

# ***AFRICAN INSTITUTE OF PROJECT PLANNING AND MANAGEMENT***

***P. O. BOX KENYA:***

***PROGRAM: POST GRADUATE DIPLOMA IN  
PROJECT PLANNING AND MANAGEMENT:***

***REGISTRATION NO: PGD003-POST GRADUATE:***

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## **AREAS OF CONCERN**

- ❖ ***Definitions***
- ❖ ***Illustrations***
- ❖ ***Objectives***
- ❖ ***Aims***
- ❖ ***Conclusion***

## **References**

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# FINAL EXAMINATION ON PROJECT PLANNING AND MANAGEMENT

## Instructions

Answer all questions in section A and any five in section B

## SOLUTIONS FOR THE FINAL EXAMINATION

### *1 What do you mean by project management?*

*A **project** is an interrelated set of activities that has a definite starting and ending point and results in the accomplishment of a unique, often major outcome.*

*"**Project management**" is, therefore, the planning and control of events that, together, comprise the project. Project management aims to ensure the effective use of resources and delivery of the project objectives on time and within cost constraints.*

*An **activity** or task is the smallest unit of work effort within the project and consumes both time and resources which are under the control of the project manager.*

*A project is a sequence of activities that has a definite start and finish, an identifiable goal and an integrated system of complex but interdependent relationships.*

*A **schedule** allocates resources to accomplish the activities within a timeframe. The schedule sets priorities, start times and finish times.*

### **THEREFORE, ALSO**

*Project management is defined as the adept use of techniques and skills (hard and soft) in planning and controlling tasks and resources needed for the project, from and outside of both inside organization, to achieve results. The purpose of project management is to achieve successful project completion with the resources available. A successful project is one which:*

- ☐ *has been finished on time*
- ☐ *is within its cost budget*
- ☐ *Performs to a technical/performance standard which satisfies the end user.*

## *2. Bring out the responsibilities of project manager.*

*A **project** is an interrelated set of activities that has a definite starting and ending point and results in the accomplishment of a unique, often major outcome.*

***Therefore**, the following are the responsibilities of project manager.*

- 1. To plan thoroughly all aspects of the project, soliciting the active involvement of all functional areas involved, in order to obtain and maintain a realistic plan that satisfies their commitment for performance.*
- 2. To control the organization of manpower needed by the project.*
- 3. To control the basic technical definition of the project, ensuring that "technical" versus "cost" trade-offs determine the specific areas where optimization is necessary.*
- 4. To lead the people and organizations assigned to the project at any given point in time. Strong positive leadership must be exercised in order to keep the many disparate elements moving in the same direction in a co-operative.*
- 5. To monitor performance, costs and efficiency of all elements of the project and the project as a whole, exercising judgment and leadership in determining the causes of problems and facilitating solutions.*
- 6. To complete the project on schedule and within costs, these being the overall standard by which performance of the project manager is evaluated.*
- 7. To ensure all project activities, results and evaluations are done and reported accordingly based on the time frame and to facilitate monitoring and evaluation of the project especially community based projects.*

## *3. How budgets are framed in projects?*

*Budget is defined as rough estimation of the project figure dedicated to a specific purpose or objective.*

*Meanwhile:*

*A project is an organization of people dedicated to a specific purpose or objective.*

*Projects generally involve large, expensive, unique, or high risk undertakings which have to be completed by a certain date, for a certain amount of money, within some expected level of performance.*

*At a minimum, all projects need to have well defined objectives and sufficient resources to carry out all the required tasks.*

*Or*

*A project is a combination of human and non-human resources pulled together in a temporary organization to achieve a specified purpose*

*Therefore the following are the methods available in budgeting for the project objectives:*

*In its simplest terms, project success can be thought of as incorporating four basic facets. A project is generally considered to be successfully implemented if it*

❖ *Comes in on-schedule (time criterion).*

❖ *Comes in on-budget (monetary criterion).*

❖ *Achieves basically all the goals originally set for it (effectiveness criterion).*

*Is accepted and used by the clients for whom the project is intended (client satisfaction criterion).*

*By its basic definition, a project comprises a defined time frame to completion, a limited budget, and a specified set of performance characteristics. Further, the project is usually targeted for use by some client, either internal or external to the organization and its project team. It seems reasonable; therefore, that any assessment of project implementation success should include*

*These four measures.*

## **1. The Project Life Cycle**

*One method that has been used with some regularity in order to help managers conceptualize the work and budgetary requirements of a project is to make use of the idea of the project life cycle.*

*The concept of the life cycle is familiar to most modern managers. Life cycles are used to explain the rise and demise of organizations, phases in the sales life of a product, etc. In a similar*

*fashion, managers often make use of the life-cycle concept as a valuable tool for better understanding the stages in a project and the likely materials requirements for the project through each distinct phase.*

*A project's life cycle has been divided into four distinct stages:*

- 1. **Conceptualization**; the initial project stage. At this stage a project is determined as being necessary. Preliminary goals and alternatives are specified, as well as the possible means to accomplish those goals.*
- 2. **Planning**; this stage involves the establishment of a more formalized set of plans to accomplish the initially developed goals. Among planning activities are scheduling,*
- 3. **Execution**; the getting, and the allocation of other specific tasks and resources. Third stage involves the actual "work" of the project. Materials and resources are procured, the project is produced, and performance capabilities are verified.*
- 4. **Termination**; once the project is completed, there are several final activities that must be performed.*

***THEREFORE:***

### ***Budgets***

*A budget is a plan statement for a given period of time in future expressed in financial or physical units. Budget contains expected results in numerical terms. A budget is a quantitative expression of a plan. Organizational budgets vary in scope. Master budget which contains the consolidated plan of action of the whole enterprise is in a way the translated version of the overall business plan of the enterprise. Similarly, production budget represent the plan of the production department. Again, capital expenditure budget, raw material budget, labour budget, etc. are a few minor budgets in the production department. One of the advantages of budgets is they facilitate the comparison of actual results with the planned ones by providing yardsticks for measuring performance.*

### ***5. Write a note on Break Down structure.***

*The purpose of the work breakdown structure (**WBS**) is to subdivide the scope of work into manageable work packages that can be estimated, planned and assigned to a responsible person or department for completion.*

*The breakdown should group similar work together to improve productive efficiency, built method and executive strategy.*

*The WBS was originally developed in the 1960s as part of the drive towards improved project definition and it soon became the backbone of planning and control system.*

*The WBS is an excellent tool for quantifying the scope of work as a list of work packages and is an essential tool for ensuring the estimate or quotation includes the complete scope of work.*

*The **WBS** can also be considered as a hierarchical form of mind map that helps to break complexity down into simple manageable components.*

*According to Turner, the WBS is defined as a cascade of deliverables, in which the overall product or objective of the project is broken into sub-products, assemblages and components*

***The main components of the WBS that are discussed in this chapter are:***

***Structure***

- ❖ *Methods of subdivision*
- ❖ *Numbering or coding system*
- ❖ *Level of detail*
- ❖ *Number of WBS levels*
- ❖ *Roll – up*
- ❖ *Integrating the WBS/OBS to assign responsibility*
- ❖ *Work package*

***The work packages*** are shown with short description and later with a number. On your project you may consider also including the following

- ❖ *Specifications*
- ❖ *Quality requirements*
- ❖ *Estimate (man-hours)*
- ❖ *Budgets*
- ❖ *Duration*
- ❖ *Procurement*
- ❖ *Resources*
- ❖ *Equipment requirement*

***The WBS structure***

*There are two methods of presenting the WBS:*

*Graphically in boxes*

*Text indents*

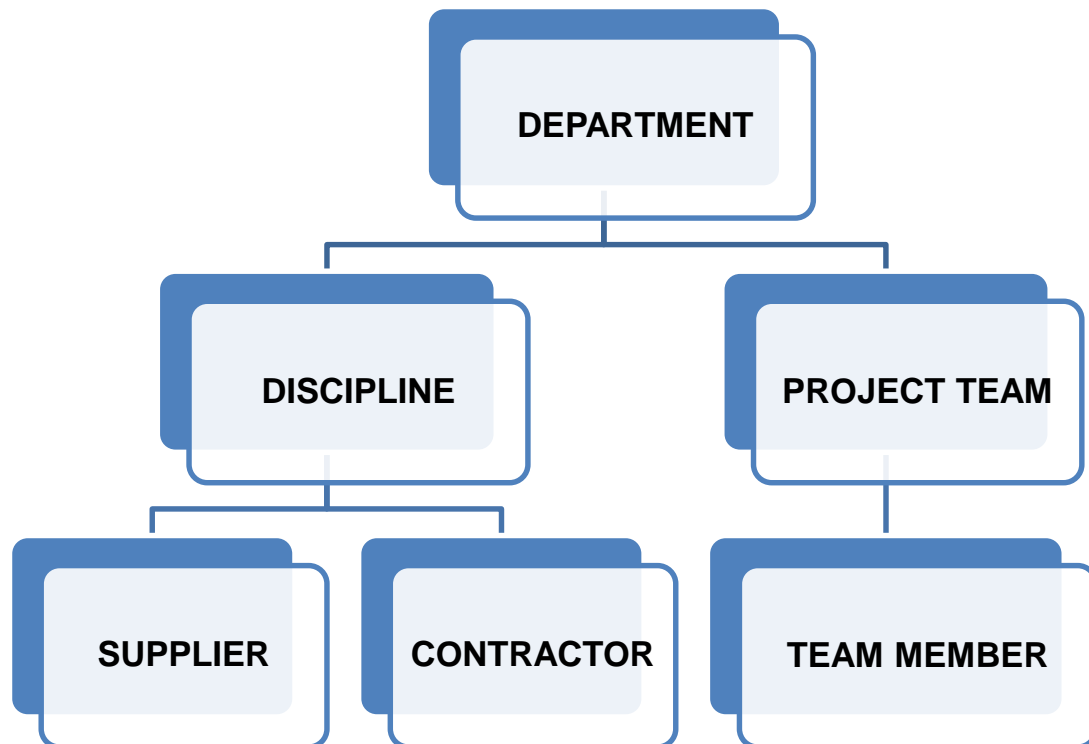
*The WBS is a hierarchical structure which is best presented by a graphical subdivision of the scope of work in boxes. This logical subdivision of all the work element is easy to understand and assimilate, thus helping the project participants to quantify their responsibility and gain their commitment and support.*

### **FOR EXAMPLE OF WBS**

*Organization breakdown structure (OBS): this represents a hierarchy of the company managing the project. By linking the OBS with the WBS or PBS this will identify who is responsible for performing the work packages.*

*The OBS could contain any of the following subdivision*

- ❖ *Department*
- ❖ *Contractor or supplier*
- ❖ *Project team or person*



### **6. Explain the methods of scheduling projects.**

**Schedule.** *The sufficiency of the time allocated for performing the defined acquisition tasks. This factor includes the effects of programmatic schedule decisions, the inherent errors in schedule estimating, and external physical constraints.*

**Therefore the following are the methods**

- ❖ *Mathematical analyze*
- ❖ *Gants chart*
- ❖ *Simulation*
- ❖ *Duration compression*
- ❖ *Resource levelling*
- ❖ *Task list*
- ❖ *Calendar*

## 7. *What is expediting in project management.*

*Expediting is the progress expeditor (progress chaser) follows-up on the purchase orders and instructions encouraging them to happen by continually monitoring the supplier. On a large project the expeditor becomes the project manager's eyes and ears as he takes on a criminal investigating approach.*

*Therefore consider asking the following questions:*

- ❖ *Have you received the order?*
- ❖ *Do you have all the construction drawings , specifications and planning information*
- ❖ *Have the materials and components been orders/ received/inspected/passed /and are they available.*
- ❖ *Is the order understood*
- ❖ *What is your job number*
- ❖ *Who is your project manager or foreman*
- ❖ *Has the job been planned into your production system (show me )*

## 8. *Explain the methods of data collection.*

*The following are the methods used in the data collection especially in the project*

- ❖ ***One- on- one interview***
- ❖ ***Focus group discussion***
- ❖ ***Collaborative workshop mode***

### ***Observation***

- ❖ *Each method has advantages and problems. No single method can fully measure the variable important to OD Examples:*
- ❖ *Questionnaires and surveys are open to self-report biases, such as respondents' tendency to give socially desirable answers rather than honest opinions*



- ❖ *Observations are susceptible to observer biases, such as seeing what one wants to see rather than what is actually there.*
- ❖ *Because of the biases inherent in any data-collection method, it is best to use more than one method when collecting diagnostic data.*
- ❖ *The data from the different methods can be compared, and if consistent, it is likely the variables are being validly measured.*
- ❖ *Information about the people you are gathering data from is important.*  
***Collect the specific demographics necessary. Some examples***
  - ❖ *Age*
  - ❖ *Gender*
  - ❖ *Income level*
  - ❖ *Ethnic background*
  - ❖ *Status (student, teacher, visitor)*
- ❖ *Be careful not to collect demographics that are not specific to your data collection purpose*
- ❖ *Responses are limited to the questions asked in the instrument.*
- ❖ *They provide little opportunity to probe for additional data or ask for points of clarification.*
- ❖ *They tend to be impersonal.*
- ❖ *Often elicit response biases – tend to answer in a socially acceptable manner*

***Sample Employee / Management Relationship Survey***

***Sample Employee / Management Relationship Survey***

<b>Role Clarity</b>		
Employees are unclear about their roles; responsibilities and authority are ambiguous.	1   2   3   4   5	Employees are clear about what is expected of them; they know their responsibilities and authority.

<b>Communications</b>		
Employees are guarded and cautious when communicating with management	1   2   3   4   5	Employees are open and authentic when communicating with management

<b>Team Goals and Objectives</b>		
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## ***Interviews / Focus Groups***

- ❖ *Another unstructured group meeting conducted by a manager or a consultant.*
- ❖ *A small group of 10-15 people is selected representing a larger group of people*
- ❖ *Group discussion is started by asking general questions and group members are encouraged to discuss their answers in some depth.*
- ❖ *The richness and validity of this information will depend on the extent that trust exists.*

### ***9. What is auditing? List out the types of organization structure in project management.***

*Auditing is referred to an objective examination and evaluation of financial statements of organization to make sure that financial records are fair and accurate representation of the transactions they claim to represent. The audit can be conducted internally by employees of the organization or externally by the outside*

*Therefore the following are types of organization structure in project management*

#### ***❖ Functional organization structure:***

*Under a function organization structure, people who do similar tasks are grouped together based on specialty. So all the accountants are placed in the finance department and so on for the marketing, operations, senior management and human resources departments.*

*The advantages of this kind of structure include quick decision making, because the group members can easily communicate. They can also learn from each other, since they already possess similar skill sets.*

#### ***❖ Matrix organization structures***

*The topology of the matrix structure has the format as a mathematical matrix in this case the vertical line represent the functional department's responsibility and authority.*

#### ***❖ Co-ordinating matrix***

*Referring to the matrix organization structure to the traditional function hierarchy where the project manager (more like called project co-ordinator, progress chaser, or expeditor) co-ordinates the resources across functional department*

#### ***❖ Pure project organization structure***

*The pure organization structure is similar in shape to the functional organizational structure except now all the departments are dedicated to the project.*

### ❖ **Job descriptions**

*The job description develops the organization structures positions into a further level of the details.*

### ❖ **Organization structure selection**

*Selecting the right organization structure is essentially a balancing act between addressing the project's needs (scope), the project team's needs (and stakeholders needs) and just as important the individual's needs.*

## **10. Explain conflict management.**

*When objections to change become a matter of intergroup conflict different problems requiring special treatment may arise. This may happen if a group is to give up its activity or work method to adopt one practiced by another group. If a group sees itself as threatened, there will be a closing of the ranks and more cohesion action, and the group will become more tolerant of authoritative rule by its chosen leaders. Hostility to other group is likely to arise, especially if the situation is perceived a win-lose encounter. Communication will become distorted and difficult, as each group will be prepared to admit only the positive aspects of its own argument and the negative aspects of the "enemy's"*

*Basic strategies to reduce intergroup conflict*

*In planning and implementing change, interpersonal or intergroup conflict may develop for a number of reasons:*

- ❖ *Poor communication;*
- ❖ *disagreement on objectives and results to be pursued;*
- ❖ *disagreement on intervention methods used;*
- ❖ *differences over the pace of change;*
- ❖ *resistance to change;*
- ❖ *fear of losing influence and power;*
- ❖ *competition for resources;*
- ❖ *non-respect of commitments;*
- ❖ *refusal to cooperate;*
- ❖ *personality and culture clashes;*
- ❖ *Poor performance and inefficiency*

*The principal methods of resolving interpersonal conflict were summarized by **GORDON LIPPITT** in the following terms:*

*Withdrawal: retreating from an actual or potential conflict situation.*

*Smoothing: emphasizing areas of agreement and de-emphasizing areas of difference.*

*Compromising: searching for solutions that bring some degree of satisfaction to the conflicting parties.*

*Forcing: exerting one's viewpoint at the potential expense of another – often open competition and win-lose situation.*

*Confrontation: addressing a disagreement directly and in a problem-solving mode – the affected parties work through their disagreement.*

*As a rule, it is advisable to depersonalize conflict by ensuring that the disputants do not sit in judgment over each other, and to focus the conflict on the basic issue by concentrating disagreement on factual grounds. Withdrawal avoids the issue, but the solution may be only provisional; it may be used as a temporary strategy to buy time or allow the parties to cool off. Forcing uses authority and power and can cause considerable resentment; it may be necessary in extreme cases where agreement obviously cannot be reached amicably. Smoothing may not address the real issue, but permits the change process to continue at least in areas of agreement. Compromising helps to avoid conflict, but tends to yield less than optimum results. Confrontation is generally regarded as most effective, owing to its problem-solving approach involving an objective examination of available alternatives and a search for an agreement on the best alternative. Finally, adopting an attitude of one side winning and the other side losing is like pouring gasoline on the fire of conflict.*

## **SECTION B**

### ***11. Describe the concept of work break down structure in project planning.***

*The purpose of the work breakdown (WBS) is to subdivide the scope of work into manageable work packages that can be estimated, planned and assigned to a responsible person or department for completion.*

*The breakdown should group similar work together to improve productive efficiency, built method and executive strategy.*

*The WBS was originally developed in the 1960s as part of the drive towards improved project definition and it soon became the backbone of the planning and control system. The WBS is an excellent tool for quantifying the scope of work as a list of work packages and is an essential tool for ensuring the estimate or quotation includes the complete scope of work. The WBS can also be considered as a hierarchical form of mind map that helps to break complexity down into simple manageable components.*

***Therefore WBS is defined as a cascade of deliverables, in which the overall product or objective of the project is broken into sub-products, assemblages and components.***

*The main components are:*

- ❖ *Structure*
- ❖ *Methods of subdivision*
- ❖ *Numbering or coding system*
- ❖ *Level of details*
- ❖ *Number of WBS levels*
- ❖ *Roll-up*
- ❖ *Integrating the WBS/OBS to assign responsibility*

## *12. What do you mean by budget uncertainty? How risk is managed in projects*

*Budget uncertainty is defined as an aid for specifying the expanded measurement uncertainty. The individual measurement uncertainty factors are summarized, usually in tabular form, in measurement uncertainty budget.*

*Therefore the following are process of risk management:*

*National legislation and national policy for disaster management.*

- *Plans and procedures for risk management and the coordination of risk response at international, national and subnational levels.*
- *The strengthening of institutional and human resources for risk management.*
- *The establishment and management of stocks of relief supplies and equipment and the identification of transportation options.*
- *Public education, public awareness and community participation in risk management.*
- *The collection, analysis and dissemination of information related to risk that are likely to occur in the region.*

### *13. How the projects are planned, monitored and controlled in cycle process?*

*One method that has been used with some regularity in order to help managers conceptualize the work and budgetary requirements of a project is to make use of the idea of the project life cycle. The concept of the life cycle is familiar to most modern managers. Life cycles are used to*

*Explain the rise and demise of organizations, phases in the sales life of a product, etc. In a similar fashion, managers often make use of the life-cycle concept as a valuable tool for better understanding the stages:*

- ❖ Conceptualization; the initial project stage. At this stage a project is determined as being necessary. Preliminary goals and alternatives are specified, as well as the possible means to accomplish those goals.*
- ❖ Planning; this stage involves the establishment of a more formalized set of plans to accomplish the initially developed goals. Among planning activities are scheduling budgeting, and the allocation of other specific tasks and resources.*
- ❖ Execution; the third stage involves the actual "work" of the project. Materials and resources are procured, the project is produced, and performance capabilities are verified.*
- ❖ Termination; once the project is completed, there are several final activities that must be performed.*

*Therefore the project can be planned and monitoring as follows*

- ❖ Project Mission- initial clearly defined goals and general directions.*
- ❖ Top Management Support- Willingness of top management to provide the necessary resources and authority/power for project success.*
- ❖ Project Schedule/Plan-A detailed specification of the individual actions steps for project implementation.*
- ❖ Client Consultation- Communication, consultation, and active listening to all impacted parties.*
- ❖ Personnel- Recruitment, selection, and training of the necessary personnel for the project team.*

- ❖ *Technical Tasks- Availability of the required technology and expertise to accomplish the specific technical action steps.*
- ❖ *Client Acceptance- The act of "selling" the final project to its ultimate intended user*
- ❖ *Monitoring and Feedback- Timely provision of comprehensive control information at each stage in the implementation process.*
- ❖ *Communication- The provision of an appropriate network and necessary data to all key actors in the project implementation.*
- ❖ *Troubleshooting- Ability to handle unexpected crises and deviations from plan.*

#### *14. What are the methods used in evaluating, auditing and terminating a project?*

*Project monitoring and evaluation (M&E) information systems (IS), frequently a requirement for funding, are believed to inform the reporting process. The logical framework approach (LFA) is widely used throughout the aid industry for project design and appraisal, and although much of the literature also promotes the use of the LFA for the purposes of M&E, it has proved inadequate. This article reviews the key limitations of the conventional LFA for M&E and proposes an extension to the LFA matrix (the ‘logframe’) in order to facilitate its application beyond the design phase. This is achieved by adding a time Dimension, more precisely defining the elements of the project MIS, and integrating other project management tools.*

*Developing countries and international aid agencies finance, design, and manage large numbers of diverse and complex development projects. In 1987 alone, the central government of India financed more than 3,000 projects and its state governments sponsored another 6,000–7,000, while Pakistan supported some 3,800 projects under its Federal Annual Development Plan (Ahmed and Bamberger 1989). Among the projects financed by international aid groups, approximately 192 were completed under the auspices of the World Bank in 1985, according to its project completion reports (World Bank 1987), and close to 250 are completed every year under the U.S. Agency for International Development (USAID), to judge by its evaluation reports (OECD 1986).*

#### ***The Current Status of Monitoring and Evaluation in Developing Countries***

*The available evidence suggests that a significant proportion of these projects fail to fully achieve their objectives. Of the 192 completed by the World Bank in 1985, approximately 20 percent had unsatisfactory or uncertain outcomes (World Bank 1987:5). Success rates have been even lower for complex projects in low-income countries in need of major social and Economic reform, notably in Africa. The success rate for such countries is often less than 50 percent.*



*These figures do not fully reflect project performance, however, because they usually refer to the project implementation stage (in which infrastructure is constructed, equipment installed, and service delivery systems established). Little is known about how well projects are able to sustain the delivery of services over time, and even less about the extent to which projects are able to produce their intended impacts.*

*The need for such information has grown considerably in recent years, for governments and donor agencies have come under mounting pressure to formulate development strategies that contribute to broad goals, such as protecting the environment, alleviating poverty, and improving the economic, social, and political participation of women—all of which require a thorough understanding of the complex interactions between a project and its environment. Because many governments are also finding that the constraints on their resources are increasing, they are in addition being pressed to use those resources effectively.*

*In view of these various problems, it has become essential for governments and donor agencies alike to learn as much as possible from past experience that will enable them to identify the kinds of projects and delivery systems most likely to succeed and the factors most likely to contribute to that success. As a result, more emphasis is being placed on monitoring and evaluating (M/E) the extent to which development projects are cost-effective and achieve their intended objectives. Fortunately, the need for improved monitoring and evaluation systems comes at a time when the industrial nations have made numerous advances in the theory and practice of program Evaluation. In the United States and some other industrial nations, program evaluation is emerging as a separate social science and management discipline. Since the early 1970s it has become standard practice in the United States to monitor and evaluate most federal and state-financed projects, and the results of these evaluations are used extensively by both supporters and opponents of these programs. Accounting Office now publishes more than one program evaluation a day—many of which greatly influence budgetary allocations and the formulation of new programs. The growing presence of Delivered by The World Bank e-library to University of Laval Evaluation specialists can be seen in their published works, in professional organizations such as the American has more than 2,500 members), and in the increasing number of courses on monitoring and evaluation (now offered in at least forty-six universities in the United States).*

*In the opinion of many leading evaluation practitioners, satisfactory solutions have been found to most of the basic problems of evaluation design and analysis, at least for countries such as the United States. It is possible to produce methodologically sound and operationally useful evaluations for a broad range of development programs. Rossi and Wright in a review of the status of evaluation research, concluded:*

*The evaluation research field is beginning to reach a high level of intellectual accomplishment, that is, just as the best evaluation research of the prosperous decades is being published. New developments in techniques and methodology have appeared that promise to raise the overall quality not only of evaluations but of many other areas of social research as well. Evaluation researchers have now learned how to conduct field experiments successfully and how to analyze the resulting complicated data sets, and they have also started to provide solutions to some of the most serious validity problems of non-experimental research.*

### ***Monitoring and Evaluation at the Project Level***

*Monitoring and evaluation studies can be conducted at the project, sectoral, or national levels. Baum and Tolbert (1985:333) have defined a project as "a discrete package of investments, policies, and institutional and other actions designed to achieve a specific development objective (or set of objectives) within a designated period." Although this definition is satisfactory for capital investment and economic development projects, it is less adequate for many kinds of social projects and programs. For social programs, the objectives may be partly defined by beneficiaries as the program evolves, and much greater flexibility may be required, depending on the period in which the project or program is to be implemented.*

*The project concept has evolved from the activities of the international aid agencies and their concern that their financial assistance would be used to achieve specific and monitorable objectives within a given time frame.*

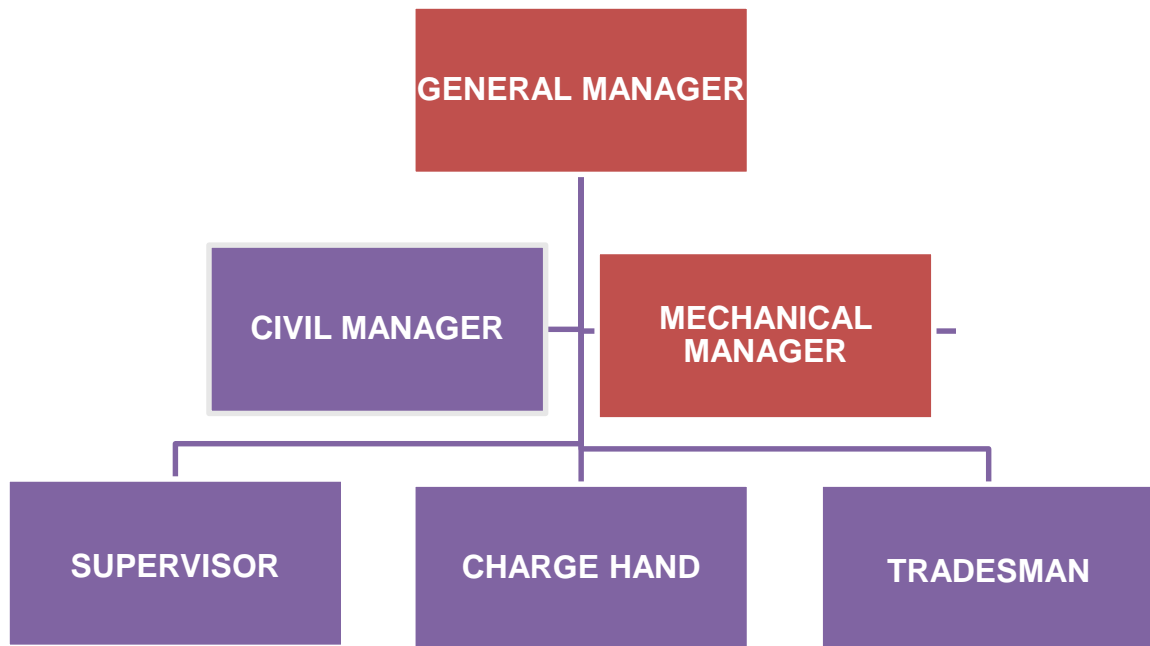
*Projects generally progress through seven main stages. Monitoring & Evaluation systems should provide the information that project planners, implementers, and managers need at each of these stages and should help determine whether a project has been implemented as planned, what problems need to be resolved, what expected or unexpected impacts have occurred, and what lessons can be learned for the selection and design of future projects.*

*15. Explain in detail the functional organizational and matrix organizational structure.*

*Functional organization structure this is traditional organization structure based on the subdivision of product lines or discipline into separate departments, together with a vertical hierarchy.*

*Outline a typical structure with a number of functional departments reporting to the general manager. Also called wedding-cake corporate structure.*

*As illustrated below*



*The advantages of the functional organization structure (particularly for project within a department) are:*

- ❖ *Function departments provide a home for technical expertise which offer technical support and continuing development*
- ❖ *Functional departments provide good support as the work is usually carried out in the department*
- ❖ *Functional departments can achieve a high degree of flexibility, because people in the department can be assigned to the project, then immediately reassigned to other work.*
- ❖ *Functional departments provide the normal career path for advancement and promotion*
- ❖ *Functional departments work is simpler to estimate and manage as the scope of work is usually restricted to own field and the functional data should contain information from previous project*
- ❖ *Lines of communication within the department are short and well establish.*
- ❖ *There is quick reaction time to problems within the department*

- ❖ *Some employees prefer working in a consistent work routine, rather than the challenge of diverse projects.*
- ❖ *Functional departments offer clearly defined responsibility and authority for work within the department*

**Meanwhile:**

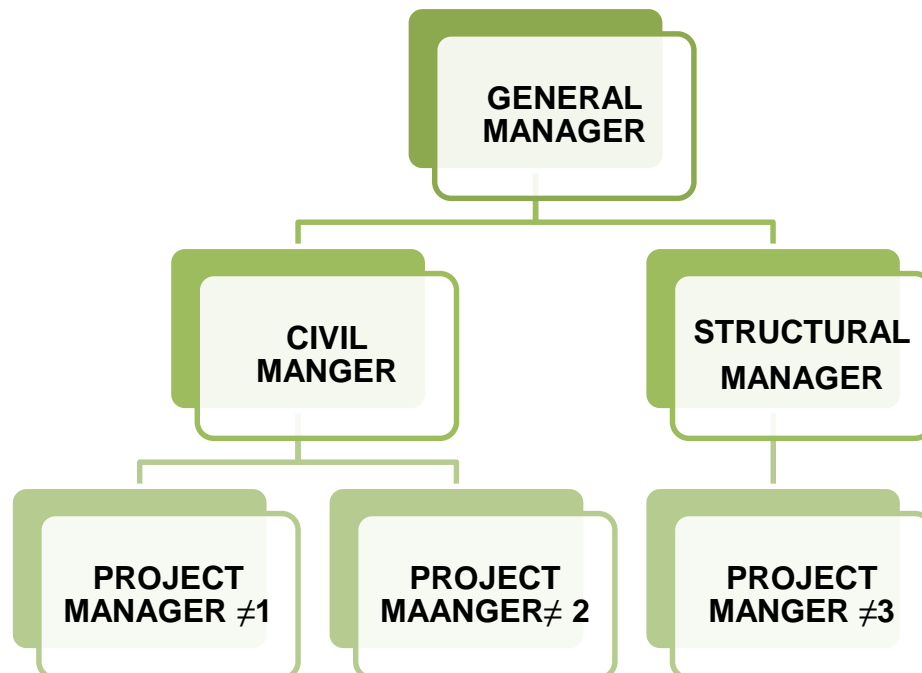
#### ❖ **Matrix organization structures**

*The topology of the matrix structure has the format as a mathematical matrix in this case the vertical line represent the functional department's responsibility and authority.*

*While the horizontal lines represent the projects responsibility and authority thus giving the matrix structure its unique appearance and name*

*The matrix structure is considered by many practitioners to be the nature project organization structure, as it formalizes the informal links (mentioned in the previous section).*

*On multi-disciplined projects employee need to communicate at the operational level to perform their tasks. Where the lines of responsibility intersect, this represents people to people contact, thus providing shorter formal lines of communication.*



Consider some of the **advantages** inherent in the typical matrix organisation structure:

- The project has a clear *single point of responsibility* - the project manager.
- The project can draw on the entire resources of the company, when several projects are operating concurrently, the matrix structure allows a time-share of expertise, which should lead to a higher degree of resource utilisation.
- By sharing the use of equipment, the capital costs can be shared between projects and functional departments.
- With seconded resources project termination is not necessarily a traumatic event (worrying about continuing employment), the resources can return to their original functional department.
- Rapid response to the client's needs. The client communicates directly with the project manager.
- The corporate link will ensure consistency with company policies, strategies and procedures, yet give the flexibility to tailor these to the project's needs.
- The matrix structure can be tailored to the needs of the project with respect to; job descriptions, procedures, work instructions and lines of communication.
- Good flow of information (dissemination) within the project as there is a provision for both horizontal (project information) from function to function and vertical (functional information) through the organisation structure.
- The needs of the project and functional departments can be addressed simultaneously by negotiation and trade-off. The project is mainly concerned with what and when (scope and planning), while the functional department is concerned with who and how (resources and technical).
- Problem-solving can draw on a much wider input for ideas and innovative options - brainstorming.
- Teams of experts within the functional department are kept together as the projects come and go. Therefore technology, know-how, expertise and experience are not lost when the project is completed and the project team disbanded. Specialists like to work with other specialists in the same discipline, thus increasing innovation, problem-solving ability and synergy.
- The multi-disciplinary environment exposes people to a wider range of considerations.