraints: technological, resource and physical.

PROJECT CONSTRAINTS (cont..)

Customer satisfaction

Customer satisfaction is paramount. In terms of your business' success, ensuring your client is happy will help lead to a sustainable and long running business. After all, business in its simplest sense is customer centric. They are a business' main source of income, and if you don't satisfy your customers you jeopardize that.

Risk tolerance

The amount of risk that your sponsor is willing to take on.

Business / organisation

Business constraints include anything that the business can't change that affects a project. For example, a business may have commitments to partners or customers that can't be overlooked.

Due diligence

Due diligence is the level of care, judgement and investigation that can be reasonably expected of you and your business. As due diligence is in most cases a legal requirement or professional ethic, it generally can't be overlooked to speed up a process.

Infrastructure

The use of existing infrastructure that carries with it constraints. For example, old computer hardware will have speed and functionality limits.

Legal

Laws, regulations or agreements that restrict your project options, and determine the legal environment in which your project must operate.

PROJECT CONSTRAINTS (cont..)

Project Management Methodology

The imposed requirement to use a particular approach within your project such as a specific project management methodology. More on that here.

Physical

A physical constraint such as the size of land available to build a property, or size of warehouse space to hold your stock.

Procurement

Procurement practices, procedures or processes that must be followed when delivering your project.

Technical

An imposed technology constraint that is beyond your control, such as a particular platform your client wants you to build their website on. A lack of knowledge on new technology, training needs etc. may also be associated with this.

THANK YOU