CHAPTER 1

INTRODUCTION OF PROJECT

1.1 MEANING AND DEFINITION

Project management has become an exciting as well as challenging professional career for result oriented managers. The governments in developing countries are also developing projects to (i) attract donors for financial assistance, (ii) enhance their developmental programs and (iii) accelerate economic development. Therefore, it is important to understand what a project means before entering the concept and aspects of project management. We have heard of people, agencies and government talking about water supply projects, roads construction projects, dairy development projects, hydropower projects, higher education projects, telecommunications projects, environmental protection projects, human rights and civil liberties projects, income generating projects, research projects and civil aviation projects etc.

A project involves a single definable purpose, end item or result usually specified in terms of costs, time schedule and performance requirements. It is a process of working together to achieve a goal; during the process, projects pass through several distinct phases called project life cycle. In other words, a project is a set of interrelated time bound activities or a time bound tasks carried out to achieve certain specific objectives. It has a definite beginning and an ending and integrates human and non-human resources to deliver certain specific goods or services to target the group of beneficiaries. Every project has two phases: first, planning and preparation and second, its operations. Project planning involves definition of tasks or activities to be performed to achieve specific project objectives. In order to achieve the objectives, it must be operated within a given set of rules, regulations, constraints and limitations. The implementation of projects convert the given inputs or resources into output or result and require various financial and non-financial resources. Every project idea to be successful must technically feasible, economically viable, politically suitable and socially acceptable.

Different institutions and thinkers have defined projects in different ways. The following are some of the definitions presented by some institutions and prominent thinkers:

"Project is a one which starts from scratch with a definite mission, generates activity involving a verity of human, non-human resources all directed towards fulfillment of the mission and stop once the mission is fulfilled.” -S. Chaudhary

"A project can be defined as a unique task (however large or small) with defined goal, limited in cost and time and giving some benefits to the users when the task is completed. "S.K.Bhattacharjee

"Project is a combination of human and non-human resources pulled together into a temporary organization to achieve a specific purpose." - Clealand and King

The Project Management Institute in USA (PMI) defines project as "A one-shot, time limited,

goal directed, major undertaking, requiring the commitment of varied skills and resources. It is combination of human and non-human resources pooled together in a temporary organization to achieve a specific purpose."

"A project is defined as a temporary endeavor under taken to create a unique products or services." Project Management Body of Knowledge (PMBOK)

According to Trevor Young, a project is a "Collection of limited activities, carried out in an organized manner with a clearly defined start and finish points, to achieve some specific results that satisfy the needs of an organization as derived from the current business plans."

Harold Kerzner defines a project as "any series of activities and tasks that have a specific objective to be completed within certain specifications, defined start and end points, funding limits and consume resources."

Ralph Currier Davis defines a project as "Any undertaking that has definite final objectives, representing specified values to be used in the satisfaction of some need or desire."

All these definitions emphasize that a project is a time bound activity designed to achieve a specific goal through planning, control and temporary organization to create a product or service by overcoming time and resources constraints. The success of a project depends on sound planning, clearly defined objectives, judicious utilization of resources, logical coordination of activities and effective implementation, periodic comparisons of planned and actual performance and taking corrective steps to ensure timely completion.

Some examples of project

- Construction project (building, road, hydropower, etc)
- Research and development project
- Introducing new products in market
- Developing new information system
- Running a campaign for political office.
- Producing movie television on serial
- Performing marriage for children
- Conducting training and capacity development packages
- Awareness and advocacy campaign
- Writing a book, thesis etc.

Difference between Project and Operation

Project ceases when it declared objectives are attained while the operation adopt a new set of objectives and continue.

Resources of the Project

It is generally denoted by 5M Money, Material, Manpower, Machine, and Minute/Management It short management of above listed 5 M's relies on core function of project management.

1.2 CLASSIFICATION OF PROJECT

Projects can be classified as under:

A. According to funding (source of fund)

1. Private sector project

These projects are the basis of private investment. The private sector bodies are responsible for the development and sponsor of the project. Example- Civil homes, Kathmandu Mall, Apartments etc

2. Government sector project

These projects are the basis of government development plans. Government is the major sponsor of projects in developing countries. Example-water supply project, hospitals, schools etc.

3. Grant projects

These are those projects where the investment in project is not repaid by the government to the donor agencies.

4. Loan projects

These are those projects where the investment in project is repaid by the government to the donor agencies.

B. According to the Foreign aided project:

1. Joint venture project

This project is funded through collaboration of foreign and local investors. They involve transferring of capital, technology, management. They are based on the ownership sharing. Example Maruti- Suzuki, Everest bank (JV with bank of Punjab) etc.

2. Bilateral project

This project is funded from the financial resources of a friendly donor country, generally through grants under an agreement. Example - JICA, KOICA, GTZ etc.

3. Multilateral project

This project is funded from the financial resources of multilateral agencies such as World Bank and Asian development bank. They are generally funded through loans. However subsidy and grant are also provided by these agencies. All UN agencies are also multilateral.

C. According to Techniques:

1. Labor intensive project This project is labor based. Human labors are extensively used for implementation of the project. The is used to describe a technology that applies a labor/equipment mix that gives priority to labor, supplementing it with appropriate equipment

where necessary for reasons of quality or cost.

Advantages:

a. More employment generation

b. Utilization of scarce resources

c. Decentralization

d. Higher level of consumption

e. More production at cheaper rate

f. Saving foreign exchange

g. Scope for employment for women

Disadvantages:

a. It is static in nature so cannot be applied for long run

b. There is no possibility of improving in skills

c. Low capital formation

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2. Capital intensive project

This project is technology based. Technology represented by machinery, automation, and computerization is used to implement the project

Advantages:

a. Ease in capital formation .

b. Technology advancement

c. Skill advancement

d. Technology transfer

e. Applied for long run

Disadvantages:

a. Required Huge amount of capital

b. Un-equal payment for workers (imbalance distribution)

c. Negative consequences in saving of social overheads

d. Centralization e. Adverse effect on distribution of income

D. According to. Functions:

1. Disaster prevention projects

2. Development projects

3. Service sector projects

4. Environment friendly projects etc.

E. According to the Orientation:

1. Product oriented

The focus is on the technical content of the project. Examples - building, road, bridge etc.

2. Process oriented

No consideration is given to technical context. Examples- person focused training, repair of cement plant etc.

F. According to Scale and Size

1. Mega

It is a big size complex project for 5 to 10 years involvingh investment and high technology. Upper Karnali hydropower proie the example of mega project of Nepal. These projects require

environmental screening like EIA (Environmental. Impact Assessment)

2. Major

It is smaller in size than mega project. Middle Marshyangdi hydropower project is the example of major project in Nepal. These projects also requires environmental screening like EIA

3. Medium

It is small in size than major project. Khimti/Bhotekoshi/Jhimruk hydropower project is an example. These project requires IEE (Initial Environment Examination).

4. Small

It is the smallest project of short duration. Manang hydropower is the example.

5. Micro

It is smaller than small hydropower and are managed by community based organizations. Ghandruk Mirco hydro power project is one of the example.

G. According to Nature of project

1. Simple

2. Complex

3. Innovative

4. Emergency

H. According to Time frame and speed

1. Normal

Scheduled Normal time allowed for project implementation.

2. Crush

Saving in time is achieved by spending extra resources in terms of materials and manpower with compromising quality. Overlapping or shortening of project phases is encouraged.

1.3 CHARACTERISTICS OF PROJECT

A project has the following characteristics:

1. A defined (specific) goal or objectives

Clearly defined goals are essential so that everyone understands the purpose and vision of the project team. A project has clearly defined specific objectives or mission. It is focused on end results. It ceases to exist when the objectives have been achieved. For e.g. the goal of a construction project is to build (facility) something.

2. Temporary

Temporary means that the every project has definite beginning and end. The end is reached when the project's declared objective/goal is achieved. Temporary doesn't mean short in duration,

depending upon the nature, type and size of the project the duration of the project is determined.

3. Constraints

All projects have constraints. A project operates within the constraints of time, cost and quality performance. It has a time schedule for various activities and a completion date as deadline. It has its own budget to control costs. It has clearly laid down quality specifications. The scope and boundaries of a project are clearly delineated. Project schedule sets deadlines.

4. Unique

Projects involve doing something which has not been done before and therefore it is unique. There is only one Tajmahal, one Eiffel tower, one Panama Canal etc. No two projects are absolutely similar to each other. For example-thousands of buildings have been developed but each facility is unique - different owner, different location, different designs, different contractors etc.

5. Specific task, not routinely performed

No works are repeated again and again in the project. For examplethe first work in the hydropower project is to build the weir or barrage. After the construction of weir/ barrage or after the diversion of river water, again weir/barrage is not constructed, after those other new structures are constructed.

6. Team Work

In a project, there are number of people involved and participating, generally called as stakeholders. Projects work through team work. A project consists of multi-functional team. Team members are temporarily assigned from other functional departments. They come from various disciplines with varied experiences. The key stakeholders in a project are:

(a) Project manager: the individual responsible for managing the overall project.

(b) Customer: the individual or organization that will use the

(c) Performing organization: the enterprise whose employees are most directly involved in doing the work of the project

(d) Sponsor: the individual or group that provides the financial resources in cash or in kind, for the project.

7. Rapid Expenditure

The level of expenditure is very high as compared with the other permanent program.

8. Resource being consumed

Project consumes tremendous quantities of resources, all of which are paid for by the owner. 5M-Money, Material, Manpower, Machine and Minute are examples of the kinds of resources that are managed and controlled by the project team. Efficiently managed projects minimize, balance and forecast resource consumption for the owner.

9. Risk and Uncertainties

Risk and uncertainty go hand in hand with project. A risk free project cannot be thought of. Even if a project appears to be risk free, it only means that the risk element is not apparently visible on the surface and it will be hidden underneath. The risk factor will come to surface when conditions become conducive to it. On the other hand, risk gets managed as the project phase's proceeds.

10. Planning and Control

Projects work to a plan. A project requires effective and efficient planning and control systems. Standards are set for project activities through planning. They serve as yardsticks for measuring project performance. Actual performance is compared with standards to find out deviations, Corrective actions are taken to control deviations.

11. Defined deliverables

Defined deliverables are what the owner establishes as the program and what is further clarified in the contract documents by design professionals. A certain quantity of work will be completed in accordance to certain specifications within a certain time frame.

12. Contracting and subcontracting

Most projects are contract-based. The project work is characterized by high level of contracting and subcontracting. Complexity increases the need for subcontracting. Contracts can be of various types, such as lump- sum contract, unit price contract, negotiated cost plus fixed fee contract and turnkey contract. Proper contract planning and management is the key to effective project management.

13. Progressive elaboration:

Progressive means proceeding in step and elaboration means worked out with care and detail: thoroughly developed.

1.4 SETTING PROJECT OBJECTIVE AND GOAL

Objectives are the ends towards which the activities of a project are directed. A project has clearly defined (specific objectives). It is focused on end result. Project exists when the objectives have been achieved. Hence the first step in any project is to define the objective. We define the project objective in order to:

1. Make sure that we have identified the right target.

2. Create team commitment and involve all interested parties in achieving the successful project outcome.

Goals are purpose and mission for initiating a project which is set at the start of project. It is the specification of what is hoped to ha achieved at the end of the project which allows stakeholders to specify the target then work towards their own objectives. Goal should clearly state what the project will deliver. Goal setting takes time, energy and dialogue.

When we set out to define project objectives there is useful acronym to remember SMART. These are the indicators of objectives which means

S= Specific (Clear and well defined)

First, you want to make your goal as specific as possible. You want to ensure your goal is detailed and describe exactly what you want. For example, if you set a goal to own your own home, be specific about it. Don't just say "I want to own a house". Describe what kind of house you want; how big will it be, how many bedrooms will it have, do you want a house with a yard or not, and where do you want your new home to be located? Answer the question Who, What, When, Where, Which and How. The more specific a goal is the clearer target you set for yourself.

M = Measurable so that project outcome can be measured and compared (Evaluated)

Second, when setting goals, make sure you set goals whose progress you can measure. There is a difference between saying I want to lose weight and I want to lose 30 pounds. When you say, I want to lose 30 pounds, you can measure that. You can see your progress as you decrease your weight from 30 pounds, down to 25, down to 20 and so on. This will help you see fruits of your labor and motivate you to keep pushing forward. Now if you merely said I want to lose weight, well, losing even one pound could constitute you achieving your goal, so you wouldn't be kept motivated to continue.

A = Achievable / Attainable and Agreed by all the members of the team

Third, you want to set a goal that is attainable. Based on current restrictions, such as your schedule, workload, and knowledge, do you believe you can attain the objective you set? If not, then set a different goal, one that is attainable for you in the present moment. By setting unattainable goals, it will only make you feel like a failure for not accomplishing the target you set for yourself.

R= Realistic, possible under limited set of resources

This is in line with attainability, set goals that are realistic. If you are 40 pounds overweight and haven't exercised in years, it'd be a pretty unrealistic goal to run a triathlon with 2 months of training. So set a goal you have a realistic chance of achieving. Doing otherwise is setting you up to fail before you even start.

T = Time framed, if there is not pressure to complete the project it will never get completed

Last and most important, all smart goals must be time-bound. You should have a dead line by which you plan to have the goal completed. Setting a deadline reinforces the seriousness of the goal in your mind. It motivates you to take action. When you don't set a timeline, there is no internal pressure to accomplish the goal.

Objective should not only be SMART they also need to be brief and simple to understand.

Examples of SMART goal

1. Bad example of a SMART goal: "I want to write a book".

Good example of a SMART goal:

"I want to write a work book on "How to add 10 years to your life that is at least 150 pages in length and get it completed by June 30th 2011. I will write at least 4 pages every weekday until I complete the book."

2. Bad example of a SMART goal: "I want to have a lot of money".

Good example of a SMART goal:

"I want to make one million within 10 years by starting an internet marketing business selling personal development products all over the world and by providing life coaching consultancy and conducting live seminars."

1.5 PROJECT LIFE CYCLE AND PHASES

Project is a temporary job. It cannot continue endlessly. A project depending upon its nature, size and type, undergoes through different well defined phases right from its inception to successful completion. Collectively, the project phases are known as project life cycle phases. The breakdown and terminology of these phases differs depending upon the nature of the project or organization. The following important five phases contribute to develop a project from an idea to reality, basically for infrastructure related project.

a. Initiation Phase

b. Planning Phase

c. Engineering and Design Phase

d. Implementation Phase

e. Termination Phase

a. Initiation Phase :-

This phase includes:

- Conceptual study: projects are born with creative ideas. It includes preliminary evaluation of ideas, such as project identification, project formulation."
- Feasibility study: the objective of the feasibility study is to have more detailed information about the location, nature, dimensions, raw material needed, equipments, cost-benefit analysis, and the detail about the users who will be benefitted from the project.
- Market study: it includes the study of the marketing prospects and demand of the product, considering (a) potential size and composition of the market (b) present and projected demand of the product/services.

After the completion of this phase, a go/no-go decision is made.

b. Planning phase :-

This phase includes

Work breakdown structure: the project is broken down into small elements so that all the activities to be performed in the project are included.

Cost and Schedule Planning: after breaking down the project, the time and cost of each activity is determined and overall time and cost of the project is determined.

Contract terms and condition: the contract terms in which the project activities are to accomplish is determined in this phase. The contract may be lump-sum, fixed price, unit rate etc.

After the end of this phase time and cost estimate of the project : made and major contracts are let

c. Engineering and Design

This phase includes:

(a) Preliminary engineering and design

It stresses architectural concepts, evaluation of technological process alternatives, size and capacity decisions, and comparative economic studies. In designing dam, hydropower, irrigation channel preliminary design requires analysis of hydrological characteristics, geological condition, precise location of dam etc.

(b) Detailed engineering and design

It involves the process of successively breaking down, analyzing and designing the structure and its elements. This detailed phase include architects, interior designers, landscape architects, and several engineering disciplines including chemical, civil, electrical, mechanical etc.

d. Implementation Phase

This phase includes:

- Application of the paper work physically in the real field.
- Manufacturing, installation of machines and testing and civil works. .
- Controlling is performed to check project performance at any point of time during implementation.
- The facility is substantially completed at this phase.

e. Divestment/ Phase out/ Termination

- This phase is the end of project and project is brought to its completion.
- In this phase, the final testing and maintenance of the project is done and handed over to the customer and resources are released to other projects.
- The basic tasks in this phase are evaluation and handover of the project output to the beneficiaries.

Project life cycle in terms of resources/risk and time

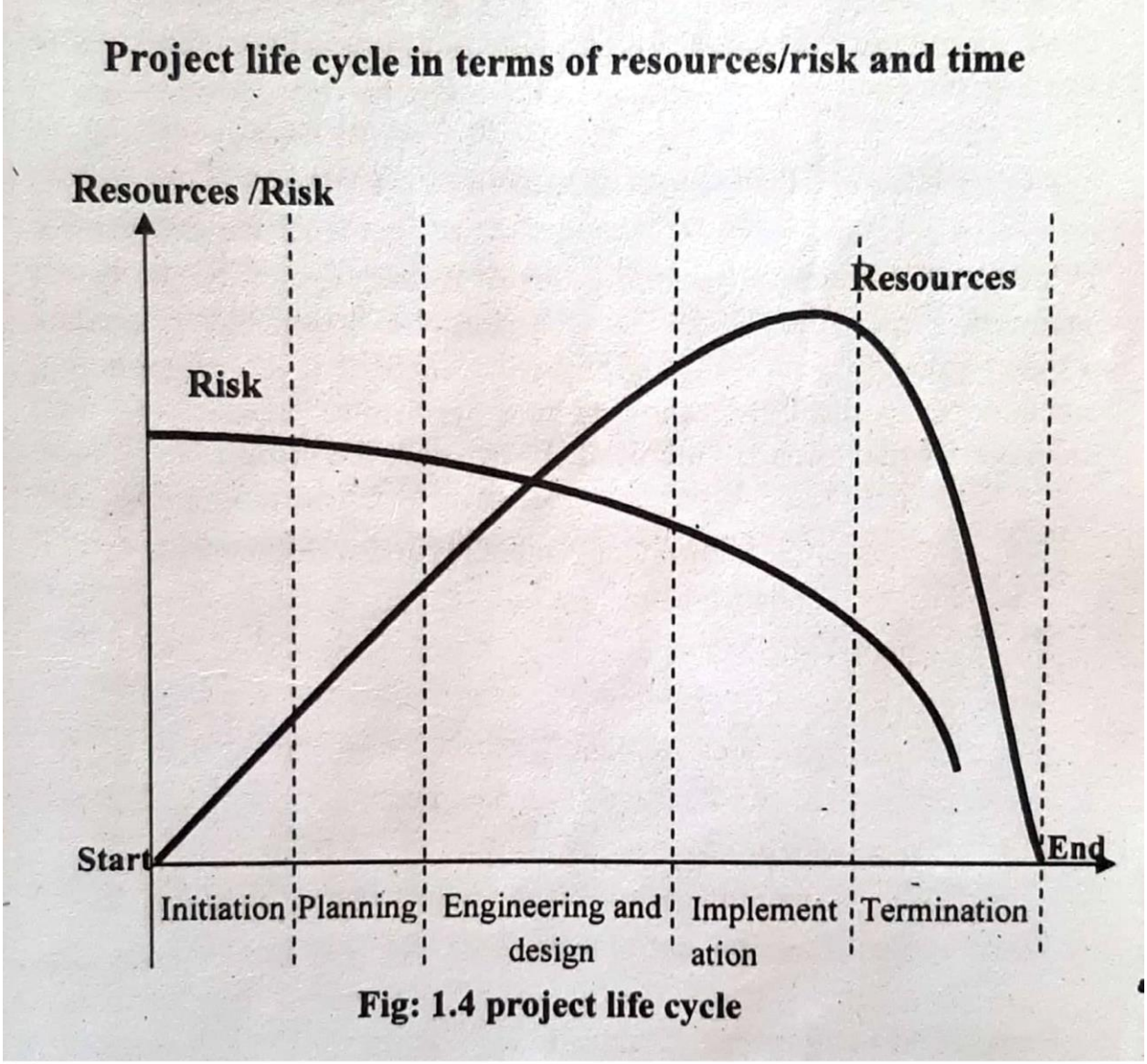


Fig: 1.4 project life cycle

- Cost and staffing levels are low at the start, higher towards the end, and drop rapidly as project draws to a conclusion as shown in fig below.
- The probability of successfully completing the project is lowest, and hence risk and uncertainties are higher at the start. The probability of successful completion gets progressively higher as the project continues.

Most project life cycles tend to progress slowly at the start, quicken their momentum towards the middle and drop their momentum towards the end

1.6 PROJECT MANAGEMENT

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 use of planning, executing, controlling and closing processes. Basically nine managerial functions are involved in managing the project.

- Project Integration Management (plan development)
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Risk Management Project
- Human Resource Management
- Project Quality Management
- Project Communication Management
- Project Procurement Management

Project Management Concept

- All work is a process and processes combine to create a phase
- Various phases with well defined milestone make up a project.
- Uncertainty is inevitable in each phase.
- Inability to measure and manage uncertainty is worst enemy.
- By using specific tools and systematic application, project can be effectively managed.

1.7 PROJECT ENVIRONEMNT

The project management performance largely depends on the environment which differs from country to country. The environment has a serious influence on the implementation and cost of the project. The changing environment increases the project complexities, uncertainties, competition to obtain all kinds of resources and rapid technological changes. In order to achieve the goal, it must continually adapt to its environment, which is constantly changing. Failure to adequately adapt to the environment is a major cause due to which project fails. Project must respond to a variety of external processes and the environment of project is sum of all the forces and factors outside it. Project now days are becoming increasingly complex with their technical, economic, social and political influences raising new project management issues and problems. Project Environment can be analyzed at different levels as follows:

1. External Environment
2. Operating / Task Environment
3. Internal Environment

1. External Environment

A project's external environment consists of all those forces outside a project that are relevant to its operation .It implies all the conditions, circumstances and influences surrounding and affecting the total project or any part of it. It includes all the factors, which are external and beyond the control of an individual project and its manager It provides the framework within

which a project has to operate components of external environment are political, economic, Sonia and technological, often referred as PEST.

(a) Economic Environment

The economic system determines the economic environment. The major elements of economic environment are economic policies economic system, national income, distribution of income, market factors, product market, infrastructure facilities, inflation, fiscal policies, and economic conditions in the national context and regional economic groups and cooperation in the international context. The economic environment is a major factor that influences the investment climate in the country. Includes the economics system, national income, distribution of income, market factors, product market, infrastructure facilities, inflation, fiscal policies, etc. It affects the cost of inputs and demand of project products.

(b) Political legal Environment

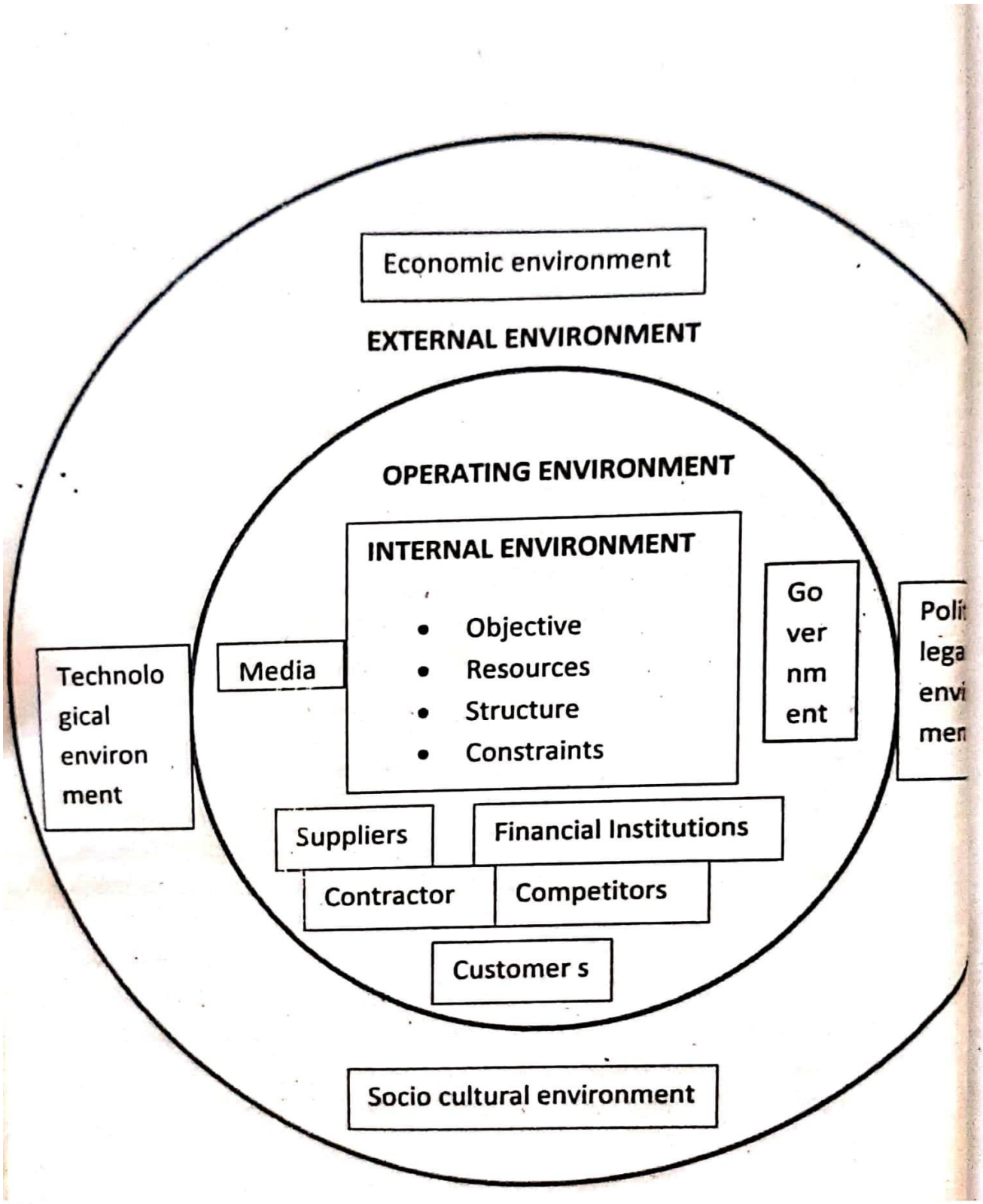
Political environment refers to various political and legal factors that affect public life. It Includes constitution, political parties, political stability, national and international government, administrative law, ideology of government in power etc. These components either restrain or facilitate the functioning of the project. Legal environment refers to the legal framework and other provisions that affect the project management and project implementation. It includes laws, regulations and court decisions that are designed to encourage guide and control all activities of the state and the private sectors. The legal environment protects the rights of various interest groups like society, project, employees and consumers.

(c) Socio cultural Environment

Projects are operated in a society for the benefit of the society. Social environment comprises of social structure, population trends, caste structure, education system, social values, life style, beliefs and expectation in a particular society. Another factor culture is closely associated with society and includes values, norms beliefs and behavior of the people. Both these together constitute socio-cultural environment as they either promote or strain human relationships. It can have major influence on project and its functioning.

(d) Technological Environment

It consists of stare of technology, machinery, equipment, methods, systems, skills and rate of technological change etc. Drastic changes have taken place in the field of technology during last two or three decades. The information and communications technology has advanced to new heights and not only created tremendous opportunities but also enhanced project management techniques, technology brings changes in production processes, skills required and job prospects. Project manager should be concerned with the components of technological environment are pace of change in technology, technology transfer, levels of technology absorption and research and development.



2. Operating /Task Environment

It refers to a group of stakeholders, participants or interest groups who benefit from the project or get affected by it. The participants are directly or indirectly affected by the project activities. The project team does not have a direct control over the elements of the task environment but can influence them. It consists of media, customers, consultants, competitors, financial institutions, suppliers, contractors and government.

3. Internal Environment

If external environment determines what a project might do, internal environment dictates what it can do. It is located within the project and can be controlled by it. It not only shapes but also affects the effectiveness of a project. It consists of the following: Objective, Resources, Structure, constraints,

Objective

It is the desired end results, which the project wants to achieve. It provides orientation to project manager. Every efforts of project manager should contribute to attaining objective of the organization as whole.

Resources

Projects have human and non human resources. The human resources include specialized experts and managerial personnel. It is the key resources because objective of project can be achieved only through people. Non human resources consist of financial resources and physical resources.

Structure

Structure provides the framework within which project functions. The structure of project is ad-hoc and cuts across organizational and departmental lines.

Constraints A project functions in a dynamic environment characterized by constraints of time, cost and quality. The time cost and quality are the guiding parameters of project. A project manager should effectively balance these complex parameters of a project.