



PROJECT MANAGEMENT COURSE.

PRESENTED BY

TIBAH MANKA SOLANCH,
STUDENT ID: UM71225SEN80378

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ABBREVIATION

AIU	Atlantic International University
PM	Project Management
PMS	Project Management System
NPAS	Non-Performing Assets
EPA	Environmental Protection Agency
DPR	Detailed Project Report
ROI	Return on Investment
NPV	Net present value
PI	Profitability Index
IRR	Internal Rate of Return
AOA	Activity on Node
EST	Earliest Start Time
LST	Latest Start Time

STEEP	Social, Technological, Ecological, Economic and Political
ER	Environmental Resource
CPM	Critical Path Method

PROJECT MANAGEMENT

1. INTRODUCTION

1.1. DEFINITION OF AND MEANING OF TERMS:

Project: According to the American National Standard ANSI/PMI 99-001-2004) project is defined as a temporary endeavor undertaken to create a unique product, service or result;

According to the ISO 10006 refers to a unique process consist of a set of coordinated and controlled activities with starts and finished dates undertaken to achieve an objective confirming to specific requirements and needs including the constraints of time, cost and resource;

Example of projects include the development of water sheds, creation of irrigation facilities, development of a new variety of crops, construction of and rehabilitation of commercial facilities, construction of road infrastructures, development of public and green spaces and construction of pedestrian footpaths. It should be noted that the above-mentioned projects differ in composition, type, scope, size and time;

CHARACTERISTICS OF PROJECTS

1. Unique in nature;
2. Have a definite objective or goal to achieve;
3. Requires set of resources (material and personnel);
4. Have a specific time frame for completion with a definite start and finish time frame;
5. Involve risk and uncertainties;
6. Requires cross-functional team and interdisciplinary approach.

Project Management System: This focuses on integrated planning and control;

Project Management: It is a distinct area of management that deals with projects. It refers to the application of knowledge, skills, tools and techniques in a project environment. Globally Project Management has

attained a great level and has emerged as a distinct area of management practices carried out to meet the challenges of recent times such as new economic environment, globalization, rapid technological advancement, and quality concerns of stakeholders such as increased in the world's population.

Project Management is therefore divided into three (03) main features such as:

Project Manager \longrightarrow the Project Team \longrightarrow Project Management System (Organization, Structure, Information processing, Decision-making and the procedures for the integration of horizontal and vertical elements of the project organization).

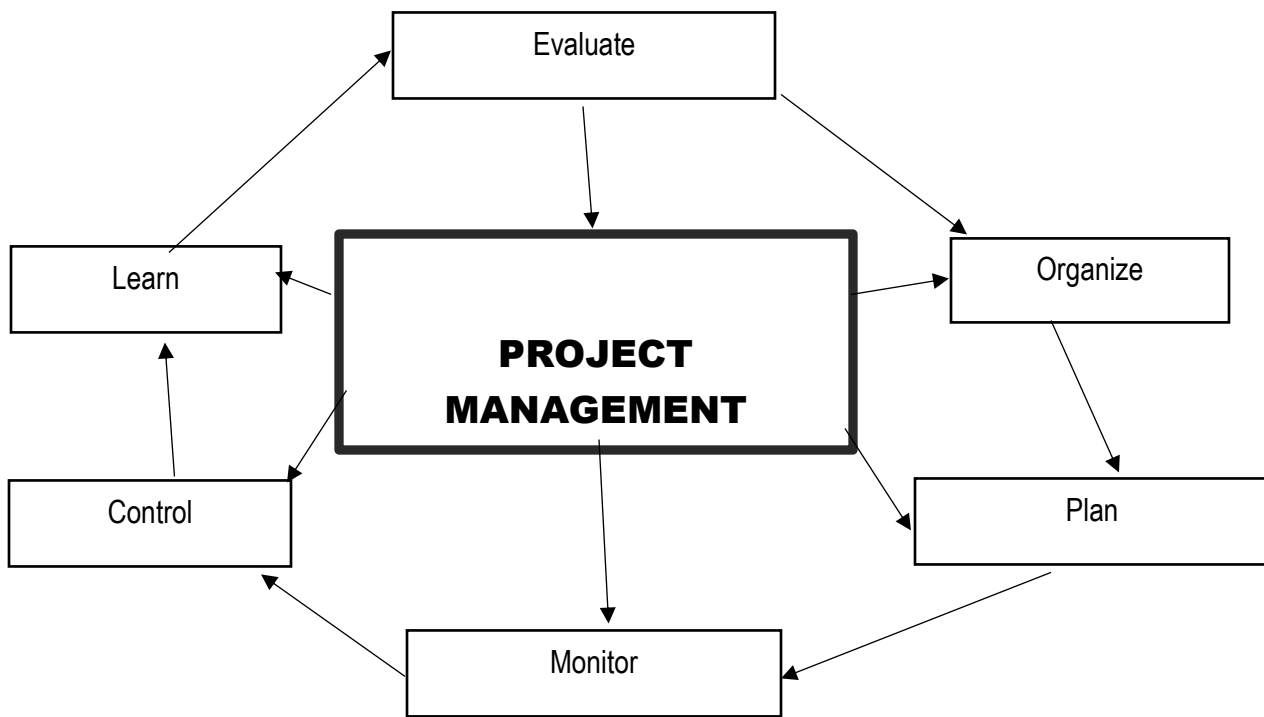


Figure 1: Interactive process of Project Management.

Project Circle: According to the European Commission Joint Relex Service for the management of community aid to non-member countries (SCR) training hand book, the way in which projects are planned and carried out follows a sequence that has become known as the project cycle. The cycle starts with the identification of an idea and develops that idea into a working plan that can be implemented and evaluated.

Ideas are identified in the context of an agreed strategy;

Project Identification: This refers to meeting market demands, exploitation of natural resources, creating wealth, developmental projects and National Planning;

Project Formulation: It is a process of presenting a project idea in a form which can be subject to comparative appraisals for the purpose of determining the priority that should be attached to a project having serious resource constraints;

Pre-feasibility Studies: This is a process of gathering facts and opinions pertaining to projects;

Risk: This is a term in used in Project Management that refers to the occurrence of adverse consequences and it is very quantifiable;

Uncertainty: This is a term in used in Project Management that refers to inherently unpredictable dimensions and is assessed.

Pay back period is defined as a way of calculating the time required to recover the initial project investment out of the subsequent cash flow. It is thus calculated as $\text{Annual Income} - \text{Annual Return}$.

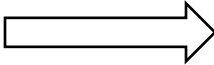
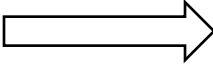
Return of investment is defined as the percentage of the initial investment.

Net payment value is use to measure the financial viability of a project.

A. SUMMARY OF COURSE

Project Management: It is a distinct area of management that deals with projects. It refers to the application of knowledge, skills, tools and techniques in a project environment. Globally Project Management has attained a great level and has emerged as a distinct area of management practices carried out to meet the challenges of recent times such as new economic environment, globalization, rapid technological advancement, and quality concerns of stakeholders such as increased in the world's population.

Project Management is therefore divided into three (03) main features such as:

Project Manager  the Project Team  Project Management System (Organization, Structure, Information processing, Decision-making and the procedures for the integration of horizontal and vertical elements of the project organization).

Project Management is very important because the world is evolving into a developmental phase and too much pressure on societies to embrace implement sustainable projects. For developmental goals to succeed project management has to be a priority to all project owners.

Project Management has benefits such as:

- Handling of complex, costly and risky assignments by providing appropriate solutions;
- Handling of assignments in a specified way and time (start-finish points);
- Provide task orientation to personnel in an assigned organization.

Project Management can then be classified into different aspects which are **Project Performance, Project**

LIFE CYCLE AND PROJECT CLASSIFICATION.

1. PROJECT PERFORMANCE:

There exist 03 dimensions of project performance. These are scope, time and resource.

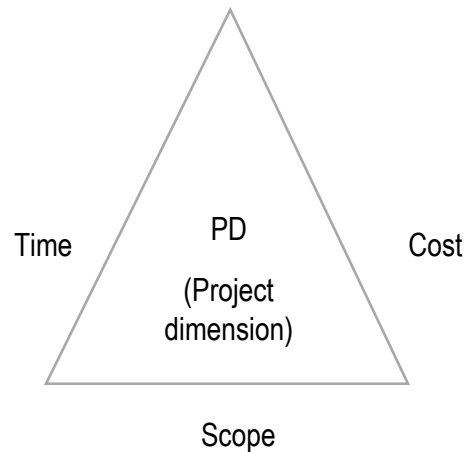


Figure 2: Quality triangle for project performance.

$PD=f(\text{scope, cost, time})$

Any change in each dimension will affect the others e.g., an enlarged scope will require more time for completion and the cost of the project will increase and vice versa.

Successful completion of the project will require accomplishment of specified goals within a scheduled time and budget.

Depending on the quest for developmental projects by societies, some school of thoughts prefer that stakeholder's satisfaction be added as one of the dimensions of project performance but notwithstanding, the performance of a project is still limited to the three above-mentioned parameters (scope, time and cost)

2. PROJECT LIFE CYCLE

This is another aspect of Project Management (PM) which presents an overview of the rationale and principles of Project Management, it is classified into four different project phases such as Conceptualization, Planning, Execution and Termination.

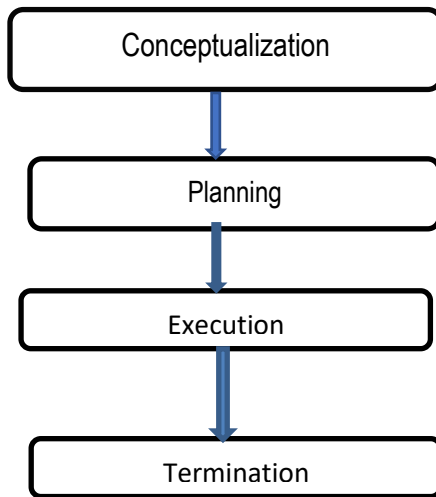


Figure 3: illustration of project phases.

I-Conceptualization Phase

This phase starts with the seed of an idea, identification of the product (service, pre-feasibility, feasibility studies, appraisal and approval). The project idea is conceptualized with initial considerations of all possible alternatives for achieving the project objectives. As the idea becomes established, a proposal is developed setting out rational method, estimated cost, benefits and other details for appraisal of the stakeholders.

-After coming to conclusion with project proposals, the feasibility dimensions are analyzed in details known as the detailed studies.

II-The planning phase

In this phase a project structure is planned based on project appraisals and approvals taking into consideration detailed plans for activities, finances and resources.

Major tasks to be carried out at this phase involve:

- 1- Identification of activities and their sequencing;
- 2- Time frame for execution;
- 3- Estimation and budgeting;
- 4- Staffing.

III-Execution phase

At this phase the plans are put into operation. Here each activity is monitored, controlled and coordinated to achieve project objectives.

Activities in the phase include:

- 1- Communication with stakeholders;
- 2- Reviewing the progress;
- 3- Monitoring cost and time;
- 4- Managing changes.

IV-Termination phase

This is the end phase or the completion of the project wherein the agreed deliverables are installed and the project is put into operation with arrangements for follow-up and evaluation.

LIFE CYCLE PATH

The life cycle of a project from conception to termination follows either an “s” shaped path or a “j” shaped path. In an “s” shaped path the progress is slow at the start and termination/terminal phase and is fast in the implementation phase. E.g., implementation of a watershed project, pedestrian bridges starting with deviation of water and creation of a temporary path for pedestrians as illustrated below:

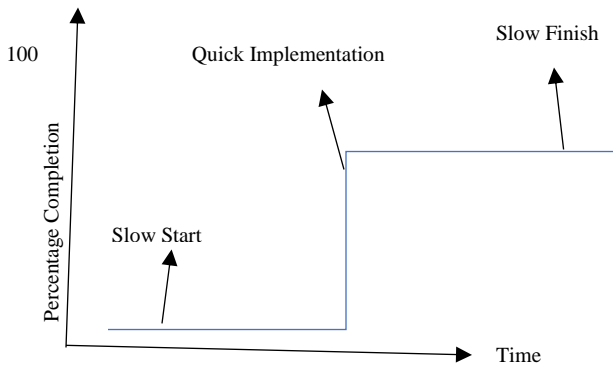


Figure 4: Project life path “S” Shaped

In a “J” cycle path, the progress of the project improves at the fast rate. E.g., the project for the construction of garbage can platform (where land preparation progresses slowly).

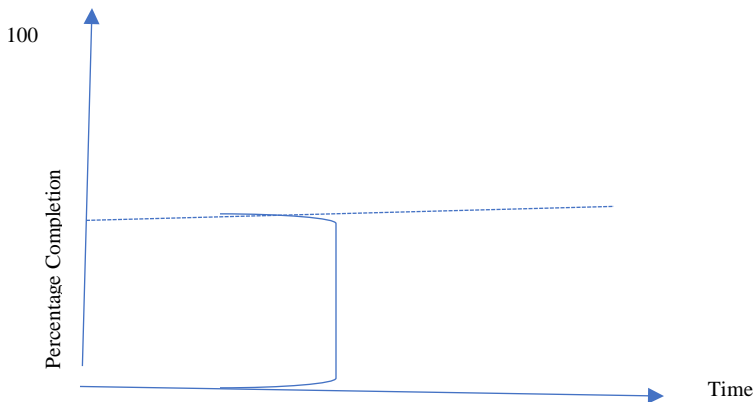


Figure 5: project life cycle path- “J” shape

I. Project Classification

Projects are classified into Industrial and Developmental approaches

Industrial or commercial projects are undertaken to provide goods and services to meet the growing need of the population or customers while providing great returns to investors or stakeholders. Projects at this stage are grouped into demand and supply based. The demand-based approach is meant to satisfy customers needs such as fertilizers, agro-processing infrastructure etc. Meanwhile resource/supply-based approach

are those that take advantage of the available resources like water, land, agricultural products, raw materials, minerals and human resources. Examples of resource-based projects are food product units, oil refineries (SONARA in Limbe-Cameroon), coal mining industries. On the other hand, projects that involve human resources are IT sectors, clinical research projects in bio services.

Developmental project classification is meant to facilitate the promotion and acceleration of overall economic development such as irrigation, agriculture, infrastructure like roads, drainage, sludge treatment, commercial facilities, installation of lighting spots, development of public/green spaces, health and education.

The table below illustrates the differences between Industrial and Developmental Projects.

Table 1: Differences between Industrial and Developmental Projects.

Dimension	Industrial Project	Developmental Project
Scale of project	Limited	Large
Investment	Dependent	High
Gestation period	Dependent	High
Profitability	High and considered on Internal Rate of Return (IRR)	Modest and considered on Economic Rate of Return (ERR)
Finance	Stringent debt equity norms	Operates on higher debt equity
Source of fund	National stock markets and from domestic financial institutions	International Organization like IMF, WB, ADB and others such as loans.
Interest rates and repayment period	Market rates and repayment period is usually 7-10 years	Very low on borrowed funds and the repayment period extends up to 25 years and beyond.

II. PROJECT IDENTIFICATION AND FORMULATION

II.1. Project Identification

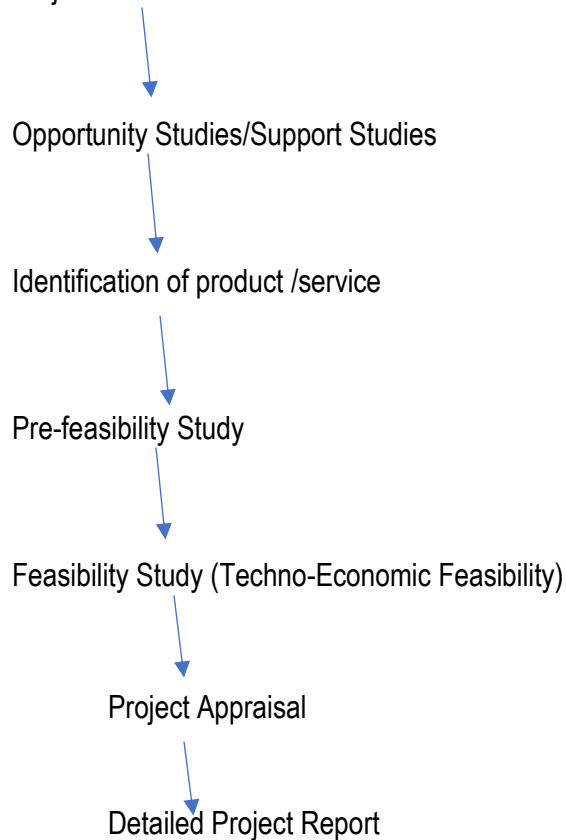
Projects are conceived with the objectives of meeting market demands, exploitation of natural resources and creation of wealth. These projects are identified based on the ideas, available data and expert opinions that are promising.

II.2. Project Formulation

It is a process of presenting a project idea in a form which can be subject to comparative appraisals for the purpose of determining in definitive terms the priority that should be attached to a project under severe resource constraints.

Project formulation involves the following:

Project Formulation



Description of the different stages of project formulation.

- 1. Opportunity Studies (O.S):** This involves the identification of investment opportunities which are mostly carried out at the macro level by agencies involved in economic planning. O.S is divided into Area study, sectoral, sub-sectoral studies and resource-based studies. O.S is also considered in project identification.
- 2. Pre-feasibility Studies:** It is an intermediary between opportunity studies and detailed feasibility studies. It is then defined as a process of gathering facts and opinions pertaining to the project. It focuses on market potentials, magnitude of investment, technical feasibility, financial analysis and risk analysis. It also depends on the time available and the confidence of decision-makers.

Pre-feasibility Studies gives project managers the opportunity to develop a project profile and present to stakeholders and funding agencies to solicit their support for the project.

- 3. Feasibility Studies (F.S):** This is a backbone of project formulation. It investigates practicalities, ways of achieving objectives, strategic opinions, methodology, predicts likely outcome, risk and the consequences of each action. A well conducted feasibility study provides sound base for decisions, clarification of objectives, logical planning, minimal risk and a successful cost-effective project. F.S operates on the STEEP (Social, Technological, Ecological, Economic and Political) Factor.

It should be noted that preparations for a feasibility study report is always difficult due to the choice of technology, plant capacity, location, finance and assumptions on which the decisions are made.

Feasibility Studies focuses on the following:

Economic and Market Analysis, Technical Analysis, Market and Financial Analysis, Economic Benefits, Project Risk and Uncertainty and Management Aspects.

3.1. Economic and Market Analysis

This involves a number of factors that need to be taken into consideration such as product specification, pricing, channels of distribution, trade practices, threat of substitutes, domestic and international competition, opportunities for exports and analysis of future scenarios.

3.2. Technical Analysis

Technical Analysis is based on product, specifications and requirements of quality standards. It mostly deals with technology and contractual aspects. Technical Analysis is classified into the following aspects:

- ✚ Technology: It involves availability, alternatives, latest state of art and other implications.
- ✚ Plant Capacity: It deals with market demands and technological parameters;
- ✚ Inputs: This has to do with raw materials, components, power, water, fuel and others.
- ✚ Availability of skilled man power;
- ✚ Location and Logistics;
- ✚ Environmental Aspects such as pollution;
- ✚ Requirement such as foundations/buildings;
- ✚ Other relevant details.

3.3. Environmental Impact Studies (EIS)

This aspect of project formulation usually comes before feasibility studies with objectives to identify the environmental resources (ER)/values or environmental aspects (EA) likely to be affected by the project;

EIS aims to describe measures and assess the effects that proposed projects will have on the environmental resources. Again, it aims at providing alternatives to the proposed projects which could accomplish the same results but with different environmental effects.

The environmental impact studies will provide necessary measures to curb negative effects of the project on the environment as per the environmental regulation and standards.

3.4. Financial Analysis

It examines the viability of the project from a financial point of view and also indicates the return on investments. It is broken down into the following:

- Pay back period;
- Return on Investment (ROI);
- Net present value (NPV);
- Profitability Index (PI)/Benefit cost ratio;
- Internal Rate of Return (IRR)

3.5. Social Cost Benefit Analysis (SCBA)

This is a methodology for evaluating projects from the social point of view and it focuses on social cost and benefits of a project.

4. Project Appraisal

For a project to be successful from conception to end it has to be evaluated at different phases as enumerated below:

- a) Market Appraisal: This involves demand projections, adequacy of marketing infrastructure and competence of a key marketing personnel;
- b) Technical Appraisal: It involves product mix, capacity, process of manufacturing engineering and know-how, technical collaboration, raw materials and consumables, location and site building, plant and Equipments, manpower requirements and break even point;
- c) Environmental Appraisal: This involves impact on land use and micro-environment, commitment of natural resources and government policy;
- d) Financial Appraisal: It involves capital, rate of return, specifications, contingencies, cost projection, capacity utilization, financing pattern;

- e) Economic Appraisal: It involves economic rate of return, effective rate of protection, domestic resource cost.;
- f) Managerial Appraisal: It focuses on promoters like the French Development Agency, African Development Bank, organizations, structures, managerial personnel and Human Resource Management.

5. Detailed Project Report (DPR)

Once projects are appraised and investment decisions are arrived at, a detailed project report is prepared. This report provides all relevant details including design drawings, environmental and technical specifications, detailed cost estimates.

RISK AND UNCERTAINTY IN PROJECT MANAGEMENT

These are two pertinent aspects that are associated with projects. Risk is referred to occurrence of adverse consequences and is quantifiable meanwhile uncertainty is unpredictable dimensions which is assessed through sensitivity analysis.

Risk and Uncertainty are influenced by the following factors:

- Technical Factors that involve project scope, change in technology, quality and quantity of inputs and errors of work estimation.
- Economical Factors: This involves market cost, competitive environment, change in policy and exchange rate.
- Socio-political Factors: This aspect has to do with dimensions such as labour, stakeholders involved;
- Environmental Factors: This involves the level of pollution and environmental degradation.

ECONOMIC BENEFITS OF PROJECTS.

The implementation of projects today has benefitted every community in the world today through employment, economic development of project areas, foreign exchange savings.

Management of Projects

The management of projects in the context of today has to involve the background of the project promoters, the management philosophy, organizational set up and staffing of the project implementation as well as the operational phase, the time frame of the project implementation is taken into consideration and a realization of a feasibility report.

Project Management Techniques

Project management has to do with decision making for the planning, organization, coordination, monitoring and control of a number of inter-related time bound activities. Project Management techniques are classified into two categories such as Bar Charts and Network Analysis. The network analysis is further classified into Programme Evaluation, Review Technique called PERI and Critical Path Method (CPM).

Project Management Challenges and Solutions.

According to Kiss project, project management has encountered some challenges over the years and possible ways of dealing with these challenges have been identified as explained below.

1. Scope Creep

Scope creep is a natural and expected phenomenon for any project. There are times when it can be beneficial but mostly the cons outweigh the pros. 52% of project teams reported facing scope creep in 2017 and the trend is continuing upwards. Clients who don't precisely know what they want and have vague requirements are one of the biggest project management challenges for both managers and the project team.

How to deal with it:

Proactively engaging with clients during the project planning phase can help you get their exact requirements as well as understand their expectations. Additionally, planning your resource and talent usage accurately is also key. It's also important to not take up ad-hoc change requests during project execution as this can result in delays and added costs. Stick to the initial plan.

2.Lack of Communication

Effective communication in project management is extremely important for a successful project. You need to have timely and transparent methods of communication to ensure that all stakeholders are involved in the process. Deloitte states that 32 percent of professionals believe that communication is the biggest issue of project management. Miscommunication is also dangerous for project teams because it affects their teamwork. It can cause conflicts among team members and can potentially delay the project.

How to deal with it:

Project managers often rely on various collaborative and project management software available in the market in order to ensure that everyone stays updated. Project collaboration tools not only make it easier for managers to carry on their duties but also ensure greater transparency in projects and accountability within the team. This is achieved through features such as contextual comments, and priority assignment capabilities.

3.Lack of clear goals and success criteria

Clarity is one of the most important requirements for the successful completion of the project and the lack of it creates several project managements issues. A study states that about 39% of projects fail due to the lack of a project plan and a clearly defined project

It is also important for a project manager to come up with a way of quantifying project progress by setting up project milestones and quality tests. In addition to helping your team progress, having a clear set of objectives will also help project managers defend their vision in front of the upper management and the customers.

How to deal with it:

Popular approaches to goal setting like SMART and CLEAR can help a project manager come up with a set of effective goals right from the start of a project. This can help overcome the barriers of project management. Additionally, one must keep in mind that not clearly defining goals is a mistake. Therefore, once you create goals for your project team, make them obvious to teammates and document them.

4. Budgeting issues

Most managers consider financial issues as one of the biggest hurdles in effective project management. A study in 2017 revealed that 49.5 % of manufacturing managers' report costs as the biggest project management challenge they face. By efficient cost management, a manager can avoid various common complications a project may face and strive for better and quicker results.

How to deal with it:

It is absolutely necessary to adopt a proper project scheduling tool, budgeting procedure and make realistic assumptions to avoid cost overruns. Planning the project scope must be done keeping in mind the budget in hand. Else, budget limitations could threaten the very success of a poorly budgeted project. Like everywhere else in project management, documenting is key.

5. Inadequate risk management

Having the foresight to identify potential 'what if' scenarios and making up contingency plans is an important aspect of project management. Projects rarely go exactly as planned because there are so many variables that can create unlimited possibilities.

How to deal with it:

It is the job of every project manager to come up with alternate plans that the team may adopt if the project begins to spiral out of control. Having a project risk management system helps in identifying the types of risks and mitigating them. Having a contingency plan in place is critical. This plan should identify all risks that the course of action to be taken if they materialize it.

6. Lack of accountability

A project team performs really well when every member feels responsible and tries to fulfill the role assigned to them. Lack of accountability on the part of team members can sink an entire project.

How to deal with it:

Effective project managers assign responsibilities to team members and direct the team toward the common goal of successfully completing their project. Having a project tool that allows responsibilities to be assigned and tracked is key to fostering accountability. Additionally, having regular check-ins within the team also fosters accountability.

7.The limited engagement of stakeholders

It is important for project managers to ensure that all the project stakeholders are on the same page and have a clear vision of the project. An uninvolved client can cause a lot of problems in the final stages of a project so it's important to consider the customer's feedback and keep them updated throughout the project.

How to deal with it:

Invite your client and other stakeholders to your project management tool so they can actively participate in shaping the project and providing feedback. Further, ensure that you keep all internal and external stakeholders in the loop right from the project planning stage. Schedule regular meetings with all stakeholders and address their concerns as required.

8.Unrealistic deadlines

Having an impossible deadline is another project management challenge that can severely affect the quality of the end product. Any effective project manager knows the capability of the project team and negotiates the project timeline by prioritizing deadlines and project tasks.

How to deal with it:

In agile project management, velocity, which is the measure of work completed in a single sprint, is decided collectively by taking inputs from all stakeholders. This is done during the planning phase of the project. Further, frequent monitoring of deadlines by the project manager is a must. This ensures that any increase in scope (scope creep) during the execution of the project is either avoided or timelines modified as required.

CONCLUSION

To conclude, project management has so far been a very important aspect of development in the world today. Despite its challenges it still remains a great force to reckon with. Project promoters and other organizations should be encouraged through successful realization of projects, project managers should undergo intense trainings and capacity building to maintain competence, all projects should be sustainable. Governments should institute project management at all levels and should avoid their political games from affecting project management because a good project management system is a goal for the common man. Again, Funds meant for projects should not be swindled irrespective.

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