[Academic Script]

Introduction to Project Management (Part 1)

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1. Meaning of Project and Project management

In this session we are going to discuss meaning of project, characteristics of project, project identification, generation of ideas, project screening and measurement of performance, and project cycle.

Meaning of Project and Project management

Let’s start with the meaning of project. A Project is a series of related and interrelated jobs usually directed toward some major output.

A project requires a significant period of time to perform which has a definite beginning and end. It's a temporary venture undertaken to create a unique product, service or result.

A project is a unique course of action which is not a routine operation but requires a specific set of operations to accomplish the goals.

Examples like constructing bridges, roads, relief effort undertaken after a natural disaster are projects.

The project team may include people from different organizations who don’t usually work together but work here as a team for a particular assignment.

According to ISO 8402, a project is defined as a unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements including constraints of time, cost and resources.

A project is a complex, non-routine and one time effort to complete a particular task.

Project management is the application of processes, methods, knowledge, skills and experience to achieve the objectives of a project.

A project is a unique, momentary enterprise and venture, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits.

Project Management are the management activities of planning, directing, and controlling resources (people, equipment, material) to meet the technical, cost, and time constraints of a project.

Project management is defined as a body of knowledge concerned with principles, techniques, and tools used in planning, control, monitoring, and review of projects.

It is defined as a discipline for initiation, planning, execution, controlling, and observing the work of a project team working together for the achievement of well defined, specific goals with well-defined success criterion.

A project is a provisional effort which is designed to produce a unique product, service or result with a defined beginning and end. A project is undertaken to meet unique goals and objectives.

Now let's understand the project characteristics

For the successful completion of a project it is necessary to have the following attributes.

Target: A Project works towards a specific goal or target. Cost and time are the most important considerations in a project. For example the nano plant in Sanand was established to produce a small and inexpensive car for both in domestic and international markets.

Distinctive: It should be one of its kinds and unique. The uniqueness of the project is the driving force behind the conception and completion of a project. Tata Nano was considered to be unique because of its affordability.

Definite beginning and an end: A project should have a definite beginning and an end. It should stick to the deadlines otherwise the project might have to face the problem of cost escalations and loss of reputation due to non-completion in time. Tata Nano could finish the project in spite of relocation of plant from Singur to Sanand.

Time, cost and resource requirements: The project should clearly provide the details relating to cost, time and resources to be used.

Uncertainty and Risk: Risk and uncertainty are associated with the completion of project. The project is defined in terms of cost, time and resources required but if the estimates are different from actual, it might affect the project. Risk is a situation in which probabilities can be assigned because the company has a prior exposure where as in uncertainty the probabilities cannot be assigned.

Project Life cycle: Every project has a life cycle. The life cycle consists of five stages i.e. conception stage, definition stage, planning & organising stage, implementation stage and commissioning stage.

Customer specific nature: A project is always customer specific. Customer is the king and it is he who decides upon the product to be produced or services to be offered and hence it is the responsibility of any organization to understand the requirement of customer and manufacture those projects and services that are suited to customer needs.

Optimality: A project is always aimed at optimum utilization of resources for the overall development of the economy.

Sub-contracting: A high level of work in a project is done through contractors. The more the complexity of the project, the more will be the extent of contracting.

Unity in diversity: A project is a complex set of thousands of varieties. The varieties are in terms of technology, equipment and materials, machinery and people, work, culture and others.

2. Project Identification

Project identification begins with the conception of idea. It refers to the intentions of setting up a project. Here, it is necessary to

find whether these ideas can be transformed into a project or not.

Project identification is the first step in the strategic planning process. Before spending significant time and resources on a project, the importance of the project should be identified and likelihood of its success should be estimated.

It is necessary to do an initial feasibility analysis which would evaluate how the local or state political climate, permits, funding, or community acceptance would support or impede a project.

As project planning proceeds, a team of members should be brought together that is knowledgeable of the opportunities, complexities, and potential pitfalls of the project. The project's tasks and resource requirements should be identified, along with the strategy for producing them. This is also referred to as "scope management."

A project plan is created demarcating the activities, tasks, dependencies, and timeframes. The project manager coordinates the preparation of a project budget by providing cost estimates for the labour, equipment, and materials costs. The budget is used to monitor and control cost expenditures during project implementation.

Finally, the development of partnerships and consideration of funding opportunities are also important steps in planning.

There are two major approaches to project identification

(a) Top-down approach

(b) Bottom-up approach

The top down approach is an extremely popular approach in contemporary project management.

The phrase "top-down" means that all the directions come from the top.

Project objectives are established by the top management. Top managers provide guidelines, instructions, information, plans and fund processes. All of the project manager's expectations are clearly communicated to each project participant.

Experience shows that top-down management often results in reduced productivity and causes bottlenecks or so-called lockdowns. A lockdown gives the project manager total control over his team. Such lockdowns can lead to unnecessary pain and significantly slow down a project's completion. Creativity is not promoted down the level.

There are numerous problems with the top down approach such as one person's emotions and opinions influenced all the project decisions. Team members feel that they were not listened to, that their voices didn't count and their opinions do not matter to the top people. These problems might result into failure of projects and this is the reason why numerous organizations have turned to a bottom-up management style.

Bottom up approach

The bottom-up approach implies proactive team input in the project executing process. Team members are invited to participate in every step of the management process. The decision on a course of action is taken by the whole team. Bottom-up style allows managers to communicate goals and value. It promotes creativity at all levels and emphasize participative management. Team members are encouraged to develop personal to-do lists with the steps necessary to reach the milestones on their own. The choice of methods and ways to perform their tasks is up to the team. It empowers team members to be more innovative. They feel involved into the project development and know that their initiatives are appreciated.

The team members' motivation to work and make the project a success is doubled. Individual members of the team get an opportunity to come up with project solutions that are focused more on practical requirements than on abstract notions. The planning process is facilitated by a number of people, which makes it flow significantly faster. The to-do lists of all the team members are collected into the detailed general project plan.
Schedules, budgets, and results are transparent. Issues are made clear by the project manager to avoid as many surprises as possible.
This approach helps people to work as a team and develop a "WE" attitude - makes project progressive and sustainable.

Resources are effectively managed; dependence reduces, there is increased equity, initiative, and accountability, financial and economic discipline.

Despite all its advantages, the bottom-up style alone will not make your projects flourish.

According to many experts, the bottom-up approach is not the perfect solution, as sometimes it lacks clarity and control.
The best way is to find a balance between the two opposite approaches and take the best practices from both of them.

Best practices have emerged for the successful execution of bottom up approach. These practices change the original way of executing projects. They turn traditional project management approach into project management and bring new patterns of collaboration, which are based on collective intelligence.

Collective intelligence is a collection of valuable knowledge from different fields that each project team member is an expert in. This knowledge is successfully collected and shared in a flexible, mutual environment brought by second-generation project management software. The project manager is the one to conduct the work of his team and choose the right direction for the project development, based on the information received from the individual employees.

3. Generation of Ideas

From different sources like customers, competitors and employees various project ideas are generated. Accidentally, the project ideas are discovered. Steps should be taken to enhance the creativity and a friendly environment should be developed.

The bottom up approach encourages generation of ideas at all levels.

Techniques like attribute listing, brainstorming, and delphi technique are useful for improving the creativity at individual and group level.

The project managers should analyze the business environment that consists of the economic sector, the governmental sector the technological sector, the socio-demographic sector, the competition sector and the supplier sector. Once a pool of ideas has been generated, the project manager should carefully screen them. The Project Rating Index method helps managers to eliminate poor ideas in the initial screening process. In the case of financial projects, the project manager should assess the NPV of project ideas. Here, it is necessary to identify the investment opportunities which are prima facie feasible and promising and which require further examination and appraisal.

To stimulate the ideas, SWOT analysis is to be done. It is an acronym for strengths, weaknesses, opportunities, and threats.

It is necessary to tap the creativity of people and to harness their entrepreneurial desires; a friendly environment has to be promoted and cultivated.

A variety of sources should be tapped to identify the project ideas. One should analyse the performance of existing industries. An analysis of the inputs required for various industries may give up some ideas

An analysis of the inputs required can also throw up business ideas. An analysis of import trend and substitution is helpful in understanding the needs of the market.

A study of economic and social trends is also helpful in projecting demand for various goods and services. Research laboratories are also playing a significant role in developing project ideas.

Project Screening and Measurement of Performance:

After developing a list of project ideas, it is necessary to screen the ideas and eliminate the ones which are not promising.

Before finalising the idea it is necessary to see the project's idea compatibility with government priorities, availability of inputs, adequacy of markets, reasonableness of cost, and the risk involved.

When a firm evaluates a large number of project ideas regularly, it may be helpful to rationalize the process of preliminary screening. For this purpose, a preliminary evaluation is translated into project rating index.

4. Concept of Project Life Cycle

The Project Life Cycle refers to a series of activities which are necessary to fulfil project goals or objectives. Projects vary in size and complexity, but, no matter how large or small, all projects can be mapped to the following life cycle structure: organizing and preparing, carrying out the work, and closing the *project*. This is known as a four-phase *life cycle* and the phases are usually referred to as: initiation, planning, execution, and closure.

By **definition**, a **project** has a beginning and an end and passes through several phases of development known as **life cycle** phases.

A project is not a one shot deal. Project lifecycle is spread over a period of time. The gestation period may vary from project to project. However, the principal stages in the life of a project are common.

Project Initiation: Also referred to as identification, initial formulation and defining of projects

Project identification is the initial phase of the project development cycle. It begins with the conception of ideas or intentions to set up a project. These ideas are then transformed into a project. For projects to be properly conceived, the various characteristics like objectives, expected outputs, intended beneficiaries, outcome, stakeholders, life span of the project must be clearly defined.

Projects are expressly designed to solve the varied problems of economics whether in the short or long run.

The surveys or in depth studies should be employed to find the problems and the project planner will identify the projects that would provide solution to these problems.

At this stage, we have to identify the type of projects. The surveys and studies will give an idea about the projects for which detailing would be done before implementation.

The project details must be analysed in order to determine which of them could be considered as suitable for inclusion in the plan, allocate funds and put into execution. Different projects requirements such as commercial specification, technical inputs, needs to be determined. It is also necessary to form teams, allocate responsibilities and authorities for the same.

Planning and evaluation of projects

At this stage, the answers to the questions like what, why, when, where, whom and how of the project are sought. The planning process involves not just the identification of project activities but also estimation of time and resources, identification of relationships and interdependencies and constraints.

Commercial viability, Economic feasibility, financial feasibility, Technical feasibility and Management of the project are evaluated.

Project Execution: Also referred to as Final Formulation, execution and Implementation

Once a project has been appraised and approved, the next logical step is to implement it. Project execution divides the process of project development into eight distinct and sequential stages.

These stages are

General information: General Information about the project should be obtained.

Project description: The project details should be made.

Market potential: The market potential and the probability of its success should be estimated

Capital costs and sources of finance: The estimation of capital required for the project, and how to meet the requirement should be specified.

Assessment of working capital requirement: working capital is the capital for the day to day running of the project which needs to be estimated carefully.

Other financial aspect: Details related to cost, revenues and other expenses should be mentioned.

Economic and social variables: The various economic and social variables affecting the project should be identified.

Last but not the least, every entrepreneur should draw an implementation time table for his project. The network is being prepared, as various interrelated activities together comprise a project.

Project Completion or project Closure

It is often debated as to the point at which the project life cycle is completed. The cycle is completed only when the development objectives are realized. This is the final stage of the project when the ready output is delivered to the customers.

The whole project life cycle can be explained with the help of Ahmedabad BRTS Project. First a need was identified due to the overcrowding of internal roads in Ahmedabad, then the feasibility was tested and scheduling phase started with the sequencing of various activities was done and finally the people of Ahmedabad was delivered this service which was the termination of the project.

5. Project Networking

Project networking is a graph (flow chart) depicting the sequence in which a project's terminal elements are to be completed by showing terminal elements and their dependencies. A **Network** Diagram is a visual representation of a **project's** schedule.

It is always drawn from left to right to reflect project chronology.

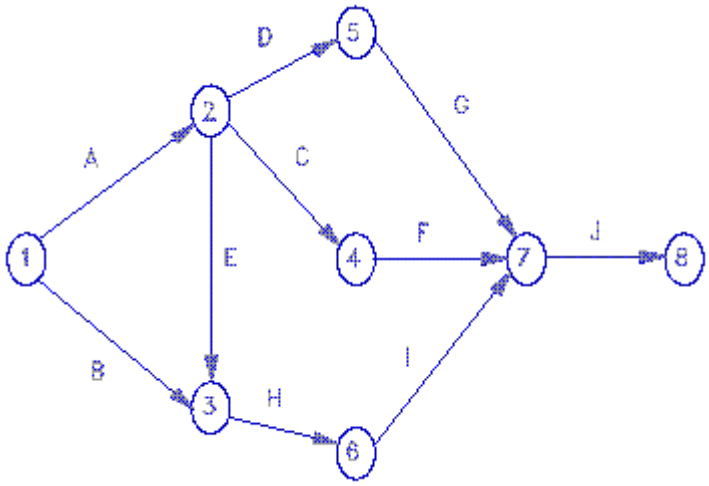
The project network shows the "before-after" relations.

The most popular form of project network is activity on node (AON), the other one is activity on arrow (AOA).

Lets take an example for better understanding:

Activity	*Description*	*Required Predecessor*	*Duration*
A	Product development	(None)	10 months
B	Market research	(None)	2
C	Production analysis	A	4

D	Product model	A	6
E	Sales analysis	A	4
F	Cost analysis	C	6
G	Testing the product	D	8
H	Sales training	B, E	4
I	Pricing	H	2
J	Project report	F, G, I	2



We see Activity A and B does not have any predecessor activity but C, D, E is starting when A is over. F is starting once activity C is over. Activity G begins when activity D is over. Activity H begins when both B and E activities are over. I commensurate when H is completed. The activity J depends on the completion of three simultaneous activities completion namely, G, F and I.

In constructing the network we make use of AON And AOA which has some logical steps.

- draw a node for each event
- Add an arrow from (activity) node i to (activity) node j if activity i must be finished before activity j can start (activity i precedes activity j).

- Note here that all arcs have arrows attached to them (indicating the direction the project is flowing in).

Every activity or task is performed in a project within a limited period of time and resources.

The successful implementation would depend on how well the network has been designed. However, during the course of implementation, many factors arise which cannot be anticipated or adequately taken note of in advance and built into the initial network.

A number of network techniques have been developed for project implementation. Some of them are PERT (PERT stands for Program Evaluation Review Technique, a methodology developed by the U.S. Navy in the 1950s to manage the Polaris submarine missile program. A similar methodology, the Critical Path Method (CPM) was developed for project management in the private sector at about the same time.) Graphical Evaluation and Review Technique (GERT), Workshop Analysis Scheduling Programme (WRSP) and Line of Balance (LOB).

Through effective networks, the sequence of activities would be decided, feasible start and completion dates can be chalked out, amount of various resources and type of resources and budget for every activity can be decided.

6. Summary

A Project is a series of related jobs usually directed toward some major output and requiring a significant period of time to perform. Project Management are the management activities of planning, directing, and controlling resources (people,

equipment, material) to meet the technical, cost, and time constraints of a project. Each project has a cycle through which it has to pass. Project should be implemented carefully keeping in mind the constraints, and after a detailed feasibility analysis.