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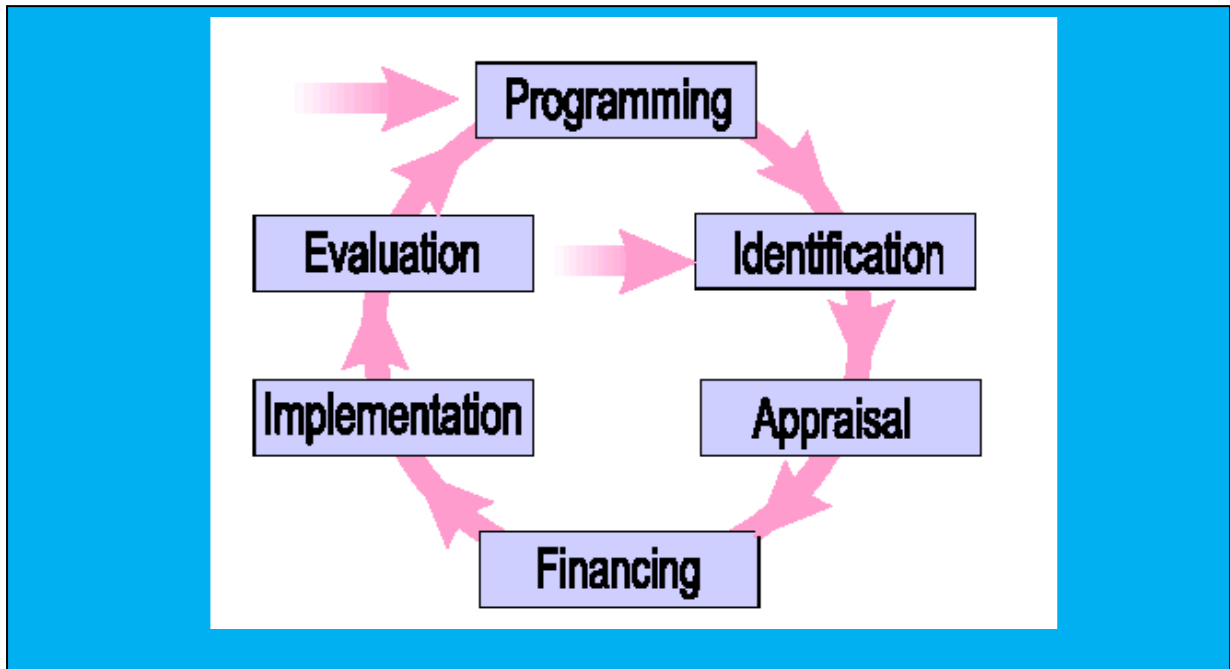
TOOLS, TECHNIQUES AND STRATEGIES OF MANAGING

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October , 2018

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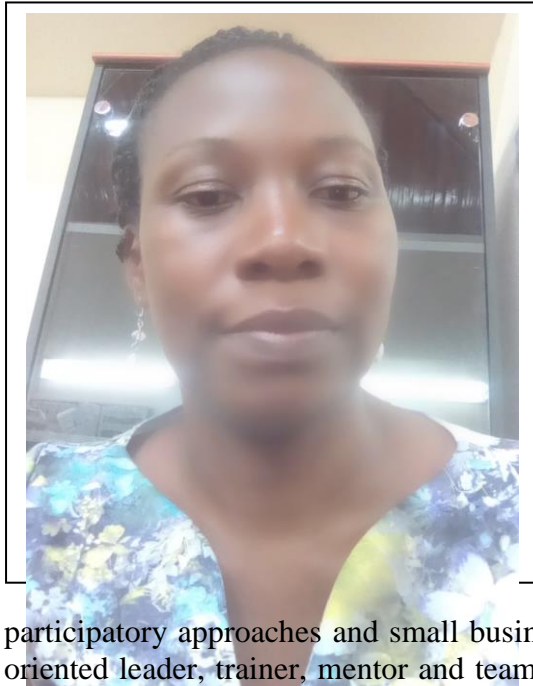
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ACKNOWLEDGEMENTS

FOREWORD

Universities offer a number of courses at both undergraduate and postgraduate level. Within the various courses are course units. One of the most salient cross cutting course unit is project planning and management. At UCU this unit is also offered as a programme for the award of the degree of Bachelor of Entrepreneurship and Project Planning. Other programmes where it is offered are BBA, BHRM, BEM, BPLM, EMBA, MDEV and BDES among others. Whereas the names of these courses do not sound exactly the same, the courses share much in terms of content.

This project aims at producing a project planning and management textbook for use by students, lecturers and practitioners in the project environment. The authors also document case studies in the African and Ugandan context of projects that have either failed or succeeded due to project management related knowledge areas. This project is innovative in a sense that this simplified bridged version will offer readers with the project management knowledge areas in a sequential manner since projects have life cycle from initiation/concept, development, execution, monitoring and evaluation and close out/termination. This will contribute to the improvement of the project management skills of practitioners and UCU graduates. Other knowledge specialists document content for cross cutting areas of gender mainstreaming as pre-liquisite for project design. The main method has been in-depth secondary review of already existing project planning and management material all aimed at producing a simplified bridged version. Secondary data search has been triangulated with primary data collected from practitioners, other lecturers' opinions/point of view and students all aimed at documenting best practice for better project management.

PREFACE

Project Management Profession now enjoys **International Recognition** as a result, Project managers are on demand all over the world. The demand for project managers is not limited to a specific sector or workplace as most modern organizations pursue their strategies through the implementation of projects. Project management being a profession, to achieve efficiency and effectiveness within work setting requires an intersection of skills (Skills-set). i.e. Project Management Skills, General Management Skills and Technical Skills. These skill set can be gained through formal and informal project management training. There are a number of bodies worldwide that are making greater attempts to improve project management profession through various standards and among these are Project Management Institute (PMI) that develops the bodies of knowledge, International Association of Project Managers (IAPM), International Project Management Association (IPMA) that develops the international competence baseline (IPMA ICB), PRojects in a Controlled Environment (PRINCE2) that develops the project methodology, South African Qualifications Authority (SAQA), Global Alliance of Project Profession Standards (GAPPS) among others. All these bodies provides different approaches and dimensions to the project management discipline. This Book aims at offering the integration of all these endeavors so that later one who attains a project management qualification can decide on to the necessary certification and licensing.

A quick library search reveals no project management textbook published by Ugandan authors and yet GAPPS (2005) recommend that project management practices may need to be contextualised to a particular project environment. Because of lack of integration and specific/contextualisation, project management any estimates and studies have placed African project failures rates as high as *60 percent*.

The Chaos Report (Standish, 1994) that globally categorized projects by how they were concluded highlight the following resolutions: Resolution Type 1, or project success: The project is completed on-time and on-budget, with all features and functions as initially specified. Resolution Type 2, or project challenged: The project is completed and operational but over-budget, over the time estimate, and offers fewer features and functions than originally specified. Resolution Type 3, or project impaired: The project is cancelled at some point during the development cycle. Overall, the success rate was only 16.2%, while challenged projects accounted for 52.7%, and impaired (cancelled) for 31.1% (Standish, 2016). So, why is it that so many of these high-profile projects fail? There are lots of reasons why this is still happening, but out of that larger pool of factors, failure is attributed to poor management of the project life phases.

In Uganda, the Budget Monitoring and Accountability Uganda (BMAU, 2015) policy brief highlights key findings for ineffective project implementation at the Ministry of Agriculture Animal Industry and Fisheries (MAIFF) but are all project management related. Key issues are linked to project human resource management, project integration management, project communications management, project procurement management, project cost management and project time management All these issues are project management knowledge,

competence and ethical gaps. This publication is meant to enhance students, practitioners and lecturers competencies in various project management areas.

The New Vision of March 11th 2015 rated most of the Ugandan University Graduates negatively in project management, creativity, performance, time management and initiative. Basing on this study conducted by employers, they used the project management core competencies to evaluate our graduates and that is why time management came up, performance in terms of costing and quality and even initiative when it comes to project scope definition. The facilitating project knowledge areas include: project human resource management, project communication management (M&E aspects), project procurement management, project risk management and project integration management. Meanwhile, there are areas in practical project planning and management which are cross cutting which also determine the quality of the project. These include: gender mainstreaming, environment impact assessment during project design, HIV/AIDS and sustainable development strategies.

For this first edition book, it categorizes project management tools and techniques basing on the project management knowledge by PMBOK as emphasized by PMI but contextualised the knowledge dimensions to Africa/Uganda. It also includes some cross cutting areas which are always left out or underestimated during project planning and design. Such cross cutting issues have been documented to contribute to project failure or success. In other editions, we shall relate PMBOK areas, IPMA ICBs, PRINCE2, GAPPS among other standards; though pointing out more precursors to project success in developing or transitional nations like Uganda.

Please enjoy reading this book and apply the knowledge you get to the actual work environment by doing The Right Things Right for The First Time. Thank you.

Stephen Kyakulumbye

Lead Author and Editor in Chief

LIST OF ACRONYMS
AACE: American Association of Cost Engineers

AMS:	American Mathematical Society
APM:	Association of Project Management
AusAID:	Australian Aid
BBA:	Bachelor of Business Administration
BDES:	Bachelor of Development Studies
BEM:	Bachelor of Economics and Management
BHRM:	Bachelor of Human Resource Management
BoK:	Book
BPLM:	Bachelor of Procurement and Logistics Management
BPR:	Business Process Re-engineering
CHAOS:	Chaos Report
CIA:	Central Intelligence Agency
CPM:	Critical Path Method
DAC:	Development Assistence Committee
DPU:	Development Planning Unit
ECSS:	European College of Sports Science
EMBA:	Executive Master of Business Administration
GAPPS:	Global Alliance for Project Profession Standards
GIZ:	Gesellschaft für Internationale Zusammenarbeit
ICB:	International Competence Baseline
ICESCR:	International Covenant on Economic, Social and Cultural Rights
IAPM:	International Association of Project Managers
ICT:	Information Communications Technology
IPMA:	International Project Management Association
ISO:	Organization of International Standards
IT:	Information Technology
LGDP:	Local Government Development Plan
LoGICS:	Local Government Information Communication System
MAIFF:	Ministry of Agriculture, Animal Industry and Fisheries
MBO:	Management By Objectives
MDEV:	Master of Development Evaluation
NAADS:	National Agricultural Advisory Services
NARO:	National Agriculture Research Organization

NUSAF: Northern Uganda Social Action Fund

OECD: Organization for Economic Cooperation and Development

OPM: Office of the Prime Minister

PCM: Project Cycle Management

PERT: Project Evaluation and Review Technique

P2M: Project and Programme Management

PMBOK: Project Management Body of Knowledge

PMI: Project Management Institute

PPM: Project Planning and Management

PRINCE2:   Projects in Controlled Environment

RCDF: Rural Communications Development Fund

SAQA NQF: South African Qualifications Authority National Qualifications Framework

UCU: Uganda Christian University

UTAMU: Uganda Technology and Management University

WBS: Work Breakdown Structure

WID: Women In Development

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PART ONE: PROJECT OVERVIEW

CHAPTER ONE

PROJECT PLANNING AND MANAGEMENT: CONCEPTS AND DEFINITIONS

Stephen Kyakulumbye

Introduction

Project Planning and Management has gradually emerged overtime from the historical Biblical era, the first project being the Tower of Babel (Genesis 11:1-9). According to this project, a united humanity in the generations following the Great Flood, speaking a single language and migrating eastward, comes to the land of Shinar. There they agree to build a city and a tower tall enough to reach heaven. God, observing their city and tower, confounds their speech so that they can no longer understand each other, and scatters them around the world. This was a project communications management component to impend project success like in any other project. Some modern scholars have associated the Tower of Babel with known structures, notably the Etemenanki, a ziggurat dedicated to the Mesopotamian god Marduk by Nabopolassar, the king of Babylonia about 610 BCE. The Great Ziggurat of Babylon is reported to have been 91 metres (300 ft) in height (Harris and Stephen, 2002).

In 1974, a book entitled *The Project Management Body of Knowledge (PMBOK)* was published. In 1984, the title of this book was changed to *A Guide to Project Management Body of Knowledge*. This section provides an overview of some pertinent areas in *PMBOK* contextualizing them with African cases. More and more standards are available to improve project management discipline and they include APM, GAPPS, IAPM, IPMA, P2M, SAQA NQF Level 5, ISO 21500 among others.

Project Management by knowledge body (PMBOK)

Project management is categorized into two functions:

a. Core functions

1. Project time management
2. Project cost management
3. Project quality management

    4. Project scope management

b. Facilitating functions

    1. Project human resource management

    2. Project communication management (M&E aspects)

    3. Project procurement management

    4. Project risk management

    5. Project integration management

    6. Project stakeholder management

Definition of a Project

1. According to the Association of Project Managers (1984), "a project is a task of creating an outcome with predetermined objectives. It involves the complex interaction of resources, services and organizations".

2. A project cab be conceptualized as a solution to a problem.

3. Project Management Institute (1987): "Any undertaking with a defined starting point and defined objectives involves a variety of resources and is unique.

4. A project is any undertaking that has a beginning and end, and is carried out to meet established goals within cost, schedule and quality objectives."

5. It can be an endeavor in which human, material and financial resources are organised in a novel way to undertake a unique scope of work, of a given specification, with constraints of cost & time so as to achieve beneficial change defined by quantitative and qualitative objectives.

6. A temporary process undertaken to create one or a few units of a unique product or service whose attributes are progressively elaborated during the development cycle.

7. Project Management Institute (1996): " A temporary endeavor undertaken to create a unique product or service"

Cross cutting issues that relate to a project is that it is a temporary, organized human endeavor to provide a solution to an identified need. It is not an on-going operational organizational activity. A project can also be defined as a set of activities that has a starting point and an end

with specific objectives to achieve. Therefore projects are activity oriented and they consume resources in terms of Man, Machinery, Moments, Materials and Management Information Systems.

This definition clearly shows that a project is different from a statement of work (SOW) in that project is "a temporary endeavor undertaken to create a unique product or service" while a SOW is a narrative description of products or services to be supplied under contract.

A project as a process

A project is a process aimed at the achievement of specified objectives. Thus, it is vital to emphasize that a project refers to *a process and not the end product or result.* Process can be defined as a series of actions or operations directed towards generating a particular result. For instance, in a construction project, the final constructed building is not the project but the product of the project. The project is a process by which the building is constructed. Projects produce deliverables referred to as end items/Outputs. However, the product of the process usually has a life beyond the process. A project goes through five standard processes called project management process groups:

1. Initiating process group: Those are processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or a phase.
2. Planning process group: This helps to establish the scope of the project (limits and exclusions also called project boundaries), refines the project objectives and define the strategy required to execute the project in order to achieve the objectives that the project was undertaken to achieve.
3. Executing process group: The processes performed to complete the work defined in the project management plan to satisfy project specifications.
4. Monitoring and controlling process group: These processes require to track, review and regulate the progress and performance of the project; identify areas in which changes need to be made; ensures that project execution is as per the plan with the required quality dimensions. This process group can results into critical decisions of project terminations, project scale up and project replication.

5. Closing process group: They are performed to finalize all activities across all process groups to formally close the project or phase.

Project management

Project management is the application of knowledge, skills, tools and techniques to project activities to meet and exceed stakeholder project requirements. Project management is accomplished through processes, using project mgt knowledge, skills, tools and techniques that receive inputs & generate outputs.   Project management is concerned with the overall planning and co-ordination of a project from conception to completion aimed at meeting the stated requirements and ensuring completion on time, within cost and to required quality standards.

Project management is normally reserved for focused, non-repetitive, time-limited activities with some degree of risk and that are beyond the usual scope of operational activities for which the organization is responsible.

Prerequisites to success

1. Selection of appropriate processes within the project management process groups that are required to meet project objectives.
2. Use a defined approach to adopt the product specification/Strategy
3. Comply with requirements to meet stakeholder needs and expectations
4. Balancing the triple constraints demands
5. Even worse: on-time, on-budget, great quality, but **delivering something your organization/customers do not need**. Therefore projects should address stakeholder/beneficiary needs.

Why organizations devote a lot of effort on projects?

1. Compression (shortening) of the product life cycle i.e. time to market for few products with short life cycles has become increasingly important
2. Global competition: Quality movement of ISO 9000 certification cover design, procurement, quality assurance and delivery processes
3. Knowledge explosion: Projects encompass latest advances

4. Corporate downsizing: Project management is replacing middle management or organizations outsource project work

5. Increased customer focus: need customised products not generic products in nature

6. Small projects represent big problems: 100s of projects can be implemented concurrently

7. Social Cost Benefit Analysis also called economic analysis: projects need to be evaluated from the point of view of the society (or economy) as a whole. This forms a foundation for the chapters within this book.

8. Triple bottom line (planet, people, and profit/benefits): threat of global warming has brought sustainable business practices to the fore front. Not only focus on profit maximization to the detriment of the environment and society, effort to reduce carbon imprint and utilize renewable resources are realised through effective project planning and management.

Project Attributes

A review of the various project definitions gives rise to distinctive characteristics of projects:

1. **Unique:** A project is a unique, one-off discrete undertaking. Although similar projects may have similar objectives, every project faces a unique set of environmental, political and resource issues as well as constraints. In addition, every project results to some extent in new, unique deliverable or set of deliverables. It is never repeated exactly. E.g. even though many thousands of office buildings have been developed, each new facility has a degree of uniqueness about it (Different owner, different design, different location, different contractors).

2. **Finite:** A project is a temporary process, i.e. finite/limited duration. A project has a beginning and an end at which point one can say its objectives have been accomplished. Even the resources used on a project are temporary, only needed for the project life time.

3. **Multiple Resource, Discipline & Organisations:** Each project has a different mix of discrete skills, technologies, and resources which are brought together to focus on the attainment of project specific objectives.

4. **Life cycle:** Projects have a unique and distinctive life cycle that passes through several distinct stages. The activities and resources change as the project progresses through the

cycle. The cycle is characterized by a slow start, through a progressive build-up and peak, followed by a decline and final termination. At the end, some projects may be incorporated into the normal on-going operations of the parent organisation.

5. **Dynamic:** A project operates in a dynamic operational and managerial environment compared to relatively stable environments of conventional enterprises. The dynamic nature of projects means that the mixture of resources changes frequently throughout the project life cycle, varying with the needs of the project. The project work may also generate dynamic reactions in the environment. For instance, think about food kiosks developing along a road under construction.

6. **Discrete end objectives:** Projects are formed to meet identifiable objectives or constraints, usually specified in terms of scope, time, cost and quality requirements. The end results must be definable at the beginning. So a project is a goal directed with a single set of objectives and when these objectives have been achieved, the project is completed.

7. **Progressive Elaboration of Specifications:** A project emerges out of the awareness by someone that a problem or opportunity exists. Modifications show a progressive elaboration of specifications.

8. **Part-time use of resources:** Projects frequently use resources on a part-time basis, whereas permanent organizations try to use resources on a full-time basis. The sharing of resources frequently requires skillful negotiation to see that projects get the necessary resources to meet objectives throughout their project life.

9. **Conflict:** More than most managers, the project manager lives in a world characterized by conflicts. Conflict can be created by competition for the use of organizational resources; conflict between the project and the project team members' objectives, etc. The need to meet tight project objectives while dealing with the complexity and dynamic nature typical of projects, or because of project team members' being often accountable to two superiors at the same time, may generate some conflicts.

10. **Change:** Projects are created to create change- Projects are the change efforts of society. The turbulence and dynamic nature of the world, necessitates project managers to be effective at managing change. All managers must manage change through projects. We

undertake projects because we cannot produce or achieve the benefit by doing routine things.

Programmes and Projects

There are differences and similarities between programmes and projects as illustrated below:

Differences

The differences are as follows

1. Time: A programme is a long term intervention with different aspects, all tailored towards the attainment of the targeted programme deliverables. A project on the other hand is a temporary endeavor aimed at generating unique outputs to the community. Thus, whereas the programme can be long-term, a project can be a short term intervention.

2. Content scope: In terms of the content scope, a programme takes a wider coverage.

3. Taking the organizational structure, a programme is a concern of the organizational goal while a project addresses a mere purpose. It is thus, a sum of different purposes (projects) that will lead to the attainment of the goal (at a programmatic level).

4. Programmes are evaluated by their impact while projects are evaluated by considering the outputs. However, several project outputs, overtime, can constitute to an impact.

5. In terms of planning, a programme takes the strategic plans (made by top managers) while a project takes the operational plans (made by middle and low level managers).

Similarities

The similarities are as follows:

1. Projects that are complex and spread over a long period can also be called programmes.

2. Projects and programmes may use the same resources, whether human or materials resources. In terms of the human resources, the same persons that design the programme can be the same to design a project.

3. Projects refine the programme aspects and make them specific for the purposes of practical implementation. But the overall outcome may never take cognizance of the differences between the programme and project.

4. Both aid policy formulation from evidence. Quite a number of policies have been enacted from projects and programmes

Historical Background of Projects

Project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives (Cleland & Gareis 2006). Project management has been practiced since early civilisation before Christ (BC) from the time of creation because God's assignments were time bound. Literature reveals that projects were generally managed by creative architects and engineers themselves with little or no formal project management training. Kwak & Carayannis (2005) argue that project management has been in practice since the 1950s, and that organizations started applying systematic project management tools and techniques to complex projects. Similarly several tools and techniques have also come along way with the evolution of project management. Gantt commonly known for his Gantt chart as a project management tool invented the Gantt chart which is a systematically drawn chart showing when the activities will be implemented by time and this helps to focus the implementers on the time management aspect which is one of the indicators of project success in addition to the cost and the scope. Gantt's work is the forerunner to modern project management tools including work breakdown structure (WBS) and resource allocation. This project management function help to organize the projects and hence leading to a successful project implementation.

As a discipline, Project Management developed from different fields of application including construction, engineering and defense (Cleland & Gareis 2006). The 1950s marked the beginning of the modern Project Management era. Project management was formally recognized as a distinct discipline arising from the management discipline (Cleland & Gareis, 2006). Again, in the United States, prior to the 1950s, projects were managed on an *ad hoc* basis using mostly Gantt charts, and informal techniques and tools. At that time, two mathematical project scheduling models were developed. The "Critical Path Method" (CPM) developed in a joint venture by both DuPont Corporation and Remington Rand Corporation for managing plant maintenance projects. And the "Program Evaluation and Review Technique" or PERT, developed by Booz-Allen & Hamilton as part of the United States Navy's (in conjunction with the Lockheed Corporation) Polaris missile submarine program. These mathematical techniques quickly spread into many private enterprises.

At the same time, technology for project cost estimating, cost management and engineering economics was evolving, with pioneering work by Hans Lang and others. In 1956, the American Association of Cost Engineers (now AACE International - the Association for the Advancement of Cost Engineering) was formed by early practitioners of project management and the associated specialties of planning and scheduling, cost estimating, and cost/schedule control (project control). AACE has continued its pioneering work and in 2006 released the first ever integrated process for portfolio, program and project management (Total Cost Management Framework).

Harrison& Lock (2004) also reveals that in 1969, the Project Management Institute (PMI) was formed to serve the interests of the project management industry. The premise of PMI is that the tools and techniques of project management are common even among the widespread application of projects from the software industry to the construction industry. In 1981, the PMI Board of Directors authorized the development of what has become "A Guide to the Project Management Body of Knowledge (PMBOK Guide, 2004)," containing the standards and guidelines of practice that are widely used throughout the profession. The PMBOK guide emphasizes that for project success, the process of cost estimation, time planning and scope planning are very critical and if it carefully handled then the project will be implemented in a balanced manner.

Kousholt (2007) argues that the International Project Management Association (IPMA), founded in Europe in 1967 has undergone a similar development and instituted the IPMA Competence Baseline (ICB). The focus of the ICB also begins with knowledge as a foundation, and adds considerations about relevant experience, interpersonal skills and competence. Both organizations are now participating in the development of an ISO project management standard.

Project success is commonly measured by what many people defined as project management meeting the budget, meeting the time schedule, and conforming to the requirements known as the project scope. This prevalence of project success is so ingrained, that the Standish Group (2001) has gathered statistics since 1994 on projects in IT that succeeded, failed or were "challenged" on the criteria mentioned below. The Standish Group categorizes projects into three resolutions types:

Successful: The project is completed on time and on budget, with all features and functions originally specified.

Challenged: The project is completed and operational, but over-budget, over the time estimate, and with fewer features and functions than initially specified.

Failed: The project is cancelled before completion or never implemented (Standish Group).

According to the extreme *CHAOS Report* (2001), only 16-28% of the projects examined were considered a success. Similarly, projects worldwide are sure to fail if effective project management principles and methodologies are not provided for their execution. Ample evidence of these failures exists throughout the world for instance; a British parliamentary criticized the spiraling costs of the 2012 Olympics Infrastructure costs risen by $1.8 billion over the figure quoted, the US Navy orders Lockheed to stop work on the new coastal-waters workshop because of big cost overruns, and in a study of 300 large companies, consulting firm Pear Marwick finds that 65% of hardware and/or software development projects were significantly behind schedule, over budget, or failed to deliver value in terms of expected performance. This is particularly severe in developing countries where necessary skills have not been successfully developed in its project related work force (Kiberu, 2016).

Theoretical Background

There are several theories that explain project management and success of projects. However this book examines the theory of projects, theory of management and systems theory to give a holistic view of the project environment. The theory of management discusses three other sub-models of management: management–as planning, the dispatching model and the thermostat model. Management-as-planning has been the widely held – even if most often implicit - view on intentional action in organizations up to now (Johnston & Brennan 1996). The dispatching model, closely associated with management-as-planning, has been common in industrial engineering from the beginning of the 20th century. Likewise, the thermostat model has been the dominating view on management in the 20th century (Johnston & Brennan 1996). These ideas were all current when project management emerged. Together they form the theoretical foundation of present management practice. Below are the theory of the project and theory of

management as crystallized by the PMBOK guide and the relationship with the success of projects:

Theory of Project

The theory of project by Burner (2007-2009) views tasks and operations as a transformation process. This explains that you have some inputs, a change happens, and presto, you get some outputs. You throw some garbage in, the team has a go at it, and you get some garbage out. You provide requirements to certain specifications as input, the operation programming starts, and the end result is some running program.

Like some Russian Babushka (the little dolls that have little dolls in them) each transformation can consist of multiple smaller transformations. Requirements specification A, B and C are inputs, Programming A, B and C happen, and you get as outputs program A, B and C. The management principles behind this all use the fact that you can play with the inputs, outputs and decomposition of the tasks.

The theory relates out puts delivered to a success of a project. The management functions play their role of planning, executing and controlling and at the end of the processes; an output is expected for a project to be considered as successful. A project that fails to deliver some out puts is not considered successful. This is because the project will have consumed resources provided as inputs and no results (outputs) realized.

According to Turner (1993) scope management is the *raison d'être* of project management. He defines the purpose of scope management as follows: an adequate or sufficient amount of work is done, unnecessary work is not done, and the work that is done delivers the stated business purpose. The scope is defined through the work breakdown structure (WBS). What does Turner say, from a theoretical point of view? Firstly, he (implicitly) claims that project management is about managing work; this is the conceptualization. Secondly, he claims that work can be managed by decomposing the total work effort into smaller chunks of work, which are called activities and tasks in the PMBOK Guide. Thirdly, he claims that this conceptualization and the principle of decomposition serves three essential purposes of project management of scope

management, time management, and cost management, and that their management and control is centralized because the tasks are related by sequential dependence. Turner (1993) proposes that for project management to deliver a successful project with the constraints of time cost and scope, the tasks in the core areas of scope management, time management and cost management have to be detailed. This is also supported by the description of Morris of the classic - and still current - project management approach as follows (Morris, 1994): first, what needs to be done; second, who is going to do what; third, when actions are to be performed; fourth, how much is required to be spent in total, how much has been spent so far, and how much has still to be spent is central to the success of projects.

When we compare this crystallization of project management to the theories of operations management in general, it is easy to recognize that it rests on the transformation theory (or view) of production, which has dominated production thinking throughout the 20th century. For example, Starr (1966) formulates any production process can be viewed as an input-output system. In other words, there is a set of resources which we call inputs. A transformation process operates on this set and releases it in a modified form which we call output. The management of the transformation process is what we mean by production management.

In the transformation view, production is conceptualized as a transformation of inputs to outputs. There are a number of principles, by means of which production is managed. These principles suggest, for example, the need to decompose the total transformation hierarchically into smaller transformations, tasks, and minimizing the cost of each task independently (Kousholt, 2007). The transformation view has its intellectual origins in economics. The popular value chain theory, proposed by Porter (1985), is one approach embodying the transformation view. However, mostly the transformation view has been implicit – so embedded in thinking and practice that it has formed the basis of an invisible, unspoken paradigm that shapes behaviour.

Theory of Management

Burner (2007-2009) argues that to describe the management part, three theories are needed: management-as-planning, the dispatching model and the thermostat model. The idea behind

management-as-planning is, that management soaks up all the information about the process, creates a detailed sequence of actions, with time and resources assigned, throws the plan to the operational level and yields just do what the plan outlined. This last part is the *dispatching model*: you issue an order down the chain of command that someone has to start on a task, and that will be it; the worker will automatically without any hesitation or problem start working on it. If you have the management-as-planning view of the world you think that there is a direct relationship between what is on paper (the planning) and what happens in reality.

If you are creating a plan that will be executed blindly, you must be very sure that you know exactly what must be done; you must almost be able to predict the future. And that is exactly what the appeal of this approach to management is: it provides a sense of predictability (no surprises will occur) and you have the ultimate control of the situation; change the planning, and all the working people will change what they are doing. The *thermostat model* is the Control and in this model nothing more than looking for reality to be not in line with the plan, and kick the real world back into shape, so it fits the plan again. You define upfront the desired situation, you put in the thermometer ones in a while into the project, and when you do not have the desired temperature, you correct the process until you have your temperature.

The *PMBOK Guide* (2004) divides project management processes into initiating, planning, execution, controlling and closing processes. Let us concentrate on the core processes of planning, execution and controlling (Figure 3). A central idea is that these processes form a closed loop: the planning processes provide a plan that is realized by the executing processes, and variances from the baseline or requests for change lead to corrections in execution or changes in further plans.

Figure 3: The closed loop of managerial processes in project management according to the PMBOK Guide
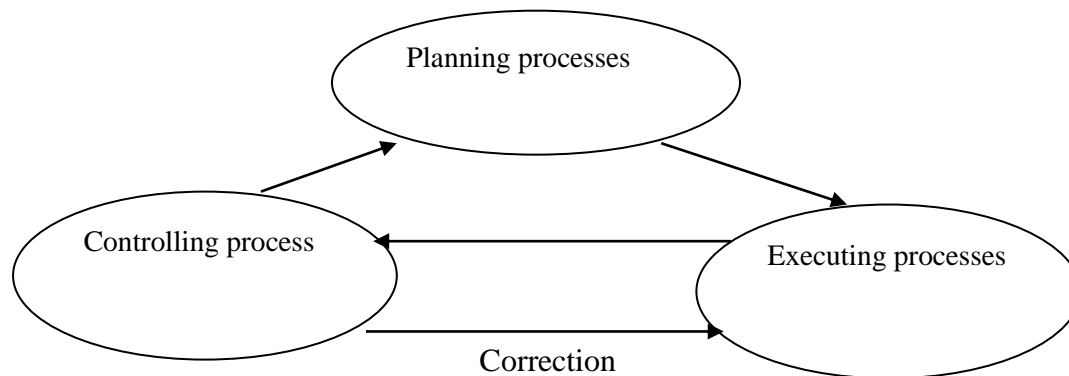
Source: *PMBOK Guide* (2004)

Systems theory

In the 1950's the main approach to understanding situations was 'reductionism' – divide something into its parts. Ludwig von Bertalnffy proposed systems thinking – discover how something interacts with its environment. All living things, non-living things and projects are open systems. Systems theory gives us a way to 'think about' open systems. Systems theory lays the foundation for the analysis and modelling of systems. Systems theory provides an analytical framework for comprehending dynamic interrelated operating systems. To a project perspective, systems thinking is holistic approach to problem solving; reflecting on how the organisation and project relates to its business environment and how factors in the environment can affect the project. A system can be defined as an identifiable, complex dynamic entity composed of discernibly different parts or subsystems that are interrelated to and interdependent on each other and the whole entity with an overall capability to maintain stability and to adapt behaviour in response to external influences. This can be a true definition for projects as they relate to their internal and external environment. Systems: are Goal Seeking, are Holistic, have Hierarchy, have Inputs and Outputs, transform inputs into outputs, consume and/or create Energy, have Feedback.

As regards systems being holistic, Fredrick Hagel (1770-1831) notes:

  – The whole is more than the sum of the parts;

- The whole determines the sum of the parts;

- The parts cannot be understood if considered in isolation from the whole;

- The parts are dynamically interrelated and interdependent;

To a project perspective, projects have sub-systems that work semi-independently to achieve a given project objective. This is evident when project managers develop a work break down structure also called project decomposition as will be alluded to in the later chapters.
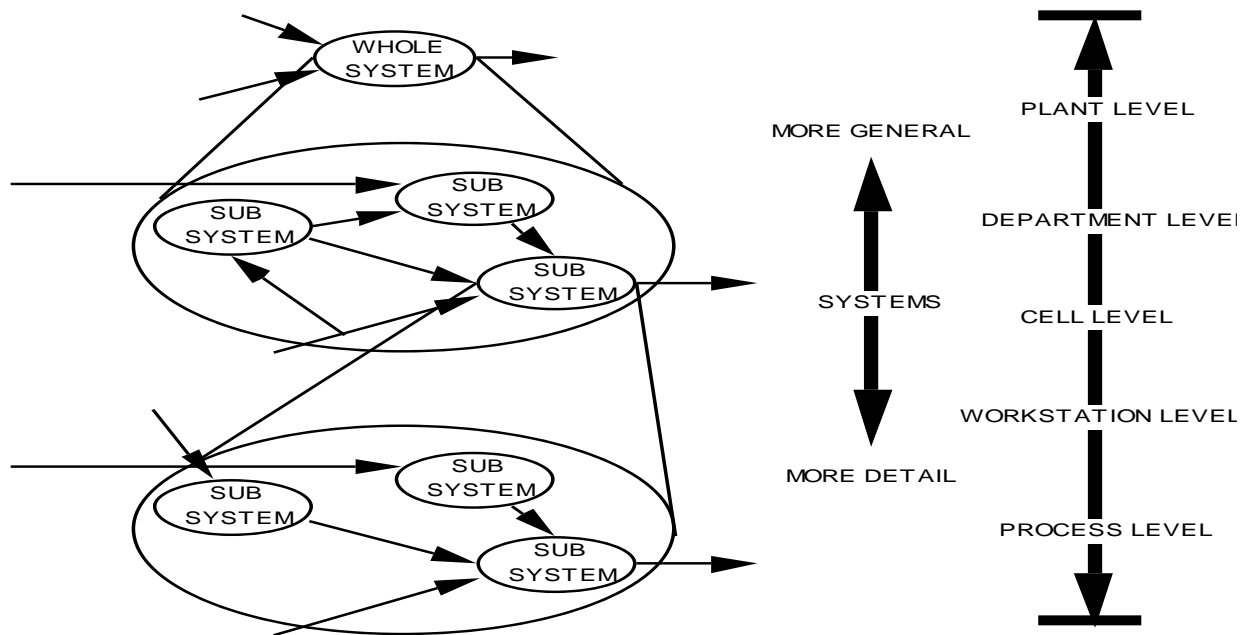
Source: Author generated

Conceptual Background

This section provides a conceptual view of various project based on a systems approach (an understanding of sub-systems within the project entirely. Some are given in form of definition and others as illustrations. A project is a finite endeavor--having specific start and completion dates--undertaken to meet particular goals and objectives, usually to bring about beneficial change or added value. This finite characteristic of projects stands in contrast to processes, or operations which are repetitive, permanent or semi-permanent functional work to produce products or services. In practice, the management of these two systems is often found to be quite

different, and as such requires the development of distinct technical skills and the adoption of separate management (Dinsmore, et al 2005).

Another key concept during project management is the triple constraint of projects also plotted on the project magic triangle. They are deemed to be critical to project success are time, scope and cost; so that when well balanced, project managers attain project quality (Figure 1). However, to detail, balancing the competing project constraints, may include, but are not limited to proper management of: Scope, Quality, Schedule, Budget, Resources, and Risks.

Fig: 1 **The Project Management Triangle**
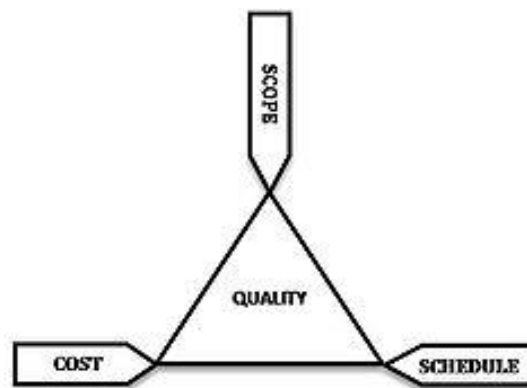
Source: *A Short Course in Project Management* (Carl, 2007)

Carl (2007) argues that "Like any human undertaking, projects need to be performed and delivered under certain constraints. Traditionally, these constraints have been listed as "scope," "time," and "cost" These are also referred to as the "Project Management Triangle," where each side represents a constraint. One side of the triangle cannot be changed without affecting the others. A further refinement of the constraints separates product "quality" or "performance" from scope, and turns quality into a fourth constraint. These three constraints are often competing constraints: increased scope typically means increased time and increased cost, a tight time constraint could mean increased costs and reduced scope, and a tight budget could mean increased time and reduced scope. The discipline of Project Management is about providing the tools and techniques that enable the project team (not just the project manager) to organize their work to meet these constraints.

Project management is the application of knowledge, skills, tools and techniques to project activities to meet project goals and objectives. Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing. Managing a project includes: identifying requirements, establishing clear and achievable objectives, balancing the competing demands for quality, scope, time and cost, adapting the specifications, plans, and approach to the different concerns and expectations of the various stakeholders. In project management, Project managers often talk of a "triple constraint"— project scope, time and cost—in managing competing project requirements for project success. The three constraints affect the project quality. High quality projects deliver the required product, service or result within scope, on time, and within budget (*PMBOK 2004*). Project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives (Cleland & Gareis 2006).

Key PM Concepts as adopted and modified from the *PMBOK® Guide 5th Edition*

The figure below is a conceptual view of the relationships between various project management concepts as applied in project management:

Figure 2: Project Management concepts
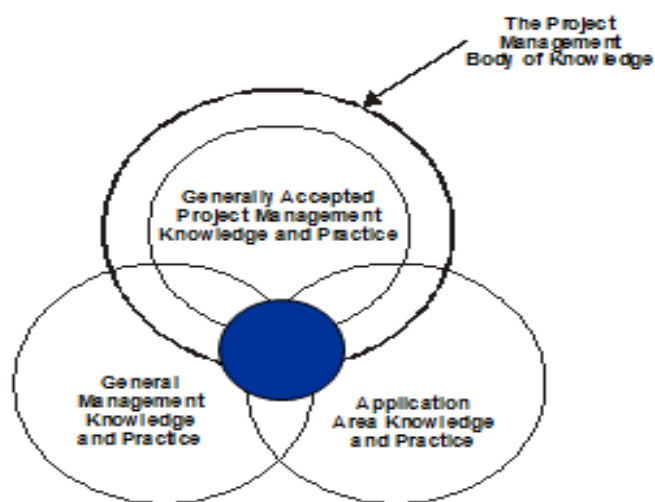
Source: Adopted from PMI, 1999.

How these concepts/dimensions relate to a project manager?

It is a responsibility of project managers to satisfy the needs: task needs, team needs, and individual needs (team members and stakeholders). As project management is a critical strategic discipline, the project manager becomes the link between the strategy and the team. Projects are essential to the growth and survival of organizations. Projects create value in the form of improved business processes, are indispensable in the development of new products and services, and make it easier for companies to respond to changes in the environment, competition, and the marketplace.

The project manager's role therefore becomes increasingly strategic. However, understanding and applying the knowledge, tools, and techniques that are recognized as good practice are not sufficient for effective project management. In addition to any area-specific skills and general management proficiencies required for the project, effective project management requires that the project manager possess the following competencies:

a) Generally Acceptable Project Management Knowledge and Practice like: project scope management, project time management, project cost management, project quality management. These are core project management knowledge areas. Also other facilitating project management knowledge areas are: project risk management, project communications management, project integration management, project risk management, project procurement management among others.

b) Application area knowledge and practice. For instance if it is an ICT project, then the project manager needs to be versed with such knowledge. If it is engineering, then the project manager needs to know about engineering disciple.

c) General management knowledge and practice that include planning, organizing, controlling, commanding, staffing, integrating, directing during the execution of the project.

However, all these competencies do not stand in isolation but interwoven to give the project manager a holistic knowledge competency view.

PMBOK Guide 5th edition summarizes that effective project management requires that the project manager possess the following competencies:

Knowledge—Refers to what the project manager knows about project management.

Performance—Refers to what the project manager is able to do or accomplish while applying his or her project management knowledge.

Personal—Refers to how the project manager behaves when performing the project or related activity. Personal effectiveness encompasses attitudes, core personality characteristics, and leadership, which provides the ability to guide the project team while achieving project objectives and balancing the project constraints.

Relationships Among Portfolios, Programs and Projects

The relationship among portfolios, programs, and projects is such that a portfolio refers to a collection of projects, programs, sub-portfolios, and operations managed as a group to achieve strategic objectives. Programs are grouped within a portfolio and are comprised of subprograms, projects, or other work that are managed in a coordinated fashion in support of the portfolio. Individual projects that are either within or outside of a program are still considered part of a portfolio. Although the projects or programs within the portfolio may not necessarily be interdependent or directly related, they are linked to the organization's strategic plan by means of the organization's portfolio.

Table 1: **Comparative Overview of Project, Program, and Portfolio Management**

	Projects	**Program**	**Portfolios**
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.	Programs have a larger scope and provide more significant benefits.	Portfolios have an organizational scope that changes with the strategic objectives of the organization.
Change	Project managers expect change and implement	Program managers expect change from both inside and	Portfolio managers continuously monitor changes in the broader internal

	processes to keep change managed and controlled.	outside the program and are prepared to manage it.	and external environment.
Planning	Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.	Program managers develop the overall program plan and create high-level plans to guide detailed planning at the component level.	Portfolio managers create and maintain necessary processes and communication relative to the aggregate portfolio.
Management	Project managers manage the project team to meet the project objectives.	Program managers manage the program staff and the project managers; they provide vision and overall leadership.	Portfolio managers may manage or coordinate portfolio management staff, or program and project staff that may have reporting responsibilities into the aggregate portfolio.
Success	Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.	Success is measured by the degree to which the program satisfies the needs and benefits for which it was undertaken.	Success is measured in terms of the aggregate investment performance and benefit realization of the portfolio.
Monitoring	Project managers monitor and control the work of producing the products, services, or results that the project was undertaken to produce.	Program managers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.	Portfolio managers monitor strategic changes and aggregate resource allocation, performance results, and risk of the portfolio.

Table adopted and modified from PMBOK Guide 5th Edition.

Context of project performance: ICT based projects

ICT has become a critical concept during project management. The unprecedented growth of information and communication technologies (ICT) driven by microelectronics, computer hardware and software systems has influenced all facets of computing applications across organizations. Simultaneously the business environment is becoming increasingly complex with functional units requiring more and more inter-functional data flow for decision making, timely and efficient procurement of product parts, management of inventory, accounting, human resources and distribution of goods and services. In this context, management of organizations needs efficient information systems to improve competitiveness by cost reduction and better

logistics. It is universally recognized by large and small-to medium - size enterprises (SME) that the capability of providing the right information at the right time brings tremendous rewards to organizations in a global competitive world of complex business practices.

Governments worldwide are, too, increasingly recognizing the need to facilitate access to public services for citizens and businesses through strategies including e-government, e-commerce, e-education (MoICT Policy, 2008). With the Ugandan government's decentralization of powers based on devolution of powers, functions and responsibilities intended to improve service delivery to local beneficiaries, local governments are determined to use every strategy including ICT to provide better services. This book concentrates on ICT projects integration which according to Upadhyaya (2011) is defined as a myriad of standalone media, including mobile telephone, radio, television, video, tele-text, voice information systems as well as computer mediated networks that link a personal computer to the network. Similarly, Mosleh and Shannak (2009) as cited by Kyakulumbye and Muhenda (2012) define ICT as the term that encompasses hardware, software, networks and people. This paper perceives ICT in terms of hardware, software and people ICT skills that form an integral component in information processing, generation and application. ICT can facilitate the exchange information and services with citizens, business and other arms of government in a much faster manner which could result in improvements in mass processing of essential tasks and public administrative operations (Zhao, 2011; World Bank, 2008).

As a way of mainstreaming ICT, the Government of Uganda (MOICT, Policy, 2008) Information Technology Policy aimed at facilitating interactions between Governments, government to citizens, business and citizens, government to business to simplify and enhance its internal and external communications. Most ICT programmes in local governments in Uganda would be placed at Local Government Business Information Centers for staff accessibility. For instance the local government Information Communication System that never worked was developed under the local government Development Program (LGDP I) and comprised three integrated parts, namely: (i) Monitoring and Evaluation Subsystem; (ii) Compliance Inspection (CI) Sub-system; (iii) Computerized Software Sub-system, which would enable the data generated from

the M&E sub-system and CI subsystem to be entered, verified, analyzed, stored and disseminated to the various stakeholders.

The programme was meant to be a multi-sectoral information system covering all sectors in a local government including: education, health, water, roads, prisons, police, production, planning, finance and administration, council and social services departments. In spite of such endeavor, ICT project failure rates is still high as evidenced from very low usability of the programmes. For instance many estimates and studies have placed ICT project failure rates as high as *60 percent*. This is an extraordinary percentage and represents many billions of wasted dollars over the years. So, why is it that so many of these high-profile projects fail? Kyakulumbye & Muhenda (2013) in similar studies conducted in selected districts like Mityana, Mukono, Kayunga, and Iganga, found low usability of the information centres where ICT projects are housed and inadequate information for effective decision making in local government and yet ICT is a critical project enabler. Opande (2009) found that failed rural ICT projects eat up US$10m in Uganda and that out of 3,863 rural projects implemented by Rural Communications Development Fund (RCDF), only 923 (24%) have been completed and are still in operation countrywide. Another documented failed ICT project is the electronic voter registration in Uganda whose cost was US $22m spent on equipment, consultancy services and operations and had no benefits because the system was not put to use for the 2001 elections.

Another worthwhile project is the District Business Information Centres (DBICs) project. This attracted a concessional loan **of US$ 106,590,305** from the export/import bank (EXIM) of China to be paid back over a period of 20 years (Mulira, 2009 as cited by *The New Vision* 2012). Its purpose was to power up the National Transmission Backbone Infrastructure and related e-Government Infrastructure in order to provide availability of Internet and reduce on the operational costs. Acquiring a loan with a long payback period necessitates establishing value for money of the proposed intervention. This paper explores the successes and failures of the Information Technology Projects through in-depth literature review and discussions with key officers of Uganda, and key informants in relevant ministries involved in ICT projects deployment.

ICT projects failure rates

There have been many reports of unsuccessful ICT related project implementations within business, including accounts of the inability of Hershey to ship candy at Halloween, Nike losing shoe orders, and Foxmeyer's failure to process orders (Cotteleer, 2003). Majed (2000) reported that 70% of ICT implementations did not achieve their estimated benefits. In other studies, the percentage of ICT project implementations that can be classified as "failures" ranges from 40% to 60% or higher (Langenwalter, 2000), and failures of system implementation projects have been known to lead to problems as serious as organizational bankruptcy (Bulkelery, 1996; Davenport, 1998; & Markus et al., 2000).

Practitioners tend to discuss the impact of the failure of ICT projects implementation in a relative sense, referring to the shutting down of the systems, being able to use only part of the system, suffering business loss, dropping market price, losing both market share and competitive advantage due to implementation failure, and so on (Deutsch, 1998; Diederich, 1998; Nelson and Ramstad, 1999). However, there have been various definitions of failure of ICT projects implementation. Failure has been defined as an implementation that does not achieve a sufficient Return on Investment (ROI) identified in the project approval phase. Using this definition, it has been found that failure rates are in the range of 60-90% (Ptak, 2000).

As ICT projects implementation failure rates are so high and the consequent impacts are so detrimental to business, there is a compelling reason for opening the "black box" to investigate the project related factors causing failure. In order to examine the causes of failure in the ICT projects implementation process, a "Project Systems Life Cycle" (Markus et al., 2000) perspective is adopted, that can help to look at what goes on (e.g., problems experienced and attempts at problem resolution) at each phase of the experience cycle (Markus et al., 2000). Previous research has focused on ICT implementation for the definition of project failure (Lyytinen, 1988). However, the majority of studies have failed to take into account the richness of the ICT projects failure phenomenon. In this book, we have conducted primary and secondary empirical investigations into ICT projects failure from the perspectives of management, the project team, and the consultants involved in ICT implementation. We define critical failure

factors or critical success factors (CFFs or CSFs) as the key aspects (areas) where "things must go wrong" in order for the ICT projects implementation process to achieve a high level of failure or success respectively.

Linking ICT project failure to the project management life cycle

Generically, project life cycle comprises of the following phases: concept phase, development phase, evaluation phase and finish or termination phase. At each of these phases is a project management knowledge area to support effective roll out of phases as per the waterfall model. For instance clarity of the nature and use of the system from the user's perspective may lead into better and successful detailed planning or development. Detailed planning should cater for the effective business process re-engineering (BPR); good BPR results into effective project management among others. Based on other similar studies conducted, these phases are collapsed into three main failure or successful dimensions for ICT projects and these are: consultant effectiveness, project management effectiveness and quality of Business Process Re-engineering with each dimension having a project knowledge management area to enhance success.

Analysis of Critical Failure Factors (Adopted from Reviewed Literature)

Critical failure factors were assessed based on the information suggested by participants and triangulated from the documents describing the ICT project implementation (ICT project plan, meeting minutes, email communications and so on). The determination of critical failure factors was based on (1) an understanding of the ICT implementation process from the information given by participants (2) each participant's critical failure factors (validated using secondary source evidence, e.g., implementation related documents, email communications and meeting minutes) and (3) a relative comparison of the most important critical failure factors with the approval from the chief informant (such as the project manager).

The fourteen critical failure factors were identified as follows:

Critical Failure Factors for project Implementation	Company A	Company B	Company C	Company D
1. ICT system misfit		√	√	√

2. High turnover rate of project team members		√		
3. Over-reliance on heavy customization			√	√
4. Poor consultant effectiveness	√	√	√	√
5. Poor IT infrastructure	√			
6. Poor knowledge transfer		√		√
7. Poor project management effectiveness	√	√	√	√
8. Poor quality of Business Process Reengineering (BPR)	√	√	√	√
9. Poor quality of testing	√		√	√
10. Poor top management support	√	√	√	√
11. Too tight project schedule	√	√		√
12. Unclear concept of the nature and use of system from the users' perspective	√		√	√
13. Unrealistic expectations from top management concerning the system	√			
14. Users' resistance to change		√	√	

Poor consultant effectiveness

Company A's consultants were considered by their project team members to be inexperienced with ICT systems and unable to provide a professional level of advice on systems project planning. Consultants communicated ineffectively during the project phase due to language barriers, and they copied the systems configuration directly from the India branch office and only suggested workarounds without applying professional skills to conduct BPR to bridge the gap between systems and business processes. A detailed test plan and guidelines were not suggested to the project team. For company B, the consultants delivered poor quality of training (very brief and like a pre-sales demonstration), conducted BPR to a poor quality and delivered poor quality management reports due to insufficient industrial experience. For company C, consultants spent only two days on training the project team and configuring the systems. They did not provide any consulting service on BPR, project management, or detailed project implementation. The project team commented that the service was insufficient and unprofessional. For company D,

the consultants were inexperienced in using the system, they followed their formal implementation methodology during only the first two months, BPR was poorly conducted as they were not satisfied with the consulting fee received from the project. Also, the user requirement analysis document produced was too wordy (all business process flow charts for clarifying how to conduct BPR were absent) and the training material (prepared by the consultants) was found to be too brief and unhelpful.

Poor quality of Business Process Re-engineering (BPR) or project re-engineering

For Company A and B, the project team members disclosed that they had an unclear vision of why or how to conduct BPR, and their consultants provided unprofessional advice for conducting BPR. They commented that the consultants provided lots of workarounds to resolve problems associated with business process mismatch. Project team members found it difficult to collaborate and contribute to BPR, and the poor quality of BPR led to incorrect system configuration problems. Business processes were not successfully reengineered to fit with the systems, and the project teams were unready for the adaptation of new business processes and they did not have the mind-set for implementing or using the new system. Moreover, during the BPR process, consultants did not conduct mapping analysis to map the software functionalities with business requirements, and this led to a mismatch between systems and business processes. Users and the business process were not ready for system implementation, and thus, the system could not provide support for business. For company C, as their vendor adopted a customization strategy and provided a two-day consulting service (all BPR expertise, system implementation process and testing advice were absent), it took more than eighteen months for vendors to complete the customization programming (mapping the system functions with the business processes). For Company D, the project team mentioned that mapping analysis was conducted in a rush. The high level business process flow diagram was missing, and thus, project team members and users were unsure of how to reengineer the business process to fit with the system. The wordy BPR documents which were free from diagrams were insufficient for the project team to understand how to reengineer the business process for a better adaptation to the new business process and system usage.

Poor project management effectiveness

Due to limited project knowledge, capability and poor project management skills, none of the companies' project managers could exercise effective project management of system implementation. They agreed that a failure to plan, lead, manage and monitor the project was a core factor that resulted in their implementation failure, because the system was complex, and project teams were required to collaborate with top management, different departments, users and consultants during implementation process. The ICT project was considered by the project managers to be challenging and demanding, as it involved managing systems, people (project team, users and external consultant) as well as re-designing business processes. For companies B, C and D, the over-tight and unrealistic project time schedule and insufficient human resource exhausted the project team members and users in coping with the system implementation. Activities of the different phases could not be conducted thoroughly (e.g., systems configuration and testing were conducted in a rush). Users could not understand the new system or adapt to the new business process within the over-tight schedule. None of the project managers in their studies were able to exercise effective project management control, especially in managing consultants, and reporting implementation problems to top management whenever necessary. It is important for the communication and training performance, when conducting BPR, and when testing system performance. Indeed, in their study, most of the companies' project team members lacked project experience (including top management, the project manager, middle level management and operational staff). However the external consultants were not able to provide professional advice and so led a failed implementation. They ultimately advise that top management and project managers need to ensure sufficient knowledge and expertise for ICT implementation before the start of project implementation. After this case based overview, this book provides a detailed elucidation of the management of the generic project cycle phases with their respective project management knowledge areas.

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PART TWO: PROJECT LIFE CYCLE

CHAPTER TWO

By Stephen Kyakulumbye

2.1 Introduction

A project life cycle is the series of phases that a project passes through from its initiation to its closure. The phases are generally sequential, and their names and numbers are determined by the management and control needs of the organization or organizations involved in the project, the nature of the project itself, and its area of application. The phases can be broken down by functional or partial objectives, intermediate results or deliverables, specific milestones within the overall scope of work, or financial availability. Phases are generally time bounded, with a start and ending or control point. A life cycle can be documented within a methodology. The project life cycle can be determined or shaped by the unique aspects of the organization, industry, or technology employed. While every project has a definite start and a definite end, the specific deliverables and activities that take place in between will vary widely with the project. The life cycle provides the basic framework for managing the project, regardless of the specific work involved. This therefore brings us to the concept of Project Cycle Management (PCM) which can be defined as a method of managing the phases of the project cycle using the integrated and logical framework approach.

Project life cycles can range along a continuum from predictive or plan-driven approaches at one end to adaptive or change-driven approaches at the other. In a predictive life, the product and deliverables are defined at the beginning of the project and any changes to scope are carefully managed. In an adaptive life cycle, the product is developed over multiple iterations and detailed scope is defined for each iteration only as the iteration begins.

2.1.1 Characteristics of the project life cycle

Projects vary in size and complexity. Whatever we do in daily life is a project in a sense that it will have a start and an end. All projects can be mapped to the following generic life cycle structure:

- Starting the project

- Organizing and preparing

- Carrying out the project work, and

- Closing the project.

PRINCE2 methodology (Projects In a Controlled Environment) categorizes these as: controlled start, controlled middle and controlled end. This generic life cycle structure is often referred to when communicating with upper management or other entities less familiar with the details of the project. It should not be confused with the Project Management Process Groups, because the processes in a Process Group consist of activities that may be performed and recur within each phase of a project as well as for the project as a whole. The project life cycle is independent from the life cycle of the product produced by or modified by the project. However, the project should take the current life-cycle phase of the product into consideration. This high-level view can provide a common frame of reference for comparing projects—even if they are dissimilar in nature.

Projects typically have a slow start, then rapid fast development and slow end. This is in terms of cost and staffing levels as per the figure below:

Figure: Typical cost and staff levels across a generic life cycle structure
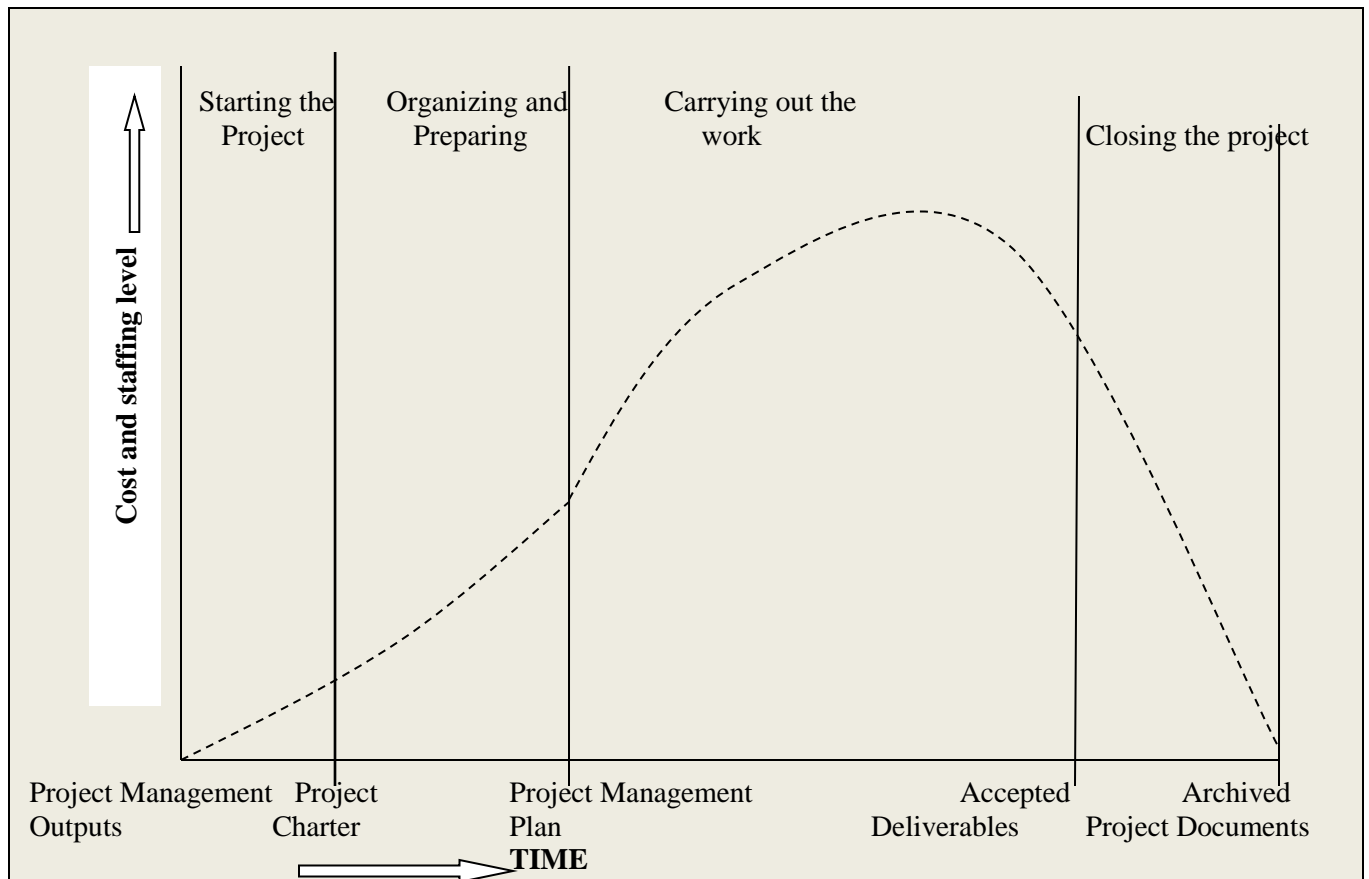
The generic life cycle structure generally displays the following characteristics:

- Cost and staffing levels are low at the start, peak as the work is carried out, and drop rapidly as the project draws to a close.

- The typical cost and staffing curve above may not apply to all projects. A project may require significant expenditures to secure needed resources early in its life cycle, for instance, or be fully staffed from a point very early in its life cycle.

- Risk and uncertainty are greatest at the start of the project. These factors decrease over the life of the project as decisions are reached and as deliverables are accepted.

- The ability to influence the final characteristics of the project's product, without significantly impacting cost, is highest at the start of the project and decreases as the project progresses towards completion. The figure illustrates the idea that the cost of

making changes and correcting errors typically increases substantially as the project approaches completion.

However the pattern of slow-rapid-slow progress toward the project goal is common. For instance, during a construction project, this pattern is very common because at most time, it is a result of changing the levels of resources used during the successive stages of the life cycle. The activity pattern of the project can be measured in various ways, such as the money spent on the project, the number of people working on the project, the amount of materials being utilized, the percentage of total organizational effort devoted to it, or the amount of conflict generated between the project and functional units.

Besides changes in the level of activity, the nature and emphasis of the activity also vary. For example, consider a mix of software development project personnel: during early stages of the project, users and planners dominate; during middle stages, designers, programmers, code builders and implementers are in charge; in later stages, end users take over.

Despite changes in the level and mix of activity, three measures of activity are applied during the full project span: Time, cost and performance. Time as a key constraint refers to the progress of activities and the extent to which the schedules and deadlines are being met. Cost refers to the rate of resource expenditure and how it compares to the budget constraint imposed on the project. Performance refers to the specifications and requirements established for the outputs of the project (for example, the speed and range of aircraft, the user friendliness of the software, the consumer appeal of a new product, the results of the polls for the candidate running for an office) and how they compare to the objectives. Ability to meet the requirements is a measure of quality of the project outputs. Throughout the project lifecycle, project teams attempt to achieve time, cost and performance requirements.

2.1.2 Project phases
A project may be divided into any number of phases. A project phase is a collection of logically related project activities that culminates in the completion of one or more deliverables. Project

phases are used when the nature of the work to be performed is unique to a portion of the project, and are typically linked to the development of a specific major deliverable. A phase may emphasize processes from a particular Project Management Process Group, but it is likely that most or all processes will be executed in some form in each phase. Project phases typically are completed sequentially, but can overlap in some project situations. Different phases typically have a different duration or effort. The high-level nature of project phases makes them an element of the project life cycle.

The phase structure allows the project to be segmented into logical subsets for ease of management, planning, and control. The number of phases, the need for phases, and the degree of control applied depend on the size, complexity, and potential impact of the project. Regardless of the number of phases comprising a project, all phases have similar characteristics:

- The work has a distinct focus that differs from any other phase. This often involves different organizations, locations, and skill sets.
- Achieving the primary deliverable or objective of the phase requires controls or processes unique to the phase or its activities. The repetition of processes across all five Process Groups (initiating process group, planning process group, monitoring and controlling process group, executing process group and closing process group), provides an additional degree of control and defines the boundaries of the phase.
- The closure of a phase ends with some form of transfer or hand-off of the work product produced as the phase deliverable. This phase end represents a natural point to reassess the activities underway and to change or terminate the project if necessary. This point may be referred to as a stage gate, milestone, phase review, phase gate or kill point. In many cases, the closure of a phase is required to be approved in some form before it can be considered closed.

Some organizations have established policies that standardize all projects, while others allow the project team to choose and tailor the most appropriate approach for their individual project. For instance, one organization may treat a feasibility study as routine pre-project work, another may treat it as the first phase of a project, and a third may treat the feasibility study as a separate,

stand-alone project. Likewise, one project team may divide a project into two phases whereas another project team may choose to manage all the work as a single phase. Much depends on the nature of the specific project and the style of the project team or organization.

2.1.2.1 Project conceptualization

This phase is at-times referred to as inception phase or programming phase depending on the nature and magnitude of the project. Critical to the start the project life cycle in the initiating process group is project conceptualization. Project conceptualisation is the first phase of the project cycle management. PCM is a method of managing the phases of the Project Cycle using project principles, tools and techniques. At each stage of the project life cycle, there are critical success factors required in terms of project knowledge compétences/areas, there principles, tools and techniques if such a phase is to undertaken successfully.

The project team needs to review the socio-economic indicators, partner countries and donor priorities. There is need to reach an agreement on sectoral and thematic focus for cooperation through formulation of feasible strategy. The input documents for this phase include but not limited to: country investment plans, donor registers and websites, organizational strategic plans, community needs assessments studies, baseline studies among others. The output for this phase is a project concept note (PCN)/paper also called a project charter.

If it is an inception, it outlines a methodology and timeline for execution of the project. It opines the project context, project logic model, the work-plan and an indicative methodology for execution. Agreement is reached how project work is to be directed and managed. Direct and Manage Project Work is the process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives. The key benefit of this process is that it provides overall management of the project work. Agreed to implementation strategy is documented in an inception report after an inception meeting. Another major purpose of this phase is that it sets limits and exclusions for project work so that during implementation, there is an agreed position. This ensures quality as project work will be performed within the scope, schedule and cost as per the work plan.

Prior to inception meetings, there are normally briefings and pre-start up activities. This aims at ensuring that all parties will remain committed to the project. Some other organizations call it a project launch meeting that will inform the start up sub-phase. Then the inception meeting is to review the project context and objectives and, if necessary, revise the implementation plan to fit with the current situation on the spot - specific objectives should not change, but the means of achieving them can be adjusted to take into account the changes since the terms of reference were drafted; the inception report is also a useful opportunity to identify key individuals for the project activities (e.g. to select the right trainers and target group for training) among others.

Inputs, tools and techniques and outputs

The inputs at this phase are: project implementation plans, approved change requests, enterprise environmental factors, organization process assets. The tools and techniques are expert judgment, project management information systems and meetings. The output of this phase to inform main implementation phase are deliverables, work performance data, change requests, project management plan updates, project document updates or summarized as a project charter.

Checklist for Drawing Up a Project Charter

A **Project Charter** is a concise and clear framework that summarizes the work done in the concept phase of the project. It is a summarized **presentation format** for project proposals. The charter comprises a checklist with the following questions:

1. What is the organisational rationale for the project?
2. Are the project objectives (outputs and expected accomplishment) clear and unambiguous?
3. What actions need to be done?
4. Who is going to do them?
5. What resources are required?
6. What is not going to be done?
7. Is everything feasible and realistic`?
8. Are outputs, expected accomplishment and objectives „measurable"? If so what measures should be used?

Below can be an outline of the project concept note/charter:

1. Project Name:
2. Background / Problem to be addressed
3. Intervention logic (project objectives, expected accomplishment and outputs)
4. Scope (point out „borderline issues")
5. Team/ Resource roles: Who does what?
6. Project Risk Assessment: Which ones have we anticipated? How are we planning to react to the major risks (design!!!)
7. Project Milestones: What needs to happen when? Include project review dates
8. (Achievement Measurement: How will we know if we've succeeded?)

Project principles, knowledge areas, tools and techniques

As noted, they key project management principles are this phase are assessing relevancy, effectiveness, efficiency and sustainability of projects as outlined below and this provides the assessment criteria of many projects:

- Projects are <u>relevant</u> to the real needs of beneficiaries because:
  - ✓ Beneficiaries are actively involved in the planning, implementation and M&E processes since the outset
  - ✓ Problem analysis is thorough
  - ✓ Goals are clearly stated
- Projects are <u>feasible and sustainable</u>; efforts are made to ensure that:
  - ✓ Outputs and objectives are logical
  - ✓ Risks and assumptions are taken into account
  - ✓ Monitoring helps adjusting implementation
  - ✓ Benefits will continue afetr the project
  - ✓ Results from evaluation are used to learn from experience and adapt the content of the project as well as reshape the new programming phase
- Efficiency
  - ✓ Analysis of how successful the project has been in transforming the means (the resources and inputs allocated to the project) through project activities into concrete project results.

- ▪ Effectiveness
  - ✓ Analysis on how well the production of project results contributes to the achievement of the project purpose.
  - ✓ Uses base-line information on the pre-project situation as a starting point

Key project knowledge management areas at this phase include project scope management also called scope definition or statement of works or specification of requirements. Using the ADDIE Model, it is the analysis phase where feasibility analysis is undertaken. Feasibility assess the viability of project idea, possibility of successful project completion, reasonable likelihood of successful completion and the constraints therein, achievability of the project idea and the project manager and team delve into the question, "*Will it work??*"

Feasibility

Feasibility is a reasonable like hood that constraints on time and other resources will not prevent the project from meeting its key intended objectives. It is also the capability of being done with the means at hand and circumstances as they are. The major purpose of feasibility is to assess the viability of a project idea-technically, operationally and economically. Many projects have failed because of detailed implementation before detailed feasibility analysis. By half life or mid-term or even before, the project develops malfunctions due to lack of feasibility assessment.

Feasibility assessment is the disciplined and documented process of thinking through a project idea or concept from its logical beginning to its logical end. For example, advancement from a flipped classroom to purely e-learning model may necessitate determining its potential to be a viable business given the realities of the economic and social environment in which it will operate. At phase, there is need to provide the client with a solid foundation upon which the project will be built. As a road to the project, it will provide:

1. Concept identification
2. Estimates of supportable market
3. Design parameters
4. Estimates
5. Revenue projections

6. Net warranted investment

Feasibility assessment will ultimately provide the scope statement which is one of the project management knowledge areas called project scope management. This assessment has to include:

1. Project Justification
2. Project Objectives
3. Major Deliverables
4. Criteria: Project/ or Phase Successfully Completed
5. Project limits and exclusions.

Types of feasibility

This section provides an outline of some of the types of feasibility that may be undertaken in consideration to start a new project or development intervention:

Technical Feasibility (TF)

This is the first systematic investigation of Project Design Viability. It is the Foundation of all other FS. It is an assessment of a Project's Capabilities. It is an investigation of Technical & Physical Parameters.

TF Reviews:
– Technical Capability of Human Resource
– Capability of Available at Technical side
– Foreign consultants Role
– Too rigid, & Advanced Technical Specifications
– Cannot be met by organization.

The question is "Can it be built?"

At this analysis, there is need to anticipate Broader Problems with Questions:

1. Adequate "**Choice of Available Technologies for Alternative Design"** purposes, considering:
   a. Physical layout
   b. Engineering design

c. Availability of raw materials?

2. **Costs of Construction and Operation**

   a. Machinery

   b. Equipment

   c. Spare Parts

3. **Manpower Requirement:**

   a. From professional to labor

   b. Locally available

   c. Responses vary – sector to sector

Primary task of TF is **Blueprinting:**

   a. Manpower needs

   b. Resources and design

   c. Provide design alternatives

   d. A Choice of available technologies and cost estimates for each alternative.

Administration Managerial Study (AMS)

This evaluates strategy of company in carrying out project activities. It provides information & Guidelines used to improve overall Project Administration.

The project manager in investigating the team examines 4 components:

   a. External linkages

   b. Internal organization

   c. Personnel

   d. Management plan

Economic Study (Econ S)

Economic study examines a proposed project in terms of net contribution to industry /economy and society and it addresses 3 related questions:

   a. R-Responsive to "urgent present or anticipated econ/social" need?

   b. P-Planned serve intended purpose?

   c. B-Benefits - justify project cost?

It requires a study of all of **Economic Implications of the project**:

a. Demand & Supply of All project outputs.

b. Ability to provide employment

c. "Multiplier" Effects (-Inc Purchase of goods Effect)

d. Use of Locally Available resources.

e. Assess project Net Contribution to Econ/social welfare of community.

f. Comparison of Economic & Social Benefits generated

g. Benefits > Costs of Project- Economically feasible (Benefit Cost Ratios-BCR, Profitability analysis/Profitability Index-PI, Net Present Value, Internal Rate of Return, Modified Net Present value etc are all conducted.

Financial Feasibility

Capability of Project Organization to Raise Funds to implement proposed project. This is different from economic feasibility.

Cultural Feasibility

Compatibility of Proposed Project vs cultural setup of Project environment.

Social Feasibility

Addresses influences of Project on Social System in Project Environment.

Safety Feasibility

Considered in Project Planning.

Analysis if Project is Capable of being Implemented and Operated Safely with Minimal Adverse effects on masses.

Environmental Feasibility

-Concern must be shown

-Action must be taken to address all environmental concerns raised or anticipated.

Political Feasibility

Referred - "Politically Correct Project." Political considerations often dictate direction for a proposed project.

Market feasibility

Market needs analysis to view:

a) Potential Impacts of Market Demand

b) Competitive Activities,

c) "Divertible" Market Share -Available

At conceptualization, other tools and techniques apart from feasibility studies include: baseline line studies also called ex-ante evaluations, pilot studies. All these are aimed at establishing the facts and figures about the proposed intervention.

2.1.2.2 Detailed planning

During detailed planning, project managers need tools and techniques to enable them structure the main components of development interventions (from social to commercial projects). Such tools include/; logical framework approach, theory of change, results chain, and logic models among others. This is based on the 21st century project management requirement of results based management. For any type of project, there must be clear assessment criteria to ascertain that results have been realized and therefore monitoring and evaluation frameworks are based. Unfortunately, many projects lack these tools and techniques and therefore measures cannot be established. This section provides a number of models and frameworks for easy results management.

The concept of results based management (RBM)

RBM is a management approach aimed to improve management effectiveness and accountability in achieving results. RBM is focused on chain results: output, outcomes, and impact. Its focus is on:

1. Analyzing problems and determining their causes;
2. Identifying measurable changes (results) to be achieved based on problem analysis;
3. Designing strategies and activities that will lead to these changes (results);

4. Balancing expected results with the resources available;

5. Monitoring progress regularly and adjusting activities to ensure results   are achieved

6. Evaluating, documenting and incorporating lessons learned into next planning phase;

7. Reporting on the results achieved and their contribution to achieving goals;

Alternative approaches to RBM:
1. Inputs
2. Activities
3. Success is measured by expenditure
4. Success is measured by the extent of goods/services delivered and the ratio of inputs to outputs.

Why Results-Based Management?
1. Resources are shrinking and increasing demand for better quality results
2. Increasing needs to improve efficiency and accountability for results
3. It is a global trend: using results-based management to improve the efficiency of development program

What is a result?

A result is a describable or measurable change that derived from a cause and effect relationship.

Result =   Change

Cause $\Longrightarrow$ Effect

Key results management terms

Input: these are human, material, financial and other resources that are required to undertake activities.

Activities: Actions taken or work performed to produce specific outputs through mobilizing inputs.

Output: these are immediate results as a consequence of completed activities

Outcome: these are likely or achieved short-term and medium-term effects of outputs.

Impact: long-term effects that are the logical consequence of the achievement of the outcomes.

The core of RBM is the results chain

The levels of results:

– short-term results or <u>outputs</u>;

– medium-term results or <u>outcomes</u>; and,

– Longer-term results or <u>impact</u>.

These are linked together into what is referred to as a results chain as illustrated in figure 1 below.
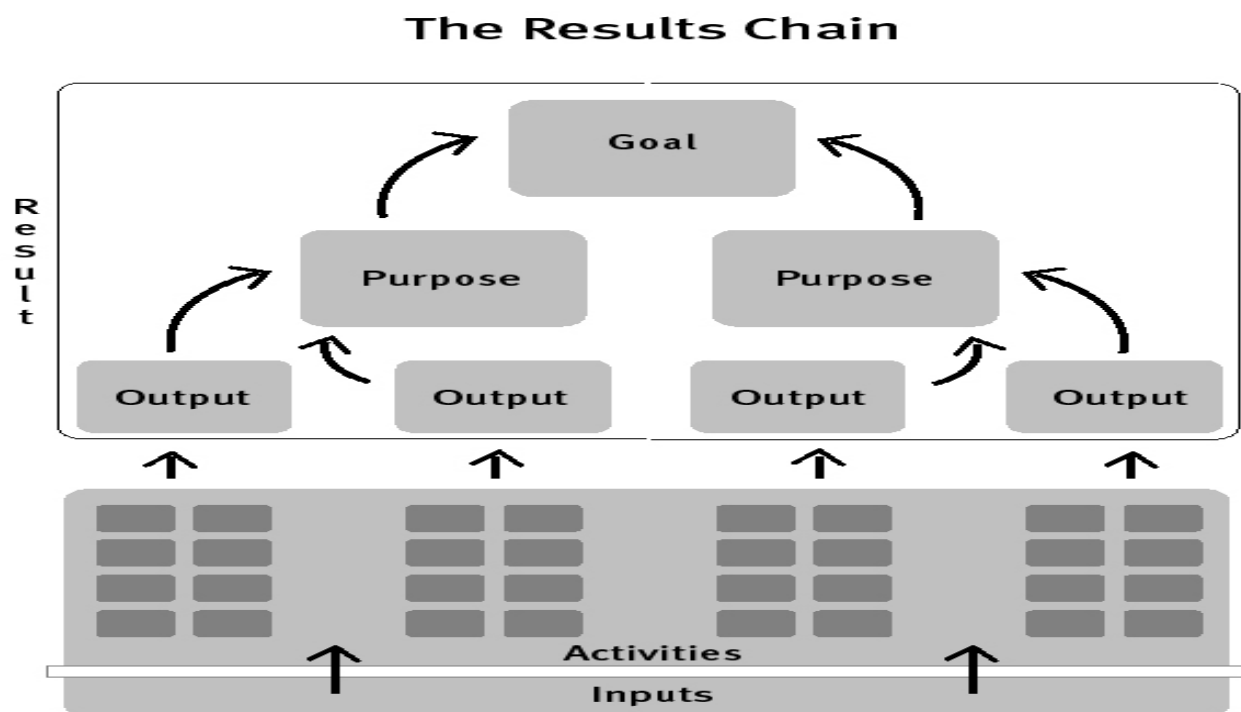
The Results Chain

Source: Author generated

Example of statistical training results chain for none statistical staff

Impact   Improved reliability, relevancy and timeliness of official statistics.

Outcome   Improved statistical capability of NS staff

Output   Improved knowledge and skills of participants

Activity   Conducting training courses for participants from East Africa

Input   Funding, equipment and facilities.

Table 1: Example of Improving Supply of Potable Energy Facilities

Impact	Improved health conditions in targeted communities.
Outcome	Improved access to sustainable energy services for target communities.
Output	Improved and renovated energy systems
Activity	Designing, constructing new energy facilities.
Input	Human resources, training, expert, funding etc.

Key principles of RBM

1. Define expected results first and activities later
2. Foster the active participation of stakeholders
3. Ensure that all stakeholders work towards achieving expected results
4. Apprise your work critically and learn the lessons

Hierarchy of RBM terms

IMPACT

Sustainable improvements in society or well-being of people

OUTCOME

Changes in behavior or improvements in access or quality of resources

OUTPUT

Product of project/ program activities

ACTIVITIES

Activities done by project/program

INPUT

Resources needed to undertake activities

RBM and Logical Framework Approach (LFA)

A logical framework matrix is a project management tool used to structure the main components of an intervention. It concentrates on ascertaining logical linkages between intended inputs, planned activities and expected outputs or results. It is also called Goal Oriented Project Planning (GOPP) or Objectives Oriented Project Planning (OOPP). The LFA is an RBM tool used for systematic planning, implementing, monitoring, and evaluating projects/ programmes.

Features of LFA:

The features of LFA are as follows:

1. Stakeholder involvement
2. Needs-based approach
3. Logical intervention approach
4. Framework for assessing relevance, feasibility and sustainability
5. Results-oriented – not activity driven
6. Logically sets objectives and their causal relationships
7. Shows whether objectives have been achieved: Indicators (for M&E)
8. Describes external factors that influence the project's success: assumptions and risks

Main steps:

The main steps for LFA strategy are as follows:

1. Stakeholder analysis
2. SWOT analysis
3. Problem tree analysis
4. Objective tree analysis
5. Logical framework matrix
6. Monitoring and evaluation

Stakeholder Analysis

Stakeholder is any individual, group or organization, community, with an interest in the outcome of a programme/project. This will be alluded to in subsequent chapter as project management knowledge area on its own.

Purpose of stakeholder analysis

The purpose is to identify:

1. The needs and interest of stakeholders
2. The organizations or groups that should be encouraged to participate in different stages of the project
3. Potential risks that could put at risk programme
4. Opportunities in implementing a programme

SWOT Analysis

SWOT stands for:

- Strengths - the positive internal attributes of the organisation
- Weaknesses - the negative internal attributes of the organisation
- Opportunities - external factors which can improve the organisation's prospects
- Threats - external factors which can undermine the organisation's prospects

The purpose of SWOT Analysis is as follows:

1. To assess the performance and capacity of the participating units, divisions of organization.
2. Each participating unit has to undertake SWOT analysis.
3. SWOT analysis is a tool for institutional appraisal and a brainstorming exercise in which the representatives of the organization participate fully.

Problem Tree Analysis

Purpose:

To identify major problems and their main <u>causal</u> relationships.

Output:

A problem tree with causes and effects

Steps in undertaking Problem Tree Analysis

Steps in undertaking problem tree analysis are as follows:

1. Identify the problems that the project will address.
2. State the problems in negative manner.
3. Group problems by similarity of concerns.
4. Develop the problem tree

   - chose a focal problem from the list and relate other problems to the focal problem.
   - If the problem is a cause of the focal problem it is placed below the focal problem.
   - If the problem is an effect of the focal problem it goes above.

Analysis of objectives

Analysis of objectives involves the following:

1. Transforming the problem tree into an objectives tree by restating the problems as objectives.
2. Problem statement converted into positive statements
3. The top of the tree is the end that is desired
4. The lower levels are the means to achieving the end.

The relationship between the problems tree and the objective tree is as follows:

Problem Tree	**Objective Tree**
a. Effects	Development objectives
b. Starter/focal problem	Project purpose
c. Causes	Results
d. Focal problem	Project purpose

Strategy Analysis

The aim of strategy analysis is division of the objectives tree into more consistent smaller sub-units that may, compose the core for a project. Each of the sub-units of the objective tree can

represent an alternative strategy for the future project. The project objectives set the framework for the strategy of the project.

Criteria for selection of the project strategy

1. Relevance the strategy corresponds to the needs of the stakeholders.
2. Effectiveness the lower level objectives of the strategy will contribute to achievement of the project purpose
3. Efficiency cost-effectiveness of a strategy in transforming the means into results.
4. Consistent with development policies
5. Sustainability of the project
6. Assumptions and risks

The Logframe Matrix

The logical framework matrix is used to present information about project objectives, outputs and activities in a systematic and logical way. The basic Logframe matrix contains 16 cells organized into 4 columns and 4 rows, as indicated in the next slide:

Logical Framework Matrix

Table 3: Showing the structure of the logical framework matrix

	Intervention logic	Objectively verifiable Indicators	Sources of verification	Assumptions/risks
Overall Objective	What is the general objective, to which the project will contribute ?	What are the key indicators related to the general objective?	What are the sources of information for these indicators?	What are general factors and conditions necessary to achieve these objectives? Which are the risks?
Project purpose (= specific objective)	What is the specific objective, to which the project will contribute ?	What are the key indicators related to the specific objective	What are the sources of information for these indicators?	What are general factors and conditions necessary to achieve these objectives? Which are the risks?

Expected results	What are the outputs envisaged to achieve the specific objectives?	What are the indicators to measure results achieved?	What are the sources of information for these indicators?	What factors and conditions necessary to obtain results? Which are the risks?
Activities	What are the activities to be carried out and in what sequence in order to produce the expected results?	**MEANS:** What are the means required to implement these activities	**Costs:** What are the costs to implement such activities	**Pre-conditions:** requirements to be met before the project starts

Planning stage of the logical framework approach

Intervention logic	Objectively verifiable Indicators	Sources of verification	Assumptions/risks
Overall Objective			
Project purpose			
Expected results			
Activities	**MEANS**	**COSTS**	**Pre-conditions:**

IF results are delivered, **AND** assumptions hold true, **THEN** the Project Purpose will be achieved.

Results Chain and Logical Framework Matrix

RBM		LFA

Result	◄·····························►	Goal/impact
Result	◄·····························►	Purpose/outcome
Result	◄·····························►	Output
Result	◄·····························►	Activities

Source: Author generated

Key: RBM Techniques

1. Start with the results
2. Determine indicators to measure progress towards achieving each result
3. Define explicit targets for each indicator to judge achievement
4. Collect information to verify/monitor the achievement/progress
5. Review, analysis and report actual results
6. RBM are good and useful techniques
7. But it won't work itself and not sufficient to achieve results
8. RBM depends on the organization's ability to create a management culture that is focused on results
9. Manage change in your organization

Developing indicators

An indicator is a quantitative or qualitative factor or variable that provides simple and reliable means to measure achievement, to reflect changes connected to an intervention, or to help assess performance of an actor.

Example:

Change of # of qualified and experienced teachers per 1000 children of primary-school age in area X in one year.

A good indicator: must be <u>verifiable</u> by the evaluator and a third party; must be <u>linked</u> to the results intended or to significant changes in the situation; must be <u>manageable</u> to collect, present and to track over time. *Some also want indicators to be, ''S.M.A.R.T.E.R'';* **S**pecific, **M**easureable, **A**chievable, **R**elevant, **T**imebound, **E**conomic, **R**ealistic.

2.1.2.3 Project implementation, monitoring and control

This sub-phase covers the core part of the project cycle; larger projects should have steering committee, long term projects are generally found to be more effective when they minimize the number of different short-term consultants. Progress towards a planned objective must be measured at different levels (project work team / managers, partner institutions, external monitor) by comparing actual results with planned targets using the specified indicators - it is inevitable to use regular and timely reporting, to ensure that the management team is aware of all relevant issues. The final Completion report then includes a summary of progress since the start and a section on lessons learned. It should also answer the comments made by the task manager and external monitors. During this phase, comparison is made to the baseline data that was generated at the initial design of the project during need identification and assessment. The projected results in the results chain and logical framework matrix are assessed to examine progress made so far since project start up. Reports generated can be process reports or progress reports. There can also be mid-term reports generated by external consultants. Without baseline data at this phase, it would imply measuring the immeasurable.

Progress reports with updated work plan and **Monitoring reports** reviewing progress towards the project results indicators - are to be regularly (at least yearly) written and assessed to enable remedial activities if need be. Steering committee or control day on the spot may be called before significant decisions are to be made. This phase requires review of the impact of all project changes and the implementation of approved changes:

• **Corrective action**—An intentional activity that realigns the performance of the project work with the project management plan;

• **Preventive action**—An intentional activity that ensures the future performance of the project work is aligned with the project management plan; and/or

• **Defect repair**—An intentional activity to modify a nonconforming product or product component.

Inputs, tools and techniques and outputs

The inputs of monitor and control project work are: project management plan, schedule forecasts, cost forecasts, validated changes, work performance information, organizational process assets, baseline surveys, feasibility studies. The tools and techniques are expert judgment, quantitative and qualitative analysis tools, project management information systems, meetings. The outputs are change requests, work performance reports, project management plan updates, project documents updates.

2.1.2.4 Project completion or closure

This is the final sub-phase in the implementation phase. Whether premature completion called termination or mature completion called finish, it remains completion. For successfully finished projects, recommendations made can be scaling up, replicating or transforming it into a programme. By scaling up, the same intervention or project is continued beyond the project life while for replicating, the same project is transferred to be implemented into another geographical location. Because project that end in a premature nature result into resource wastage, this section deals more on it to ensure future programming do not end up this way.

Project termination

A project can be said to be terminated when work on the substance of the project has ceased or slowed to the point that further progress is no longer possible. There are four fundamentally different ways to close out a project: extinction, addition, integration, and starvation.

Termination by extinction

The project may end because it has been successful and achieved its goals. The project may also be stopped because it is unsuccessful or has been superseded. A special case of termination by extinction is "termination by murder" which can range from political assassination to accidental projecticide. Two important characteristics of termination by murder are the suddenness of project demise and the lack of obvious signals that death is imminent; When a decision is made to terminate a project by extinction, the most noticeable event is that all activity on the *substance* of the project ceases.

Termination by Addition

If a project is a major success, it may be terminated by institutionalizing it as a formal part of the parent organization. Project personnel, property, and equipment are often simply transferred from the dying project to the newly born division. The transition from project to division demands a superior level of political sensitivity for successful accomplishment.

Termination by Integration

This method of terminating projects is the most common way of dealing with successful projects, and the most complex. The property, equipment, material, personnel, and functions of the project are distributed among the existing elements of the parent organization. In general, the problems of integration are inversely related to the level of experience that the parent or client has had with: the technology being integrated and the successful integration of other projects, regardless of technology. A few of the more important aspects of the transition from project to integrated operation that must be considered:

- **Personnel** - where will the team go?

- **Manufacturing** - is the training complete?

- **Accounting/Finance** - have the project's account been closed and audited?

- **Engineering** - are all drawings complete and on file?

- **Information Systems/Software** - has the new system been thoroughly tested?

- **Marketing** - is the sales department aware of the change?

Termination by Starvation

This type of project termination is a "slow starvation by budget decrement." There are many reasons why senior management does not wish to terminate an unsuccessful or obsolete project:

- Politically dangerous to admit that one has championed a failure

- Terminating a project that has not accomplished its goals is an admission of failure

When to Terminate a Project

Some questions to ask when considering termination:

- Has the project been obviated by technical advances?

- Is the output of the project still cost-effective?

- Is it time to integrate or add the project as a part of regular operations?

- Are there better alternative uses for the funds, time and personnel devoted to the project?

- Has a change in the environment altered the need for the project's output?

Fundamental reasons why some projects fail to produce satisfactory answers to termination questions: A project organization is not required, Insufficient support from senior management, Naming the wrong person as project manager, Poor planning. These and a few other reasons, are the base cause of most project failures. The specific causes derive from these fundamental issues.

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CHAPTER THREE
PROJECT IDENTIFICATION AND SELECTION STRATEGIES
Stephen Kyakulumbye

Introduction

Project identification and selection falls within the first project life cycle stage of project conceptualization and early state of planning; and the first two project management process groups (initiating and planning process groups). Quite often, project management team can be faced with a number of project alternatives upon which management requires scientific justification for the better or best viable option. There is therefore need for utilization of qualitative and quantitative identification and selection strategies of projects for candid management decision back up. This chapter offers an introduction to numeric and none-numeric project identification and selection strategies.

Non-Numeric project identification strategies

Project identification is the initial phase of the project development cycle. It begins with the conceiving of ideas or intentions to set up a project; These ideas are then transformed into a project. Clear project identification allows you to answers questions: How do the projects come about; Where do projects come from; and why are projects where they are?

Approaches to project identification

There are two major approaches to project identification Top-down and Bottom-up approaches

Top-down approach

1. Projects are identified based on demands from beyond the community.
2. This may include directives from:
   o International conventions (such as Kyoto Protocol/climate change).
   o International institutions or NGOs that have determined particular priorities and thus projects.
   o National policy makers identifying projects that pertain to party manifestos and/or national plans.

Advantages of top-down approach

1. It may be a rapid response to disasters like floods, war outbreak because there is limited time and chance to consult the beneficiaries.
2. It can be effective in providing important services like education, health, water, roads etc.
3. It can contribute to wider national or international objectives and goals
   o and therefore potentially be part of a wider benefit
   o (as in the case of trans-boundary resources, such as climate, water or others)

Limitations of top-down approach
1. Does not help in modifying strongly established ideas and beliefs of people.
2. Assumes external individuals know better than the beneficiaries of the service.
3. Communities have little say in planning process rendering approach devoid of human resource development.
4. Community develops dependency syndrome on outside assistance and does not exploit their own potential.
5. The development workers (change agents) become stumbling blocks to people-led development tendency to impose their own biases, etc. on people

Bottom-up approach
In this approach community/beneficiaries are encouraged to identify and plan the projects themselves with or without outsiders**.**

Advantages of bottom-up approach
1. Interveners accomplish more with limited resources since people tend to safeguard what they have provided for themselves.
2. Develops people's capacity to identify problems and needs and to seek possible solutions to them.
3. Provides opportunities of educating people.
4. Helps people to work as a team and develop a "WE" attitude - makes project progressive and sustainable.
5. Resources are effectively managed; dependence reduces, there is increased equity, initiative, accountability, financial and economic discipline.

Limitations of bottom-up approach
1. Not always effective for projects that require urgency to implement
2. Time-consuming and requires patience and tolerance.
3. People sometimes dislike approach because they do not want to take responsibility for action.
4. The agency using this approach is never in control and cannot guarantee the results it would want.
5. The priorities of communities may not fit with national or international priorities that seek to have a broader impact

Top-down approaches to project identification
1. The Household (Socio-Economic) Survey
1. Studies social and economic situations of a given area for instance climate, geographical set-up, economic activities, political set up, education system, culture, diet, social services, physical infrastructure etc.
2. Method is popular with the UBOS.
3. Uses questionnaires, interviews, documentation, and direct observation.
4. Data is collected, processed and analyzed and projects are then identified

2. Rural Rapid Appraisal
This is referred to as Rapid Rural Appraisal (RRA) when carried out in a rural areas, and Rapid Urban Appraisal (RUA) in an urban area.
1. Method collects and assesses data quickly using any data collection techniques.
2. Primary purpose is to acquire the information in the shortest time possible and it lowers the cost. It is rapid because investigation, assessment and identification of projects are done at the same time.

Rapid appraisal uses the following data collection techniques:
1. Analysis of secondary data sources
2. Interviews
3. Direct observation at site
4. Visualization of Resources like social organizational maps and time series maps.

3. Needs Assessment Survey (NAS)
This is also referred to as **situation analysis** (SITAN).
- It involves:-
- Fact finding about problems or needs in a given area or community.
- Finding out what is lacking in a given area or community.
- Investigating a situation in a given area.
NAS is carried out to:
- ✓ Find out the problem in a given community so as to identify the most appropriate solution (s)/project (s) to solve the problem (s) in question.
- ✓ Analyze the causes of the problems and seek likely solutions to the problems leading to project identification.

Bottom-up approaches to project identification
1. Animation
This is a process of stimulating people to become more aware and conscious of problems they suffer from.

- o to gain confidence in their ability to deal with these problems and take initiatives to improve situation.
- o Animation makes the community better understand and be prepared to overcome its problems and take decisions with full responsibility.
- ✓ Carried out by **Animators / Helpers** / **Change agents**.
    - o **(Internal Animators** if they come from within the community or **External Animators** if from outside.)

2. Facilitation/Community action
- ✓ an attempt to assist people to get over problems by (say) training them in certain skills, providing them with the needed information e.g. market information, linking them up with relevant agencies and organizations to improve access to the needed resources etc.

3. Participatory Appraisal
- ✓ Project identification should be participatory, and should involve local communities in identifying and prioritizing their needs.
- ✓ The DTPC should consider the views of the communities during the screening and selection of various project proposals and the selection of the preferred proposals for implementation.
- ✓ PRA (participatory rural appraisal) when carried out in rural areas; and PUA (participatory urban appraisal) when carried out in urban areas
- ✓ PRA/ PUA can be described as a family of approaches, methods and behaviours that enable people to express and analyze the realities of their lives and conditions, to plan for themselves what action to take, and to monitor and evaluate the results.
- ✓ The key to PRA/PUA is that the only external involvement is in facilitation. The communities themselves determine the issues, priorities and courses of action.

Non-Numeric Project Selection Methodologies
Non-numeric Project Selection does not use numbers. "Easy to dismiss such models as unscientific (but) they should not be discounted casually. These models are clearly goal-orientated and directly reflect the primary concerns of the organisation"
Generally used when limited information is available or selection process must be completed quickly. Examples:
- o Sacred cow,
- o Operating necessity,
- o Competitive necessity,
- o Product line extension,
- o Comparative benefit model.

Sacred Cow

- ✓ projects - idea from top & influential management
- ✓ *Maintained until successfully concluded, or until the boss, personally, recognises the idea as a failure and terminates it.*"
- ✓ Maybe inappropriate, but supported by top management and this *is "an important contributor to project success*

Operating Necessity

- ✓ projects embarked upon with little management discretion
- ✓ eg collapsing wall
- ✓ Major consideration- is cost justified.? "*If yes, costs kept as low as is consistent with project success, but project will be funde*d"

Competitive Necessity

- ✓ Project selected to maintain organisation's position &/or survival eg: upgrade ageing production equipment to counter developments from its competitors.

Product Line Extension

- ✓ Project to develop new product - not be selected based on profitability but "*would be judged on the degree in which it fits the firm's existing product line, fills a gap, strengthens a weak link, or extends the line in a new, desirable direction*"

Peer review

- ✓ Management want unbiased external assessment of proposed project.
- ✓ Peer review = send proposal to experts to assess technical merits
- ✓ Experts submit independent recommendations, or panel
- ✓ Common in scientific areas particularly government funded R&D project proposals.
- ✓ Advantages - assessment is expert and objective
- ✓ However "peer review has long been criticised as a highly subjective approach that is susceptible to distortions, such as bias in favour of an old boy network"

Comparative Benefit Model

- ✓ Used to select between diverse projects not easily comparable.
- ✓ Allows a ranking to be obtained, even though it may not be possible to evaluate the projects against every project-selection factor. Examples:
    - o Q-sorting.
    - o Forced comparison,
    - o Peer review

- o Murder board
- o Grid profiling,
- o Profile modelling

Q-<u>Sorting</u>

This is a structured group process where each person is given set of project cards. Steps:
1. Each person sorts cards into <u>HIGH</u> or <u>LOW</u> priority– based on criteria
2. Cards reviewed & MEDIUM-priority projects extracted
3. HIGHs = HIGH or VERY HIGH. LOWs = LOW or VERY LOW. Now 5 piles
4. Results from all group members grouped & displayed.
5. Results surveyed by each person who can shift any card
6. Results displayed. Opportunity for members to reach consensus.
7. VERY HIGH first considered for funding
8. Group processes often deeply influenced by behavioural factors which Q-sorting tries to overcome.
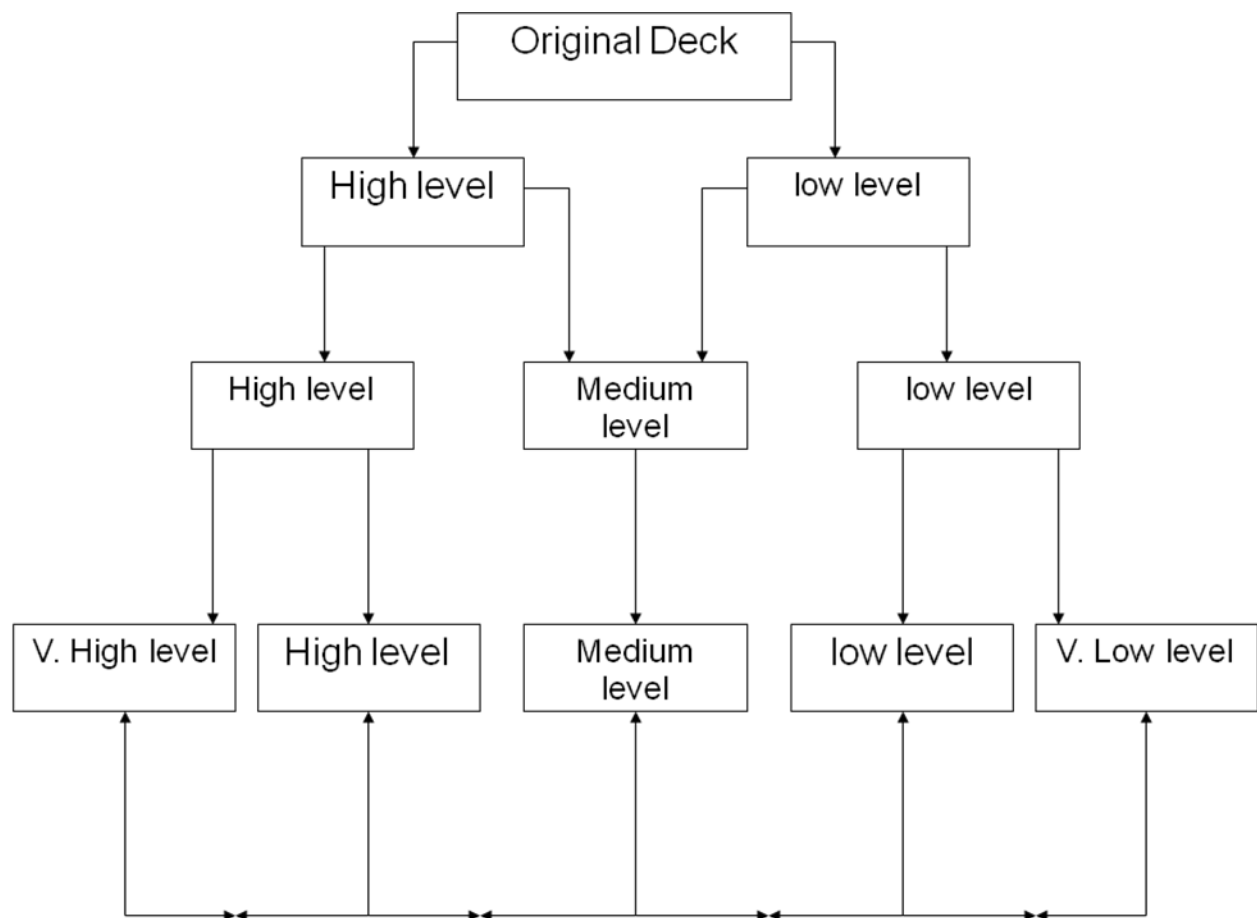
Forced comparison
- o Each department ranks projects they wish to take to selection board,
- o Each department's top-ranked project is compared to every other department's top-ranked project.
- o Board "selects one project based on their collective opinion as to the overall value of the project obtaining the organisation's objectives"
- o As 1 project selected, that department introduces next project which is then compared to top-listed projects of other departments.
- o Process continues until all projects have been ranked.
- o Number of projects selected for approval will be based upon the availability of organisational resources

Profile model
- o Rates projects qualitatively. No numerical assessments are made
- o Easy to read and quickly understood presentation.
- o Disadvantage - fails to inform whether a project scoring HIGH in certain criteria outweighs its medium & low scores in other criteria.
- o "Thus, there is no way to get a single overall score or rating for each project.

Grid profiling

This is based on 4 project selection criteria most effective for selection purposes:
1. financial benefits,
2. technical benefits
3. enhancement of core competencies
4. harmony with corporate culture
   - o Grid A - financial benefits - each project placed in cell to reflect its expected level of costs and financial benefits.
   - o Process is followed for Grids B, C, D.
   - o Then overall assessment made by selection team.
   - o Not too analytical - trust collective insights. "Spent substantial time reviewing proposals and now know each project intimately"
   - o Final step - allocate each proposal in a generic 'super' benefit-coat grid. - "when all is said and done, which cell does each belong in?

Murder board
- o Panel of people from different parts of organisation who strongly scrutinise project proposals.
- o "they should tear it apart and try to show how it is not workable"
- o Proposer must present & defend project before the panel.

- o Purpose - "not to punish & humiliate project champion but rather to distinguish between solid and shaky propositions ... the murder board serves the function of 'reality check' "
- o Usually used in conjunction with other selection methodologies, such as a profile model, grid.

Numeric Project Selection Strategies

Quite a number of scientific quantitative models are available to make informed decision during the project selection endeavors. These include: payback period, net present value, internal rate of return among others. These are available because of the concept of time value for money during project implementation.

Reasons for time preference for money

Money has time value. A shilling today is more valuable than a shilling a year to come. Why?
- ▪ Individuals prefer current consumption to future consumption
- ▪ Capital can be employed productively to generate positive returns. An investment of one shilling today would grow to $(1+r)$ a year hence (r is the rate of return earned on an investment)
- ▪ An inflationary period a shilling today represents a greater real purchasing power than a shilling a year.

Why time value for money (TVM)?

If investors prefer money today, than the same amount of money tomorrow, then for the investor to part with money today, they need to be compensated for an opportunity cost associated with future receipts. This compensation is **Interest or rate of return on investment**

Future value of a single amount

Suppose you invest shillings 1,000 for three years in a savings account that pays 10% interest per year. If you let your income to be re-invested, what will be you investment after 3 years?

First year: Principle at the beginning   1,000
                       Interest for the year (1000 x 0.10)=100
                       Principle at end   Shs 1,100
Second year: Principle at beginning   1,100
                       Interest for the year (1,100x0.10) =110
                       Principle at end of the year = 1,210
Third year: Principle at beginning   1,210
                       Interest for the year (1,210x.10) = 121
                       Principle at end   = 1,331

Compounding

What we have done is called compounding (adding on principle to generate new principle)

PV is present value or principal

r is the rate of interest per annum (compounding factor)

Interest earned in a year $= PVr$

After one year will be $PV + (PVr) = PV1$ where 1 is first year

After 2 years $= PV1 + (PV1r) = PV2$

PV after 2 years becomes $PV2 = PV1 + PV1r$ if PV is compounded at r% per annum

But $PV1 = PV + (PVr) = PV(1+r)$

$\quad\quad PV2 = PV1 + PV1r = PV1(1+r)$ but $PV1 = PV(1+r)$

$\quad\quad\quad\quad = PV(1+r)(1+r) = PV(1+r)^2$

$\quad\quad PV3 = PV(1+r)^3$ PV after n years becomes FVn ie $(1+r)^n$ is called future value interest factor or future value factor.

Therefore $FVn = PV(1+r)^n$

Solving future value problems
- To solve future value problems, find future value factors
- First for example above you can multiply 1.10 by itself three times or more generally $(1+r)$ by itself n times. This is tedious when investment period is long
- Easy way: Use calculators that have x^y. Enter 1.10, press the key labelled x^y. Enter 3 and press the = key to obtain the answer
- Use the future value interest factor table (FVIF)

Problem

Suppose you deposit shillings 10,000 today in a bank which pays 10% interest compounded annually, how much will the deposit grow to after 8 years?

$FVn = PV(1+r)^n$ where FVn is the future value of an amount after n years, r is the rate of interest and n is the number of years.

$\quad\quad = 10,000(1 + 10/100)^8$

$\quad\quad = 10,000 (1.10)8$

$\quad\quad = 10,000 (2.144) =$ shillings 2,144

Present value of a single amount

Suppose someone promises to give you shillings 10,000 three years later. What is the present value of this amount if the interest rate is 10%? The present value can be calculated by discounting shillings 10,000 to the present point of time as follows:

Value three years = shillings 10,000/=

Value two years = shillings 10,000 (1/1.10)

This continues downwards.............

The formula is the inverse of compounding.

Discounting

$FV_n = PV(1+r)^n$

$FV_n/(1+r)^n = PV$

The factor $1/(1+r)^n$ is called the discounting factor or the present value interest factor $(PVIF_{r,n})$. The present value for a promise of shillings 10,000 10%,3 will be10,000 x $PVIF_{r,n}$ = 10,000 x 0.565

=5,650/=

What is the present value of Shs 10,000 receivable 20 years if the discount rate is 8%? If $PVIF_{r,n}$ is not in table use:

Shs $10,000(1/1.08)^{20}$ =$10,000(1/1.08)^{10}(1/1.08)^{10}$

= Shs 10,000 (PVIF8%,10)(PVIF8%,10)

= Shs 10,000 (0.463)(0.463)

=Shs 2,140

Time value for money: Annuities

Future value of an annuity

An annuity is a stream of constant cash flows (payments and receipts) occurring at regular intervals of time. The premium payment of a life insurance policy are an annuity. When the cash flows occur at the end of each period, the annuity is called an **ordinary annuity or a deferred annuity.** When the cashflows occur at the beginning of the period, the annuity is called an **annuity due.** We shall focus on deferred annuity

1. Example: Suppose you deposit Shs 100,000 annually in bank for 5 years and your deposits earn a compound interest of 10%. What will be the value of a series of deposits (an annuity) at the end of the five years?

The future value of this annuity will be:

$FVA_n = A[(1+r)^n -1]/r$ where FVA_n is the Future Value of an annuity which has a duration of n periods, A is the constant periodic flow, r is the interest rate per period and n is the duration of the an annuity.

The term $[(1+r)^n -1]/r$ is referred to as the **future value interest factor** for an annuity $(FVIFA_{r,n})$

Therefore future value of an annuity = $FVn = A [(1+r)^n -1]/r$

The accumulated sum will be 100,000 (FVIFA10%, 5years)

100,000[(1.10)5-1]/10

100,000(6.105)

$$610,500/=$$

2. **Knowing what lies in the store for you**: Suppose you have decided to deposit 300,000/= per year in your public provident fund account for 30 years. What will be the accumulated amount in your provident public fund account at the end of 30 years if the interest rate is 11 percent?

The accumulated will be:

300,000 (FVIFA11%,30years)

$300,000 (1.11)^{30}-1)/.11$

300,000 (199.02)

$50,970,600/=$

3. **How much should you save annually:** You want to buy a house after 5 years when it is expected to cost 20 million. How much should you save annually if your savings earn a compound return of 12%?

FVIFAn=5, r=12% $= (1+0.12)^5-1/0.12 = 6.353$

The annual savings should be 20,000,000/6.353 = 3,148,120/=

4. **Annual deposit in sinking fund: :** A company has an obligation to redeem 500,000 million worth of the bonds 6 years hence-from now. How much should the company deposit annually in a sinking fund account where it earns 14% interest to accumulate 500,000 million in 6 years time?

FVIFAn=6, r=14% = $(1+0.14)^6-1/0.14 = 8.536$

The annual sinking fund deposit should be 500,000/8.536 = 585,750/=

5. **How long should you wait**: You want to take up a trip to USA which costs 6,000,000. The cost is expected to remain unchanged in nominal terms. You can save annually 500,000 to fulfil your desire. How long will you have to wait if you have to wait for your savings earn an interest of 12%?

The future value of an annuity of 500,000 that earns an interest of 12% is equated to 6,000,000

500,000 x FVIFAn=?, 12% = 6,000,000

500,000 x $(1.12^n -1)/0.12 = 6,000,000$

$1.12^n -1 = 6,000,000/500,000$ x 0.12 =1.44

$1.12^n\quad = 2.44$

n log 1.12 = log 1.44

n x 0.0492 = 0.158/0.0492

n = 3 years approx 3 months

Present value of an annuity

Suppose you expect to receive 1,000,000 annually for 3 years, each receipt occurring at the end of the year. What is the present value of this stream of benefits if the discount rate is 10%?

The present value of this annuity is simply the sum of the present values of all the inflows of this annuity.

PVAn = A{[(1+r)^n-1]/r(1+r)^n} _____

[(1+r)^n-1]/r(1+r)^n is referred to as the present value interest factor for an annuity (PVIFAr,n).

Application

How much can you borrow for a car: After reviewing your budget, you have determined that you can afford to pay $12,000 per month for three years towards a new car. You call the finance company and learn that the going interest on car finance is 1.5% per month for 36 months. How much can you borrow?

To determine how much you can borrow, we have to calculate the present value of $12,000 per month for 36months at 1.5% per month.

PVIFA$_{r,n}$ =(1+r)^n-1/r(1+r)^n = (1+0.015)^{36}-1/0.015(1+0.015)^{36}=27.70

This is multiplied by A which is $12,000 x 27.70 = $332,400

You can therefore borrow $332,400 to buy a car.

Period of loan amortization

Most loans for financing projects are paid in equal periodic installments (monthly, quarterly, or annually), which cover interest as well as principle repayments. Such are referred to as ***amortized loans.*** During project selection, it is imperative to think about how selected projects will be financed and one source is debt financing.

Example:

You want to borrow USD 1,080,000 to buy a flat. Your approach Centenary Bank which charges 12.5% interest. You can pay USD 180,000 per year towards loan amortization. What should be the maturity period of the loan?

The present value of annuity of USD 180,000 is set to equal to USD 1,080,000.

   PVAn = A{[(1+r)^n-1]/r(1+r)^n}

   PVAn = present value of an annuity which has a duration of n periods

   A= constant periodic flow

   r= discount rate.

   PVIFAn,r is the present value interest factor of an annuity for n years a r interest rate = {[(1+r)^n-1]/r(1+r)^n}

   180,000 x PVIFAn,r =1,080,000

   180,000 x $\dfrac{1.125^n - 1}{0.125(1.125)^n}$ =1,080,000

   $[0.125(1.125)^n]$ $\dfrac{1.125^n - 1}{0.125(1.125)^n}$ =6 $[0.125(1.125)^n]$

$1.125^n - 1 = 0.75 \times 1.125^n$
$0.25 \times 1.125^n = 1$
$1.125^n = 4$
$n\log 1.125 = \log 4$
$n \times 0.0512 = 0.6021$
$n = 11.76$ years approximately 12 years.

Determining the loan amortization schedule

For an amortised loan, one would like to establish a) the periodic instalment payment and b) the loan amortization schedule showing the breakup of the periodic instalment payments between the interest component and the principle repayment component.

Illustration: Suppose you want to finance your project and you decide to borrow USD 1,000,000 at an interest of 15% and the loan is to be paid in 5 equal instalments payable at the end of each of the next 5 years. The annual instalment payment A is obtained by:

Loan amount = A X PVIFAn=5, r=15%

$\qquad$ A X $\{[(1+r)^n - 1]/r(1+r)^n\}$

1,000,000= A X 1.0113571875/0.301703578125

$\qquad$ 1,000,000 = 3.352A

A=298,329

The interest component is the largest for year 1 and progressively declines as the outstanding loan amount decreases.

Year	Beginning amount (1)	Annual instalment (2)	Interest (3)	Principal repayment (2)-(3)=4	Remaining balance (1)-(4)=(5)
1	1,000,000	298,329	150,000	148,329	851,671
2	851,671	298,329	127,751	170,578	681,093
3	681,093	298,329	102,164	196,165	484,928
4	484,928	298,329	72,739	225,590	259,338
5	259,338	298,329	38,901	259428	-90

Small balance -90 is due to the rounding off error, otherwise it would be zero.

Investment criteria

The key steps involved in determining whether a project is worthwhile or not are: estimating the costs and benefits of the project; assessing the riskiness of the project; calculating the cost capital and computing the criterion of merit and judge whether the project is good or bad. There is a discounting criteria and non-discounting criteria as seen in the figure below:

```
                              ┌──────────────────────┐
                              │ Investment criteria  │
                              └──────────────────────┘
              ┌──────────────────────┐      ┌──────────────────────┐
              │ Discounting criteria │      │   Non-discounting    │
              └──────────────────────┘      └──────────────────────┘
   ┌──────────┐  ┌──────────┐  ┌──────────┐  ┌──────────────┐  ┌────────────┐
   │ Net      │  │ Benefit  │  │ Internal │  │ Payback      │  │ Accounting │
   │ present  │  │ cost     │  │ rate     │  │ period       │  │ rate of    │
   │ value    │  │ ratio    │  │ of return│  │              │  │ return     │
   └──────────┘  └──────────┘  └──────────┘  └──────────────┘  └────────────┘
```
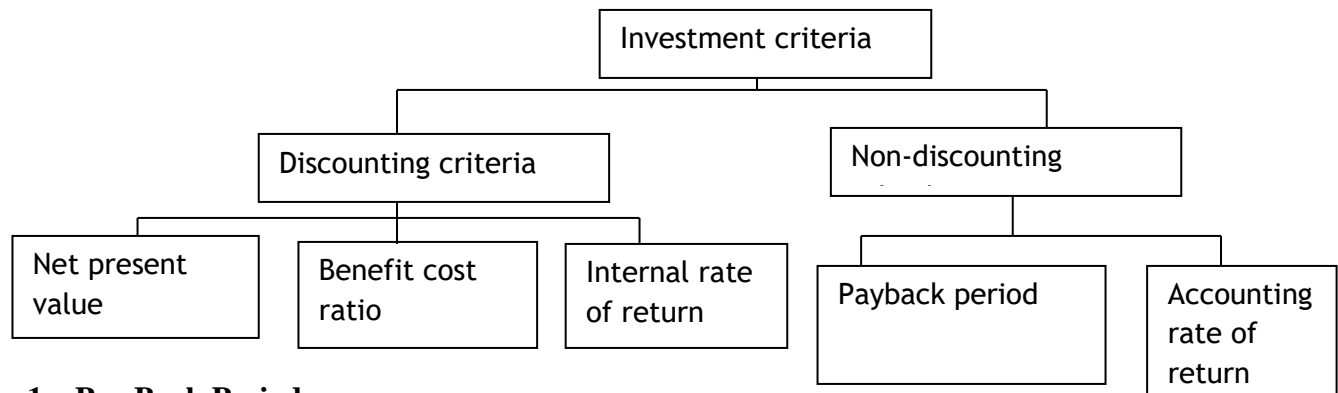
1. Pay Back Period

This is the minimum time in which the investment/project repays/recoups the initial investment. For instance if initial investment is shillings 600 million, the Project earns net benefits cash as:

Year	Amount
1	150 m
2	300 m
3	100 m
4	50 m
5	200 m

Example 2:

Project A (600 M)   Project B (800 M)

Year	Net cash inflows	
1	200	300
2	150	200
3	150	200
4	150	200
5	150	200

a) Find the payback period of each project
b) Which project should be recommended for funding?

Therefore project B is better viable because it has less payback period.

Payback Period Methodology

- Determine the yearly net cash flows (NCF)

- Reduce the initial investment with the net cash flows until you have a zero balance
- The year and month this happens is the payback period

Selection criteria for PBP
- Choose the project with the least PBP if the two projects are mutually exclusive (they can't take place at the same time)
- If the two projects are independent, then we choose one or two depending on the cutoff point

Advantages
- It is simple to understand
- It is cheap to compute
- it tells the minimum time to which our funds are at risk

Disadvantages
- It is not a measure of profitability
- PBP ignores the net cash flows after PBP
- PBP takes time to the only consideration, that other issues are less important

Way forward to cub disadvantages is to have a project score card

Issues	Score eg /10	Project score
1		
2		
Etc		

Net Present Value (NPV)

This is the sum of the present values of all the cash flows (positive and negative) that are expected to occur over the life of the project less initial investment and given by the formula:

NPV of a project = $\sum_{t=1}^{n} C/(1+r)^t$-Initial investment where C_t is cash flows at the end of year t; n=life of the project; r=discount rate.

Example

Project A had initial investment of 600 M and DF is 15%

NCF Year 1   200M

        2   150 M

        3   150 M

| 4 | 150 M |
| 5 | 150 M |

Methodology of NPV

1. Determine the Net cash flows
2. Determine the cost of capital and therefore the discount rate
3. from discount rate, generate the discount factors for a number of years
4. apply the discount factors to the net cash inflows to generate the present values
5. total the present values
6. subtract the initial investment from the total present value to obtain the NPV
7. The selection criteria if two projects have the same initial investment and are mutually exclusive, choose the project that has a higher positive NPV
8. If they are independent, then both projects could be chosen if they satisfy the selection criteria.

Advantages of NPV

NPV are additive

It is a sum of the net present values of individual projects included in the package

Intermediate cash flows are invested at cost of capital

NPV rule permits time-varying discount rates ie discount rates may differ time form time and the formula is: NPV of a project $= \sum_{t=1}^{n} C/(1+r)^t$-Initial investment

In more general forms NPV of a project $= \sum_{t=1}^{n} C/\pi_{j=1}^{t}(1+r_j)$-Initial investment where $r_j=$ one period discount rate; π=constant interest rate

Discount rate	14%	15%	16%	18%	20%
Investment cashflow	4,000 5,000	7,000		6,000	5,000

-12,000

PV of C_1 =4,000/(1.14) 3509

PV of C_2 =5,000/(1.14*1.15)..3814

PV of C_3 =7,000/(1.14*1.15*1.16)..4603

PV of C_4 = 6,000/(1.14*1.15*1.16)..3344

PV of C_5 =5,000/(1.14*1.15*1.16*1.18)..2322

Sum to get PV...

OR NPV of the project = (3509+3814+4603+3344+2322)-12,000

$$=5592$$

- It is a measure of profitability
- it takes into consideration time value of money
- it is simple
- it can be calculated even where we don't have benefits

- Some projects have multiple internal rates of return, in this case the best measure of profitability is NPV because it is unique

  ie IRR is the rate of discount that equates/brings NPV to zero. It is also called the YIELD. It is the rate of internal profit generation of the project.

Disadvantages
- We assume that the discount rate remains the same during the project period
- NPV only takes profits as the only important consideration and ignores others
- it is not easy to zero down to cost of capital

Modified Net Present Value

The standard net present value method is based on assumption that the intermediate cashflows are re-invested at a rate of return equal to the cost of capital. When this assumption is not valid, the re-investment rates applicable to the intermediate cash flows need to be defined at for calculating the modified net present value. The steps involved are as follows:

Step 1: Calculate the terminal value of the project's cash inflows using the explicitly defined re-investment rates which is supposed to reflect the profitability of the investment opportunities ahead of the firm.

$TV=\sum_{t=1}^{n} CF_t(1+r^{'})^{n-t}$ where TV=terminal value of the project's cash inflows; CF_t=cash flows at the end of year t; $r^{'}$=re-investment rate applicable to the cash inflows of the project

Step 2: Determine the modified net present value

$NPV^{*}=TV/(1+r)^{n}-IV$ (Investment outlay) where NPV^{*}=modified net present value; TV=terminal value; r=cost of capital; I=Initial outlay.

Consider two projects:

	Project X	Project Y
Investment outlay	110,000	110,000
Cash inflows		
Year 1	31,000	71,000
Year 2	40,000	40,000
Year 3	50,000	40,000
Year 4	70,000	20,000

The NPV^{*} for X and Y may be calculated for two re-investment rates, 14% and 20% assuming the cost of capital of 10%.

$TV(X)_{14\%}=31,000(1.14)^{3}+40,000(1.14)^{2}+50,000(1.14)+70,000=224,911$

$TV(X)_{20\%}=31,000(1.2)^{3}+40,000(1.2)^{2}+50,000(1.2)+70,000=\ 241,168$

$TV(Y)_{14\%}=71,000(1.14)^{3}+40,000(1.14)^{2}+40,000(1.14)+20,000=223,911$

$TV(Y)_{20\%}=71,000(1.20)^{3}+40,000(1.20)^{2}+40,000(1.20)+20,000=249,488$

Step 2: The NPV^{*} for X and Y for the two re-investment rates are:

The NPV* (X)$_{14\%}$= TV(X)$_{14\%}$ /(1.10)^4-110,000= 43,614
The NPV* (X)$_{20\%}$= TV(X)$_{20\%}$ /(1.10)^4-110,000= 54,717
The NPV* (Y)$_{14\%}$= TV(Y)$_{14\%}$ /(1.10)^4-110,000= 42,931
The NPV* (Y)$_{20\%}$= TV(Y)$_{20\%}$ /(1.10)^4-110,000= 60,000

Cost Benefit Ratio

There are two ways of defining the relationship between benefits and costs:

Benefit Cost ratio: BCR=$\sum$PVB/I

Net Benefit Cost Ratio: NBCR =PVB-1/I =BCR-1 where PVB= present value of benefits I=Initial investment.

Consider a project being evaluated by a firm that has a cost of capital of 12%.

Initial Investment		100,000
Benefits	Year 1	25,000
	Year 2	40,000
	Year 3	40,000
	Year 4	50,000

The benefit cost ratio [25,000/(1.12) + 40,000/(1.12)^2 + 40,000/(1.12)^3 + 50,000/(1.12)^4]/100,000=1.145

NBCR=BCR-1=0.145

Rules for decision:

When BCR	or	NBCR	Rule is
>1		>0	Accept
=1		=0	Indifferent
<1		<0	Reject

Internal Rate of Return (IRR)

This is the discount rate that equates NPV =0 or equates the present value of future cashflows with the initial investment. It is the value of r in the following equation

Investment $==\sum^n_{t=1} C_t/(1+r)^t$ where C_t =cash flows at the end of the year t

r=internal rate of return

n=life of the project

Year	0	1	2	3	4
Cash flow	(100,000)	30,000	30,000	40,000	45,000

The process involves extrapolation and interpolation (try and error)

1. Determine the net present value of the two closest rates of return
   NPV/15% =802
   NPV/16% =1,359

2. Find the sum of the absolute values of the net present values obtained in step 1.
   802 + 1,359 =2,161

3. Calculate the ratio of the net present value of the smaller discount rate identified in step 1 to the sum obtained in step 2. If use higher value, subtract from 16%.

   $802/2,161 = 0.37$

4. Add the number obtained in step 3 to the smaller discount rate.

   $15 + 0.37 = IRR = $ **15.37%.**

Accept: If IRR is greater than the cost of capital

Reject : If IRR is less than the cost of capital

Cost of capital

Is the cost of money you are employing in your business/project. Suppose ABC has capital of 500 million ie 300 million from circles at interest of 50% and 200 million from bank at interest of 30%. Cost of capital computed would be the weighted cost of capital as 50% + 30%/2 = 40%

This is not true; we need to consider weights.

Weighted average cost of capital K

$= \dfrac{50\% \text{ X } 300 \text{ (WEIGHT 1)} + 30\% \text{ X } 200 \text{ (WEIGHT 2)}}{300 + 200}$

$150 + 60 / 500 = 0.42 = 42\%$

Rate of return for a profitable venture should be greater than the cost of capital.

Project Selection Under Risk

Incorporating risk in the decision process involves the following:

a) Judgmental evaluation
b) Payback period requirement
c) Risk profile method
d) Certainty equivalent method
e) Risk adjusted discount rate

Judgmental evaluation

No use of any formal method for incorporating risk in the decision making process. Managers only assess the risk and risk characteristics using some of the following tools and techniques:

✓ Documentation
✓ Brainstorming
✓ Delphi technique
✓ Interviewing
✓ Root cause identification/cause-effect
✓ SWOT analysis

Payback period requirement

For risky projects, a shorter payback period is required even if NPV is positive or the IRR exceeds the hurdle rate. This approach assumes risk as a function of time.

It is true the further a benefit lies in the future, the more uncertain it is likely to be because economic and competitive conditions tend to change over time.

Risk profile method

Managers transform the probability distribution of the NPV into probability distribution of profitability index and then compare the dispersion of the profitability index with the maximum risk profile acceptable to management.

The higher the expected value of profitability index, the greater the dispersion that is acceptable to management. If the profitability index is high, the probability that NPV is negative is negligible.

Risk adjusted discount rate

This calls for adjusting the discount rate to reflect project risk. If the risk of the project is equal to the risk of the existing investments of the firm, the discount rate used is the average cost of capital of the firm; if the discount rate is greater then the risk of the existing investments of the firm, the discount rate used is higher than the average cost of capital of the firm; if less, the discount rate used is less than the average cost of the firm.

The risk adjusted discount rate is

$r_k = i + n + d_k$

where r_k = risk adjusted discount rate for project k

   i = risk free rate of interest

   n = adjustment of the firm's normal risk

   d_k = adjustment of the differential risk of project k

ie $(i + n)$ measures the firm's cost of capital; d_k may be positive or negative depending on how the risk of the project under consideration compares with the existing risk of the firm.

The adjustment of the differential risk of project k depends on the management's perception of the risk and management's attitude towards risk (risk return preference). Ie Risk avoidance

   ◦ Risk acceptance
   ◦ Risk transference
   ◦ Risk mitigation

E.g. one of the pharmaceutical firms uses the following risk adjusted discount rates for various types of investments:

Investment category	Risk adjusted discount rates
Replacement investments	Cost of capital
Expansion investments	Cost of capital + 3%
Investment in related lines	Cost of capital + 6%
Investment in new lines	Cost of capital + 10%

Once the project's risk adjusted discount rates (r_k) specified, the project is accepted if its NPV, calculates as follows is positive:

$NPV = \sum_{t=1}^{n} \overline{A_t}/(1+r_k)^t - I$ where NPV is net present value of project k

$\overline{A_t}$ = expected cash flow for year t

r_k = risk adjusted discount rate for project k

I = Initial Investment.

Task: The expected cash flows for a project which involves an investment outlay of 1,000,000 are as follows:

Years	1	2	3	4	5
	200,000	300,000	400,000	300,000	200,000

The RADR is 18%. Is the project worthwhile??

What are the limitations of RADR?

        a. Difficult to estimate d_k consistently

        b. Assumes risk increases with time at a constant rate

Certainty equivalent method

The concept of certainty equivalent coefficient

One presents you with a lottery the outcome of which has the following probability distribution:

Outcome	Probability
1,000,000	0.3
5,000,000	0.7

You are asked: How much of a certain amount would you accept in lieu of this lottery? SAY you reply 3,000,000. This amount represents certainty equivalent of the above lottery which has an expected value (1,000,000 x 0.3 + 5,000,000 x 0.7) = 3,800,000/=

The certainty equivalent coefficient = 3,000,000/3,800,000 = 0.79

Under certainty equivalent, the NPV is calculated as follows:

$\sum_{t=1}^{n} \alpha_t \overline{A_t}/(1+i)^t - I$ where A_t = expected cash flow for year t

α_t = certainty equivalent coefficient for the cash flow of year t

i = risk free interest rate

I = Initial investment

Example: XYZ Limited is considering an investment proposal involving an outlay of 4,500,000. The expected cash flow and certainty equivalent coefficients are:

Year	Expected cash flow	CEC
1	1,000,000	0.90
2	1,500,000	0.85
3	2,000,000	0.82
4	2,000,000	0.78

The risk free interest rate is 5%. Calculate the NPV of the proposal.

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PROJECT IMPLEMENTATION, MONITORING AND EVALUATION
Martin Kabanda

Introduction

Project monitoring in its broader sense is about paying attention to certain things and responding if those things change in unexpected ways. It may also involve assessing why the changes took place to pave way for devising appropriate responses. It is done throughout the project's life cycle both formally and informally. Monitoring is an internal function in any project or organization. Monitoring has been defined as "a continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds." Crawford & Bryce (2003) contend that "monitoring is the process of checking that everything is going well and according to plan" In other words, monitoring is the purposeful and systematic observation, recording and reporting on project activities. It is about regular checking to find out whether all aspects of the project (activities, inputs, results etc.) are progressing according to plan and reporting the findings to be used in making decisions for improving project performance. Evaluation on the other hand is the process of determining the worth or significance of a program to determine the relevance of objectives, the efficacy of design and implementation, the efficiency or resource use, and the sustainability of results. On the other hand, valuation is the systematic and objective assessment of an ongoing or completed project, program, or policy, including its design, implementation, and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact, and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision making process of both recipients and donors

Background of monitoring and evaluation

M&E also builds greater transparency and accountability in use of project resources. Information generated through M&E provides project staff with a clearer basis for decision-making. Future project planning and development is improved when guided by lessons learned from project experience.

Relationship between M&E

M & E are two different management tools that are closely related, interactive and *mutually supportive*. Through routine tracking of project progress, monitoring can provide quantitative and qualitative data useful for designing and implementing project evaluation exercises. Through the results of periodic evaluations, monitoring tools and strategies can be refined and further developed. Both monitoring and evaluation must be planned at the program/ project level. Baseline data and appropriate indicators of performance and results must be established

Comparison Between M&E

Item	Monitoring	Evaluation
Frequency	Regular, ongoing	Episodic/broken up
Main action	Keeping track/oversight	Assessment
Basic purpose	Improving efficiency Adjusting work plan	Improve effectiveness, impact, future programming
Focus	Inputs/outputs, process outcomes, work plans	Effectiveness, relevance, efficiency, impact, sustainability
Information sources	Routine systems, field visits, stakeholder meetings, output reports, rapid assessments	Same plus Surveys (pre-post project) Special studies
Undertaken by	Project/program managers Community workers Supervisors Community (beneficiaries) Funders Other Stakeholders	External evaluators Community (beneficiaries) Project/program managers Supervisors Funders

Monitoring

In practice, covers a wide range of activities and require data collection, but data collection is not synonymous with monitoring. Monitoring also implies analysis and use of the data. Generally, the level that records information should be able to use it. Designing data collection systems with this principle in mind helps improve chances that the data will be collected carefully and put to use.

Planning a Monitoring System

Planning a monitoring system requires answering key questions:

1. **What should be monitored?**
   - ✓ Keep information requirements to a bare minimum
   - ✓ Collect info that will be most helpful to those who will use it
2. **How?**
   - ■ **Select methods to track indicators/report on progress**
   - ✓ Observations, interviews, routine reporting, sentinel sites
   - ✓ Piggyback on existing data collection systems
   - ✓ Both formal/informal and quantitative/qualitative methods
   - ✓ Decide how information will be recorded systematically and reported clearly

- ✓ Consider the time and skills of those who will collect the data
- ✓ Pretest new monitoring instruments

3. Who should be involved when?
- ✓ Clearly identifying who will collect information on indicators, when (frequency) and who will receive it
- ✓ The monitoring plan should also identify who will be involved in reviewing progress and providing feedback

4. What resources are needed and available?
- o The human and financial cost of gathering, reporting and reviewing data should be identified
- o Needed funding and time should be set aside for this work

5. Consultation and Training
- ✓ Discuss the monitoring program with a representative group from each level before it is put into effect
- ✓ Provide training to those who will be using the monitoring systems

6. Prepare a work plan
- ✓ for each year
- ✓ listing the main activities to be carried out, their output, timing and parties involved

Purposes of project monitoring
- ✓ Serve as the basis for establishing the project's information systems
- ✓ Generate information that will allow project managers to:
  - o track achievement of project outputs (immediate results of project activities) , and
  - o monitor progress towards achievement of objectives and desired outcomes (provisional results created by outputs)

Example: Plan to monitor achievement of project outputs

Component Output	Monitoring Indicator	Means of Collection (HOW)	Frequency (WHEN)	Responsible Agency/Person (WHO)
Policy	No. of Municipal Plans with renewable strategies approved by local governments	Municipal Planning and Development Offices	Annual	Partners

Planning and Management	% of beneficiaries with functioning energy management committees	Council record + NGO Output report	Quarterly	CSO Supervisor
Training	No. of NGO personnel trained in alternative energy technology Change in knowledge on energy among trained NGO personnel No. education sessions delivered to NGO staff on alternative energy	Training Reports Pre-post training test scores/Training Reports NGO output report	Semi-annually Semi-Annually Quarterly	CSO Foundation Trainer CSO Foundation Trainer NGO Supervisor
Services	Net value of socially marketed ENERGY products	NGO output report CBD service statistics CBD service statistics	Quarterly Monthly Monthly	NGO Outreach Worker (for all indicators)
Integrated IEC	No. of linked energy messages and materials created No. of energy campaign events delivered in the community during festival periods Audience reaction to energy campaigns	NGO output report and portfolio of IEC materials NGO output reports FGD	Quarterly Quarterly Annually	NGO Outreach Worker NGO Outreach Worker NGO Supervisor

Monitoring Plan Tool

Objective	Intervention/ Results Chain Factor	Indicator	Target (Projected Result)	Means of Collection	Frequency	Responsible Party

How to Use the Tool

1st Column – insert your pre-determined time-bound objective

2nd Column – insert your pre-determined Intervention and the associated Result Chain Factor

3rd Column – list 2 or more of the indicators you selected for the specific intervention-results chain factor set. Try to include an outcome indicator as well as process indicators.

4th Column - insert a performance target for each indicator – e.g. quantitative estimate of expected result by EOP

5th Column – insert the Means (HOW) you will gather the information

6th Column – insert the Frequency of data collection (WHEN)

7th Column – Insert the name of the party/agency/person who will be primarily responsible for collecting/ reporting the information

The Evaluation Process

The various things that need to be done to ensure that the evaluation is successful.

1. Planning for or scoping the Evaluation
2. Designing the Evaluation
3. Conducting the Evaluation
4. Reporting the Evaluation Findings
5. Disseminating and Follow up on the Evaluation Findings

Planning for the Evaluation

- o Identify Stakeholders
- o Explore program context and gather background materials
- o Review of literature : Search for related evaluation, Review previous evaluations to identify issues, designs and data collection strategies used
- o Review and refine or develop a theory of change for the programme

Designing the Evaluation

- o Determine the questions and issues
- o Identify the main purpose of evaluation, issues of concern and critical timing needs
- o Identify key stakeholders
- o Determine resources available
- o Assess stakeholders needs
- o Prepare evaluation matrix – organizes the evaluation questions and plans for collecting information to answer them

The evaluation matrix

The Key elements of the Evaluation design matrix

- ✓ Main evaluation issue

- ✓ General approach
- ✓ Questions and sub questions
- ✓ Measures or indicators
- ✓ Targets of standards
- ✓ Presence or absence of baseline data
- ✓ Design strategy
- ✓ Data sources
- ✓ Sample or census
- ✓ Data collection instrument
- ✓ Data analysis and graphics
- ✓ Comments
- ✓ Note – May change as it moves from planning to implementation

Conducting the evaluation

- ✓ Brief the client and stakeholders on the evaluation design
- ✓ Work plan
- ✓ Data collection
- ✓ Data analysis
- ✓ Findings

Reporting the Evaluation Findings

- ✓ Identify major findings – what works/does not and what needs improvement
- ✓ Write the draft report
- ✓ Present draft report
- ✓ Develop and verify recommendations and lessons
- ✓ Write final report

Dissemination and follow of Evaluation findings

- ✓ Determine the needed evaluation products – a briefing, report summary, the full report,
- ✓ Identify mechanisms for sharing lessons
- ✓ Follow up recommendations to determine implementation
- ✓ Deposit electronic file in read only form in evaluation knowledge repositories
- ✓ May disseminate in journals or book chapters

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CHAPTER FIVE
PROJECT SCOPE MANAGEMENT
Stephen Kyakulumbye and Martha Olweny

Introduction

In the United States, the forefather of project management Henry Gantt, called the father of planning and the control techniques argue that planning helps you to estimate the time, cost and scope of the project (Stevens, 2002). From the fact that project success is measured in term of time, cost and scope (triple constraints), then planning will help to estimate the success of a project. According to PMI (2002), it is argued through the theory of planning that planning is structured into ten core processes to include: scope planning, scope definition, activity definition, resource planning, activity sequencing, activity duration estimating, cost estimating, schedule development, cost budgeting and project plan development. These processes are the core to project success. Many more studies have looked at three core processes to include scope planning, activity duration estimating and cost estimating which seem to determine project success if well attended to. Johnston & Brennan (1996) argue that comparison to theories in the general field of operations reveals that the perspective of project management is-as-planning. Here, it is assumed that the organization consists of a management part and an effectors part. Management at the operations level is seen to consist of the centralized creation, revision and implementation of plans. This approach to management views a strong causal connection between the actions of management and outcomes of the organization. By assuming that translating a plan into action is the simple process of issuing "orders", it takes plan production to be essentially synonymous with action.

Planning is argued as the core stage of project development.The Develop Project Management Plan process includes the actions necessary to define, integrate, and coordinate all subsidiary plans into a project management (*PMBOK Guide,* 2004). This signifies that the management function of planning is very necessary and detail attention has to be paid to it to enable the project to meet its objective within the constraints of time, cost and scope. The time planning, cost estimation and scope definition will define the plan for these constraints .Then further the smaller constraint plans can be integrated and coordinated to help in the proper management of

the project and eventually the success of the project. Unfortunately, many projects especially ICT based projects lack this triple constraint to planning (cost, scope and time)-the project management core knowledge areas and also the precursor to project quality.

Weaver (2002) observes that the power of regular updates contributes to the project success by motivating and giving direction to the project team, aiding in identifying and solving problems and above all open up a communication path for the project team. This simply explains that management functions of planning must plan for days when to review and give feed back to the team on project progress which will show whether the soft skills of project success are being adhered too. Further still, Zwikael and Globerson (2006) argue that performance ranking on project's success that was found among industries was attributed to the level of quality of planning. Construction and engineering organizations, which scored the highest on project success, also obtained the highest score on quality of planning. Production and maintenance organizations, which scored the lowest on project success, received the lowest score on quality planning

However Zwikael and Globerson (2006) argue that performance deviation among the industries is probably due to the difference in the nature of their operations. While construction and engineering companies are project oriented, as most of their work involves initiation and execution of new projects, production and maintenance organizations are engaged mostly with day-to-day operations, and their planning is oriented to that rather than to project planning. This implies that for project oriented companies, the function of project planning is key to the success of their projects. This is also true for ICT based projects which are characterized by all the project life stages as per the systems development life cycle (SDLC).

Scope planning and success of projects

As stated in the *PMBOK Guide* (2004) Project Scope Management includes the processes requires to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Project scope management is primarily concerned with defining and controlling what is and is not included in the project. Defining what is and controlling what is not included in the project to help project implementers to have a clear view of the activities to be implemented and a thorough idea of the overall project scope. This helps to

set the limits and exclusions of projects. This avoids unnecessary activities being added which can increase the scope of the project hence affecting the cost and time within which the project is to be implemented and rendering it unable to meet the desired start-finish time and being over spent. Many African projects have suffered project slippage due to failure to adhere to the initially defines scope. Management have always argued the project teams to be flexible but flexibility is dangerous in that it affects the scope that affects the time that ultimately affects the cost.

Scenario

For example: What happens when the customer keeps adding requirements? Which constraint has priority? Project management team has to decide which constraint has priority and therefore complete a project priority matrix. Here we complete a priority matrix for the project to identify which criterion is constrained, which should be enhanced and which should be accepted.

Constrain: original parameter is fixed. The project must meet the completion date, specifications and scope of the project within budget.

Enhance: Given the scope, what do we optimise? In this case, time and cost. Either reduce the costs or shorten the schedule. The idea of enhancing with regard to performance, means adding value to the project.

Accept: It is tolerable not to meet the original parameters.

	Time	Performance	Cost
Constrain		⬭	
Enhance	⬭		
Accept			⬭

Project illustration: Development of a new wireless modem project

Because **Time** to market is important to sales, the Project Manager is instructed to take advantage of every opportunity and reduce completion time. In doing so, going over the *budget* is acceptable though not desirable. At the same time, the original *performance* specifications for the modem as well as reliability standards cannot be compromised.

The *PMBOK Guide* (2004) argues that defining and managing the project scope influences the project's overall success. Each project requires a careful balance of tools, data sources, methodologies, processes and procedures, and other factors to ensure that the effort expended on scoping activities is commensurate with the project's size, complexity and importance. For example, a critical project could require formal, thorough and time intensive scoping activities in place while a routine project could require substantially less documentation and scrutiny. The project management team documents these scope management decisions in the project scope management plan. The project scope management plan is a planning tool describing how the team will define the project scope, develop the detailed project scope statement, define and develop the work breakdown structure, verify the project scope, and control the project scope. It's also argued by PMI (2002) that the preparation of a detailed project scope statement is critical to project success and builds upon the major deliverables, milestones, assumptions and constraints that are documented during project initiation in the preliminary project scope statement. During planning, the project scope is defined and described with greater specificity because more information about the project is known. Stakeholder needs, wants, and expectations are analyzed and converted into requirements. The assumptions and constraints are analyzed for completeness, with additional assumptions and constraints added as necessary. The project team and other stakeholders, who have additional insight into the preliminary project scope statement, can perform and prepare the analyses. Critical to scope definition is the work break structure.

Work break down structure or project decomposition

Work break down structure helps project managers to set deliverables, elements, work packages, tasks/activities and milestones. It outlines the work to be performed. Provides a Framework for Defining the Work on the Project - Statement of Works or specification of requirements;

Provides a Framework for Planning; (Work Not in the WBS is Work Not in the Project). A Deliverable - Oriented Grouping of Project **Elements** that Organizes and Defines the Total Scope of the Project. Each Descending Level Represents an Increasingly Detailed Definition of the Project Work. A WBS Consists of **Elements**; The Lowest Level Element in the WBS is Often Referred to as a Work Package; A Work Package Consists of Tasks or Activities; Elements are described by Nouns and Activities Contain Verbs. Once the scope and deliverables have been identified, the work of the project can be successively sub-divided into smaller and smaller work elements. The outcome of this hierarchical process is called WBS. It is a map of the project. It identifies all products and work elements and integrates project with current organization. It establishes a basis for control.

**WBS with project as final deliverable**
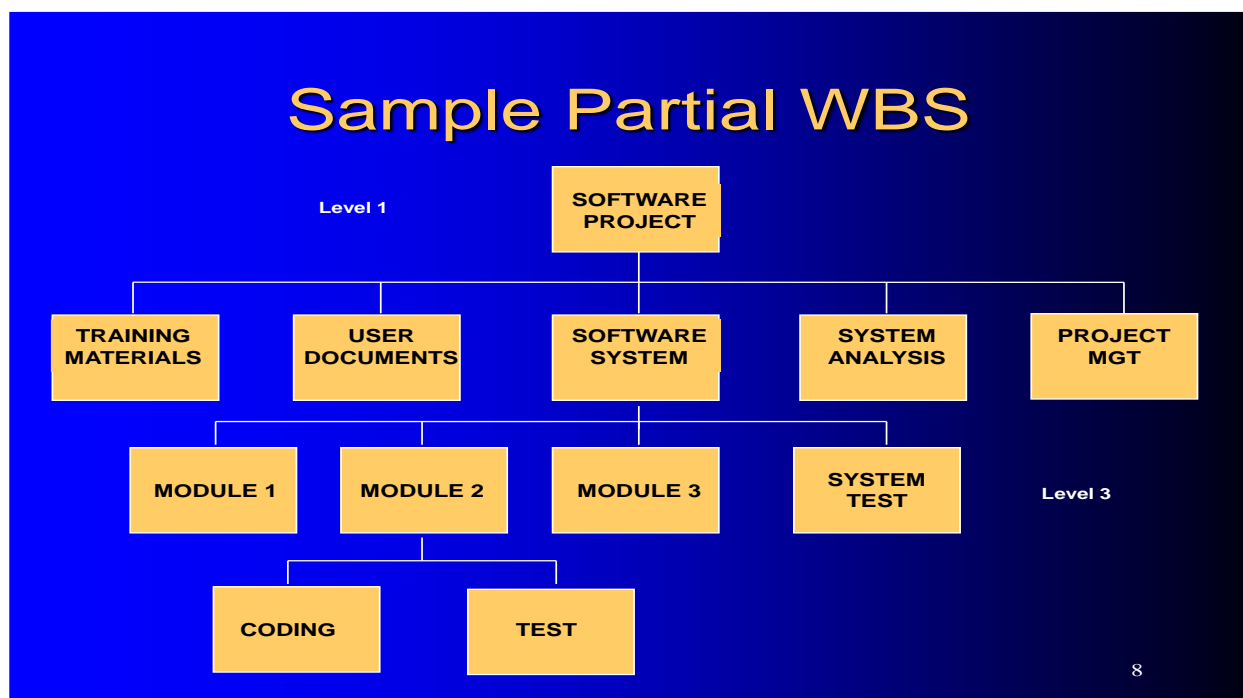
Source:

Hierarchical WBS

Major project work deliverables/systems are identified first eg software project; Then the sub-deliverables necessary to accomplish the larger deliverable are defined; The process is repeated

until the sub-deliverable detail is small enough to be manageable and where one person can be responsible; The sub-deliverable is further divided into work packages; Because the lowest sub-deliverable usually includes several work packages, the work packages are grouped by type of work e.g. hardware installation, coding, programming, testing; These groupings within a sub-deliverable are called cost accounts; This grouping facilitates a system for monitoring project progress by work, cost and responsibility.

Heading

Level 1

2

3

4

5

6
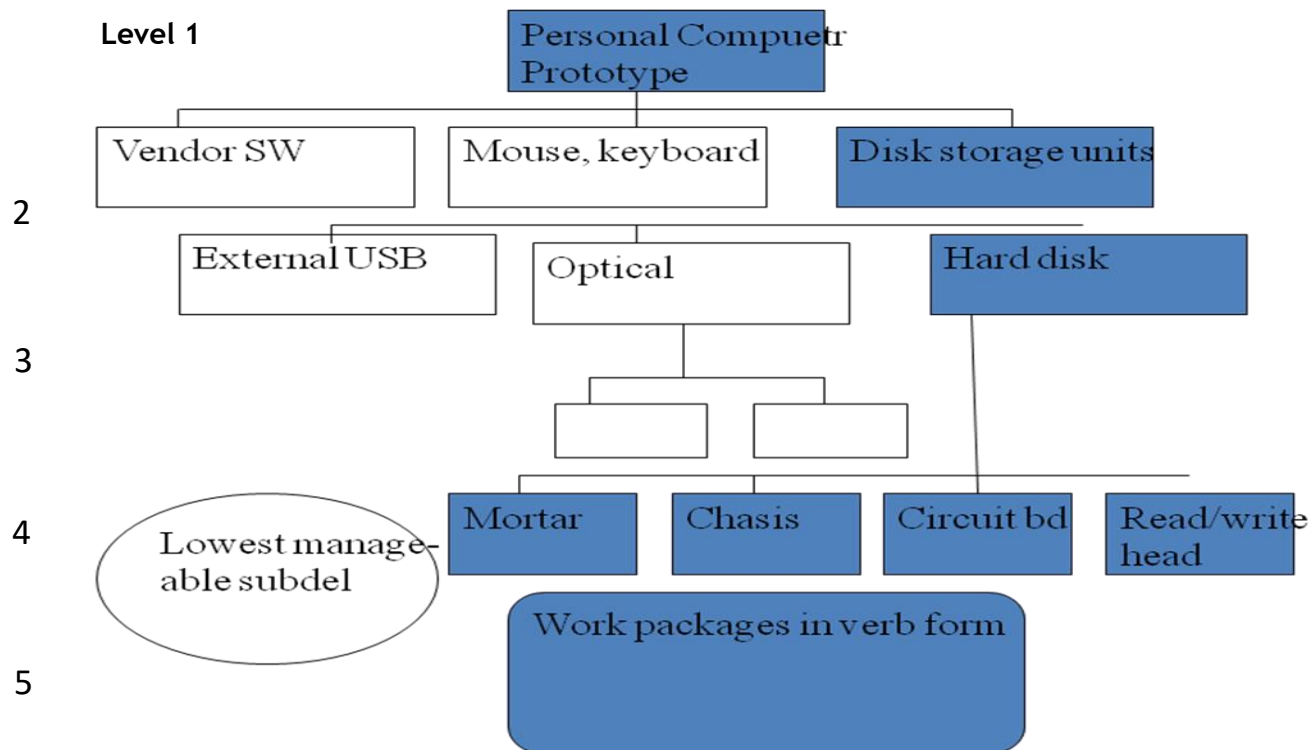
Coding the WBS

Usefulness of a WBS depends on a coding system; Codes are used to define levels and elements in the WBS, organizational elements, work packages and budget and cost information; Codes allow reports to be consolidated at any level in the structure; Use numeric indention.

1.0 Personal computer

    1.1 Disk storage units

        1.1.1 External USB

        1.1.2 Optical

1.1.3 Hard disk

    1.1.3.1 Mortar

        1.1.3.1.1 Sourcing work package

    1.1.3.2 Read/write head

        1.1.3.2.1 Cost account

The 100 % Rule during project decomposition

The next level decomposition of a WBS element (child level) must represent 100% of the work applicable to the next higher (parent) element.

Note: If you follow the 100% rule, and define the WBS elements as nouns, you have won the battle to get an effective WBS.

Types of work break down structures

These are documented as per the PMBOK Guide Definition of a Project: "*A temporary endeavour undertaken to create a unique **product**, **service** *or* **result**.*"

a) **Product breakdown:** This is Decomposition of the Natural, Physical Structure of the Deliverable. The Deliverable is a Tangible Product like construction of a house for engineering project.

b) **Service breakdown:** Here, there is No Tangible Output Product. The Main Event or "Service" is the project. Decomposition is based on a Logical Grouping (not Physical Structure). It is Often Developed Bottom-up and Detailed Activities May be Checklists. An example is Organization of a conference project.

c) **Results project breakdown:** The Project does not have a Well-Structured Primary Product as a Deliverable. It may have Several Products that Collectively Achieve the Planned "Result." The Projects are perceived as Process-Based.

Network techniques for project management

Once project is selected and the work break down structure is complete, the focus shifts to its implementation. This involves the completion of numerous activities as identified in the WBS (project components) by employing various resources (Ms): Man, Machinery, Materials,

Moments, Management Information Systems (MIS) and Money. This transforms the project on paper into reality. Due to the constraints in project resources, network techniques have been found to be useful in that they establish activity relationships and dependencies. Many successful organizations in project implementation recommend that a network plan should accompany feasibility reports. This has been found relevant for Indian projects as noted by Chandra (2004) but given little attention in African based projects. There are two basic network techniques: PERT, Gantt and CPM.

Program evaluation review technique (PERT)

Program evaluation review technique (PERT) charts depict task, duration, and dependency information. It was originally developed to facilitate the planning and scheduling of the Polaris Fleet Ballistic Missile Project of the US government mainly to handle risk and uncertainty. The orientation of the PERT is probabilistic. Each chart starts with an initiation node from which the first task, or tasks, originates. If multiple tasks begin at the same time, they are all started from the node or branch, or fork out from the starting point. Each task is represented by a line which states its name or other identifier, its duration, the number of people assigned to it, and in some cases the initials of the personnel assigned. The other end of the task line is terminated by another node which identifies the start of another task, or the beginning of any slack time, that is, waiting time between tasks.

Each task is connected to its successor tasks in this manner forming a network of nodes and connecting lines. The chart is complete when all final tasks come together at the completion node. When slack time exists between the end of one task and the start of another, the usual method is to draw a broken or dotted line between the end of the first task and the start of the next dependent task.

A PERT chart may have multiple parallel or interconnecting networks of tasks. If the scheduled project has milestones, checkpoints, or review points (all of which are highly recommended in any project schedule), the PERT chart will note that all tasks up to that point terminate at the review node. It should be noted at this point that the project review, approvals, user reviews, and so forth all take time. This time should never be underestimated when drawing up the project

plan. It is not unusual for a review to take 1 or 2 weeks. Obtaining management and user approvals may take even longer.

When drawing up the plan, be sure to include tasks for documentation writing, documentation editing, project report writing and editing, and report reproduction. These tasks are usually time-consuming, so don't underestimate how long it will take to complete them.

PERT charts are usually drawn on ruled paper with the horizontal axis indicating time period divisions in days, weeks, months, and so on. Although it is possible to draw a PERT chart for an entire project, the usual practice is to break the plans into smaller, more meaningful parts. This is very helpful if the chart has to be redrawn for any reason, such as skipped or incorrectly estimated tasks.

Many PERT charts terminate at the major review points, such as at the end of the analysis. Many organizations include funding reviews in the projects life cycle. Where this is the case, each chart terminates in the funding review node.

Funding reviews can affect a project in that they may either increase funding, in which case more people have to make available, or they may decrease funding, in which case fewer people may be available. Obviously more or less people will affect the length of time it takes to complete the project.

Critical path method (CPM)

Critical Path Method (CPM) charts are similar to PERT charts and are sometimes known as PERT/CPM. It was developed independently in 1956-57 by the Du Pont Company in the US to solve the scheduling problems in industrial settings. It is mainly concerned with the trade-off between the cost and time constraints. Their application has been in projects that employ fairly stable technology and are relatively risk free hence its orientation is deterministic. In a CPM chart, the critical path is indicated. A critical path consists of that set of dependent tasks (each dependent on the preceding one) which together take the longest time to complete. Although it is not normally done, a CPM chart can define multiple, equally critical paths. Tasks which fall on

the critical path should be noted in some way, so that they may be given special attention. One way is to draw critical path tasks with a double line instead of a single line.

Tasks which fall on the critical path should receive special attention by both the project manager and the personnel assigned to them. The critical path for any given method may shift as the project progresses; this can happen when tasks are completed either behind or ahead of schedule, causing other tasks which may still be on schedule to fall on the new critical path.

Gantt Charts

Gantt was developed by the forefather of project management Henry Gantt, also called the father of planning and the control techniques that help to estimate the time, cost and scope of the project. A Gantt chart is a matrix which lists on the vertical axis all the tasks to be performed. Each row contains a single task identification which usually consists of a number and name. The horizontal axis is headed by columns indicating estimated task duration, skill level needed to perform the task, and the name of the person assigned to the task, followed by one column for each period in the project's duration. Each period may be expressed in hours, days, weeks, months, and other time units. In some cases it may be necessary to label the period columns as period 1, period 2, and so on.

The graphics portion of the Gantt chart consists of a horizontal bar for each task connecting the period start and period ending columns. A set of markers is usually used to indicate estimated and actual start and end. Each bar on a separate line, and the name of each person assigned to the task is on a separate line. In many cases when this type of project plan is used, a blank row is left between tasks. When the project is under way, this row is used to indicate progress, indicated by a second bar which starts in the period column when the task is actually started and continues until the task is actually completed. Comparison between estimated start and end and actual start and end should indicate project status on a task-by-task basis.

Variants of this method include a lower chart which shows personnel allocations on a person-by-person basis. For this section the vertical axis contains the number of people assigned to the project, and the columns indicating task duration are left blank, as is the column indicating person assigned. The graphics consists of the same bar notation as in the upper chart indicates

that the person is working on a task. The value of this lower chart is evident when it shows slack time for the project personnel, that is, times when they are not actually working on any project.

Work breakdown structure: network diagramming: understanding dependencies

Dependencies are fundamental to planning a project and also later in understanding the effects of any problems encountered. If an activity can only begin when another is complete, then we have a dependency. It is also a link amongst a project's tasks or elements. There are four kinds of dependencies with respect to ordering terminal elements (in order of decreasing frequency of use):

1. Finish starting (FS) *A* FS *B = B can't start before A is finished*
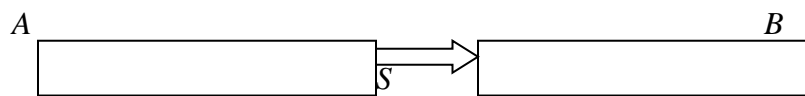
(Foundations dug) FS (Concrete poured)

2. Finish to Finish (FF)

A FF *B = B cannot finish before A is finished*
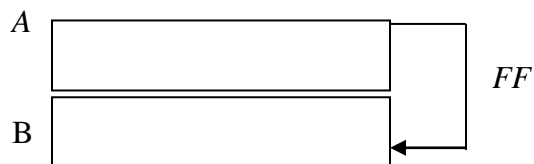
(Last chapter written) FF (Entire book written)

3. Start to start (SS)

A SS *B = B can't start before A starts*
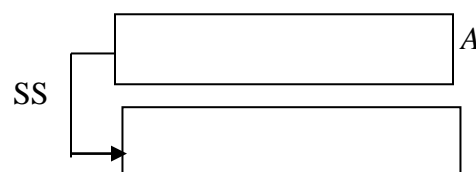
(Project work started) SS (Project management activities started)

4. Start to finish (SF)

A SF *B = B cannot finish before A starts*

(New B *1) SF (Previous shift finished)*

Types of network diagramming

a) Activity of the arrow format (AoA)

The activity on arrow format means that the lines represent tasks and the circles decision points. Activity name should be written along the line. Each activity has a duration and can be written below the line.
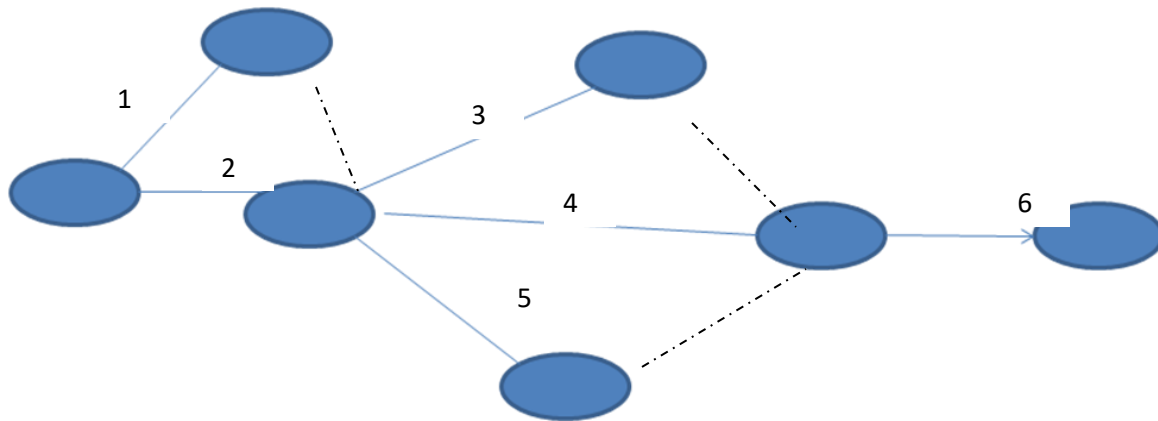
From the diagram, the following can be concluded:

- Once project starts we have two activities (1 and 2) with a start to start relationship.
- The results of the two activities have to be brought together before we can start the next three activities (3,4, 5) i.e. we bring them together using a dummy line (dotted)
- The 3 activities are brought together before we can start the final task.

Activity estimation

1. Conduct interviews   8 days
2. Investigate other systems   4
3. Analyse requirements   3
4. Investigate packages   8
5. Investigate hardware   5
6. Produce a report   5

We can now establish activities on the critical path. It is made up of activities that if delayed would result in the delay of the whole project. For instance conduct interviews will take 8 days whereas investigate other sys will take only 4 days. So a delay of up to 4 days in investigate other sys will not delay the start of the 3 successor activities.

Once the project gets underway and there are snags (as usually will be); eg if the activity gets behind schedule, the network lets the project team assess the effect on the other activities and final outcome of the project. If the activity is not on the critical path, and there is enough slack/float (delay possible) to accommodate some delay, then put a careful eye on it to ensure that it doesn't slip further (activity control). If on Critical Path, then you could add more resources.

Activity on the node format

This has boxes which represent the activities and arrows represent dependencies between them. This is the basis of Microsoft Project for Windows operating system and OpenProj software for Linux and other open source operating systems. We can analyse the critical path by making 2 passes through the model i.e**. forward pass** where we establish the earliest start time (EST) and earliest finish time (EFT) for an activity. This is done by addition. We record the EST for each activity on the top left hand box and obtain the EFT by adding to this the duration of the activity. The result is then recorded in the top right hand box. Moving through the model, the EST for an activity is the same as the EFT for its predecessor. Where an activity has more than one predecessor as does for example produce report then we take the highest of the possible EFT. Produce report cannot begin until the longest of them is completed which is to investigate packages. We know from the forward pass that the shortest time in which the project can be completed is 21 days.

Backward pass (BWP)

We perform the BWP through the model to establish the Latest Start Time and the Latest Finish Time for each activity. This time is by subtracting the duration from the EFT for the whole project say of 21 days. The LFT for each activity is recorded in the bottom right hand box and the LST is arrived at by subtracting the duration of the activity from the LFT. The LFT for an

activity is the same as the LST of its successor on the model. Where an activity has more than one successor as does for example conduct interview, the LST used is the smaller of the alternatives on offer. In this case 8 days for investigates packages. This is because if a larger figure is used, the start of conduct interviews would be delayed by 5 days. We are now able to calculate the critical path by calculating by subtracting the EST from the LST i.e. LST-EST. If there is no remainder from the subtraction, the activity is on the critical path. If there is a remainder, then this is implying to the float or slack there is in the activity. The float or slack represents the maximum allowable time that the activity can be delayed.

Time estimation
Once the logic and detail of the network have been established, time estimates must be assigned to each activity. Many projects fail because insufficient time is given to this detail. Generally, three time values are obtained for each activity: optimistic time (to), most likely time ™ and pessimistic time (tp). Optimistic time (O)-is the time required if no hurdles or complications arise; Most likely time (M)-is the time in which the activity is most likely to be completed; normal circumstances making allowances for unforeseen delays; Pessimistic time (P)-is the time required if unusual complications and difficulties arise.

Duration $= (O + 4M + P) \div 6$

Project management using Microsoft project for windows environment and OpenProj for linux environment
Project management is the planning and control of a project. ICT driven tools enable project managers to effectively manage single even portfolio of projects. Using such tools allows the user to resolve conflicts in a continuously changing environment and is necessary to continuously drive towards the achievement of the baseline project goals. Because project management should ideally result in the fulfillment of all set targets, a significant part of the project manager's work is dealing with conflicts arising from unforeseen resource and task variations. Most conflicts require the project manager to decide which goals and goal types can change and which cannot. Project software can be helpful in assisting these decisions by

illustrating 'critical paths' within the project and allow the user to easily identify what impact any changes would have.

Generally speaking a project should have the following characteristics which can be realized when computer based tools are used for project management:

Time limitation: Both a start point and an endpoint must be defined for a project. Initially, it is common for just a start date to be specified and the resultant project plan will determine the end date.

Clear objective: The objective to be achieved by the project must be clearly defined. For example, "Launch Product" is a clearly defined goal, whilst "Sale of the Product" (without quantification) is not a clearly defined goal.

Process structure: The project must be split up into clearly defined tasks. It should not represent a singular process from beginning to end, but be broken down into distinct stages.

Organizational structure: Projects often require an established organizational structure with unique skill sets to be effective, but this does depend somewhat on the scale of the project.

Certain terminology is used throughout the OpenProj and Ms Project software, so it would be useful to familiarize with some of these phrases:

Tasks: The partial activities from which the overall project is composed are called tasks. They are the smallest units/steps in a project.

Duration: The period between the start time and the finish time of a task.

Predecessors: A task that must be processed before a future dependent task can be started.

Successors: A task that can only be started if a previous dependent task has been processed.

Milestones: Milestones are important intermediate objectives. They often define phase transitions, critical project stages or intermediate results. They are usually represented as tasks that have no duration.

Summary tasks: Each chunk of a project with multiple tasks should be headed by a parent task which is known as a Summary Task. Summary tasks usually terminate with a milestone and have a fixed result (output). Summary tasks have a duration assigned automatically from their sub-task's duration and dependencies.

Slack: 'Free slack' is how much a task can delay without impacting on other tasks. 'Total slack' is how much a task can delay without impacting on the end date of the project.

Critical path: This is the shortest path from the beginning to the end of the project. Only tasks without slack exist on this path (critical path) and are called critical tasks. The project end date is automatically extended if a task on the critical path slips or has an extended duration.

Resources: Resources refer to all people, time, production and materials required to deliver the project. A mapping of required resources can be performed for each task. Reliable cost planning is only possible when real resources and costs are mapped to the tasks.

Forward scheduled: This is where a start date is set for the project and the end date is automatically calculated from the duration of the operations and the task dependencies.

Backward scheduled: This is where a deadline is set for the project and the latest possible project start is automatically calculated from the duration of the operations and the task dependencies.

Fixed duration tasks: The duration for a task is set, regardless of how many resources are assigned to it.

Effort driven tasks: The duration of a task is dependent on how many resources of the same type are assigned to it. For example, a deliverable is produced in less time with three employees than with one.

Activity duration estimation and success of projects

PMBOK Guide (2004) argues that the process of estimating schedule activity durations uses information on schedule activity scope of work, required resource types, estimated resource quantities, and resource calendars with resource availabilities. The inputs for the estimates of schedule activity duration originate from the person or group on the project team who is most familiar with the nature of the work content in the specific schedule activity. The duration estimate is progressively elaborated, and the process considers the quality and availability of the input data. For example, as the project engineering and design work evolves, more detailed and precise data is available, and the accuracy of the duration estimates improves. Thus, the duration estimate can be assumed to be progressively more accurate and of better quality. *PMBOK Guide* (2004) states that the Activity Duration Estimating process requires that the amount of work

effort required to complete the schedule activity is estimated, the assumed amount of resources to be applied to complete the schedule activity is estimated, and the number of work periods needed to complete the schedule activity is determined. All data and assumptions that support duration estimating are documented for each activity duration estimate. Estimating the number of work periods required to complete a schedule activity can require consideration of elapsed time as a requirement related to a specific type of work. Most project management software for scheduling will handle this situation by using a project calendar and alternative work-period resource calendars that are usually identified by the resources that require specific work periods. The schedule activities will be worked according to the project calendar, and the schedule activities to which the resources are assigned will also be worked according to the appropriate resource calendars (*PMBOK Guide,* 2004).

Cost estimation and success of projects

Estimating schedule activity costs involves developing an approximation of the costs of the resources needed to complete each schedule activity. In approximating costs, the estimator considers the possible causes of variation of the cost estimates, including risks. Cost estimating includes identifying and considering various costing alternatives. For example, in most application areas, additional work during a design phase is widely held to have the potential for reducing the cost of the execution phase and product operations. The cost estimating process considers whether the expected savings can offset the cost of the additional design work. Cost estimates are generally expressed in units of currency (dollars, euro, yen, etc.) to facilitate comparisons both within and across projects. In some cases, the estimator can use units of measure to estimate cost, such as staff hours or staff days, along with their cost estimates, to facilitate appropriate management control.

Cost estimates can benefit from refinement during the course of the project to reflect the additional detail available. The accuracy of a project estimate will increase as the project progresses through the project life cycle. For example, a project in the initiation phase could have a Rough Order of Magnitude (ROM) estimate in the range of -50 to +100%. Later in the project, as more information is known, estimates could narrow to a range of -10 to +15%. In some application areas, there are guidelines for when such refinements are made and for what

degree of accuracy is expected. Sources of input information come in the form of outputs from the project processes in Chapters 4 through 6 and 9 through 12. Once received, all of this information will remain available as inputs to all three of the cost management processes. The costs for schedule activities are estimated for all resources that will be charged to the project. This includes, but is not limited to, labour, materials, equipment, services, and facilities, as well as special categories such as an inflation allowance or a contingency cost. A schedule activity cost estimate is a quantitative assessment of the likely costs of the resources required to complete the schedule activity. If the performing organization does not have formally trained project cost estimators, then the project team will need to supply both the resources and the expertise to perform project cost estimating activities.

Execution and success of projects

Through the theory of execution, it is argued that the project plan is executed in regard to work authorization system, which is presented by four sentences:

A work authorization system is a formal procedure for sanctioning project work to ensure that work is done at the right time and in the proper sequence. The primary mechanism is typically a written authorization to begin work on a specific activity or work package. The design of the work authorization system should balance the value of the control provided with the cost of that control. For example, on many smaller projects, verbal authorizations will be adequate.

The underlying theory of execution turns out to be similar to the concept of job dispatching in manufacturing where it provides the interface between plan and work. This concept can be traced back to Emerson (1917). The basic issue in dispatching is allocating or assignment of tasks or jobs to machines or work crews, usually by a central authority. According to a modern definition, job dispatching is a procedure that uses logical decision rules to select a job for processing on a machine that has just come available (Bhaskaran & Pinedo 1991). Obviously, dispatching consists of two elements: decision (for selecting task for a workstation from those predefined tasks that are ready for execution), and communicating the assignment (or authorization) to the workstation. However, in the case of project management, that decision is largely taken care in planning, and thus dispatching is reduced to mere communication: written or oral authorization or notification to start work. Here, the underlying theory seems to be the classical theory of

communication (Shannon & Weaver 1949), where a set of symbols (voice or written speech) is transmitted from sender to receiver. The work of project execution is a core management function and the project management team headed by the project manager play an instrumental role in authorising the project requests. This implies that this management function speeds up the implementation process and if the verbal or written authorisations are not made in time then this will affect the time taken to complete the project, the cost will be under spent and the scope of the project will not be covered hence project success will be affected and the project may end up in the category of challenged projects. In order to execute the project the project manager, along with the project management team, directs the performance of the planned project activities, and manages the various technical and organizational interfaces that exist within the project.

Verbal work authorization and success of projects

The project manager, along with the project management team, directs the performance of the planned project activities, and manages the various technical and organizational interfaces that exist within the project (Kerzner, 1998).This signifies that the project manager and his team takes decisions on when, how and why activities are implemented. This means that the power to verbally authorize requests and ensure that they are implemented is very important for the project to succeed within the time, cost and scope constraints. As the project manager makes work authorisations, this enables deliverables to be produced as outputs from the processes performed to accomplish the project work planned and scheduled in the project management plan. These deliverables are defined as project success. Work performance information about the completion status of the deliverables, and what has been accomplished, is collected as part of project execution and is fed into the performance reporting process and the project is rated as a success or a failure.

Written work authorization and success of projects

Project execution also requires implementation of approved corrective actions that will bring anticipated project performance into compliance with the project management plan. This will ensure that the paper plan implemented as planned and there is no variance hence leading to the success of projects. Further still approved preventive actions to reduce the probability of

potential negative consequences are necessary for making corrections to the project image and helping the project to achieve its intended objectives.

Controlling and success of projects

Project control can be divided into two core process of : performance reporting and overall change control. Based on the performance reporting, corrections are prescribed for the executing processes, and based on the overall change; changes are prescribed for the planning processes. Here we consider only performance reporting, based on performance baseline, and associated corrections to execution. They clearly correspond to the cybernetic model of management control (thermostat model) that consists of the following elements (Hofstede, 1978): there is a standard of performance, performance is measured at the output (or input), and the possible variance between the standard and the measured value is used for correcting the process so that the standard can be reached. This thermostat model is identical to the feedback control model as defined in modern control theory (Ogunnaike & Ray 1994).This model promotes a feedback mechanism which helps to check whether the project is achieving the intended objectives as well as percentage achievement. In so doing the measure of success of the project is on a check and balance state which helps the project implementers to remain focused.

Monitor and Control Project Work process is performed to monitor project processes associated with initiating, planning, executing, and closing. Corrective or preventive actions are taken to control the project performance. Monitoring is an aspect of project management performed throughout the project. Monitoring includes collecting, measuring, and disseminating performance information, and assessing measurements and trends to effect process improvements. Continuous monitoring gives the project management team insight into the health of the project, and identifies any areas that can require special attention. The monitor and control project work process is concerned with: comparing actual project performance against the project management plan, assessing performance to determine whether any corrective or preventive actions are indicated, and then recommending those actions as necessary, analyzing, tracking, and monitoring project risks to make sure the risks are identified, their status is reported, and that appropriate risk response plans are being executed, maintaining an accurate, timely information base concerning the project's Product and their associated documentation through project

completion, providing information to support status reporting, progress measurement, and forecasting, providing forecasts to update current cost and current schedule information, monitoring implementation of approved changes when and as they occur.

The corrective actions are documented recommendations required to bring expected future project performance into conformance with the project management plan. If the corrective actions are implemented this will reduce the risk of the project failing. Preventive actions are documented recommendations that reduce the probability of negative consequences associated with project risks. Forecasts include estimates or predictions of conditions and events in the project's future, based on information and knowledge available at the time of the forecast. Forecasts are updated and reissued based on work performance information provided as the project is executed. This information is about the project's past performance that could impact the project in the future; for example, estimate at completion and estimate to complete. Some defects, which are found during the quality inspection and audit process, are recommended for correction.

Performance reporting and the success of projects
The monitor and control project work process is performed to monitor project processes associated with initiating, planning, executing, and closing. Corrective or preventive actions are taken to control project performance. Monitoring is an aspect of project management performed throughout the project cycle. It includes collecting, measuring and disseminating performance information, and assessing measurements and trends to effect process improvements. Continuous monitoring gives the project management team insight into the health of the project, and identifies any areas that can require special attention.

Overall change and success of projects
Prince (2004) argues that one of the outputs of directing and managing project execution is through changes requested or to revise the project schedule which is often identified while implementing project work. These changes requested will help management to closely follow the project to the end and minimise errors related to not achieving the project activities. The

integrated change control process is performed from project inception through completion. Change control is necessary because projects seldom run exactly according to the project management plan. The project management plan, scope statement, and other deliverables must be maintained by carefully and continuously managing changes, either rejecting changes or approving and incorporating them into a revised baseline. The integrated change control process includes the following change management activities in differing levels of detail, based upon completion of project execution: identifying that a change needs to occur or has occurred, influencing the factors that circumvent integrated change control so that only approved changes are implemented, reviewing and approving requested changes, managing the approved changes when and as they occur, by regulating the flow of requested changes (*PMBOK Guide,* 2004).

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CHAPTER SIX
PROJECT COST MANAGEMENT
Stephen Kyakulumbye

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Rationale of project cost management

The importance of effective costing for projects cannot be underestimated. Costing leads to proper management of projects and for effective and efficient implementation of project scope. Projects that lack a clear cost schedule are bound to failure as devotion of resources is dependent upon costs.

Management and cost accounting - responsibility accounting

Cost accounting information is designed for managers. Since managers are taking decisions only for their own organization, there is no need for the information to be comparable to similar information from other organizations. Instead, the important criterion is that the information must be relevant for decisions that managers operating in a particular environment of business including strategy make. Cost accounting information is commonly used in financial accounting information, but first we are concentrating in its use by managers to take decisions. The accountants who handle the cost accounting information add value by providing good information to managers who are taking decisions. Among the better decisions, the better performance of one's organization, regardless if it is a manufacturing company, a bank, a non-profit organization, a government agency, a school club or even a business school. The cost-accounting system is the result of decisions made by managers of an organization and the environment in which they make them.

Cost accounting is regarded as the process of collecting, analysing, summarising and evaluating various alternative courses of action involving costs and advising the management on the most appropriate course of action based on the cost efficiency and capabilty of the management.

The organizations and managers are most of the times interested in and worried for the costs. The control of the costs of the past, present and future is part of the job of all the managers in a company. In the companies that try to have profits, the control of costs affects directly to them. Knowing the costs of the products is essential for decision-making regarding price and mix assignation of products and services.

The cost accounting systems can be important sources of information for the managers of a company. For this reason, the managers understand the forces and weaknesses of the cost accounting systems, and participate in the evaluation and evolution of the cost measurement and administration systems. Unlike the accounting systems that help in the preparation of financial

reports periodically, the cost accounting systems and reports are not subject to rules and standards like the Generally Accepted Accounting Principles. As a result, there is a wide variety in the cost accounting systems of the different companies and sometimes even in different parts of the same company or organization.

The following are different cost accounting approaches:
1. Standardized or standard cost accounting
2. Lean accounting
3. Activity-based costing
4. Resource consumption accounting
5. Throughput accounting
6. Marginal costing/cost-volume-profit analysis

Classical cost elements are:
1. Raw materials
2. Labor
3. Indirect expenses or overhead costs

According to the Chartered Institute of Management Accountants (CIMA date), management accounting is defined as

"The process of identification, measurement, accumulation, analysis, preparation, interpretation and communication of information used by management to plan, evaluate and control within an entity and to assure appropriate use of and accountability for its resources. Management accounting also comprises the preparation of financial reports for non-management groups such as shareholders, creditors, regulatory agencies and tax authorities (CIMA Official Terminology).

The Institute of Management Accountants (IMA date) recently updated its definition as follows:

"Management accounting is a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy".

The American Institute of Certified Public Accountants (AICPA date) states that management accounting as practice extends to the following three areas:

1. Strategic Management—advancing the role of the management accountant as a strategic partner in the organization.
2. Performance Management—developing the practice of business decision-making and managing the performance of the organization.

3. Risk Management—contributing to frameworks and practices for identifying, measuring, managing and reporting risks to the achievement of the objectives of the organization.

Differences between management and cost accounting

Though management accounting uses the tools of cost accounting like standard costing, marginal costing; and many people think that both cost and management accounting are same which is not the case because there are many differences between the two, here are some of them

1. Cost accounting is concerned with historical cost that is the costs which have been already incurred while management accounting is concerned with forecasting of the costs and hence it looks into future unlike cost accounting.
2. The objective of cost accounting is to ascertain the costs and control it while the objective of management accounting is to provide management all information as and when required by them so that they can take right decisions at right time.
3. Cost accounting is done for internal parties like top management, owners as well as external parties like creditors, employees, government, While management accounting is done for top management only.
4. Cost accounting was evolved many years back and it is limited in its scope while management accounting is still evolving but its scope is much wider than that of cost accounting because it uses along with cost accounting other principals of subjects like statistics, economics etc…

Financial accounting

The purpose of accounting is to provide the information that is needed for sound economic decision making. The main purpose of financial accounting is to prepare financial reports that provide information about a firm's performance to external parties such as investors, creditors, and tax authorities. Managerial accounting contrasts with financial accounting in that managerial accounting is for internal decision making and does not have to follow any rules issued by standard-setting bodies. Financial accounting, on the other hand, is performed according to generally accepted accounting principles (GAAP) guidelines.

Table: Differences between Financial Accounting, Management and Cost Accounting

	Financial Accounting	Management Accounting
Primary users	External (Investors, government authorities, creditors)	Internal (Managers of business, employees)
Purpose of information	Help investors, creditors, and others make investment, credit, and other decisions	Help managers plan and control business operations
Timelines	Delayed or historical	Current and future oriented
restrictions	GAAP FASB AND SEC	GAAP does not apply, but information should be restricted to strategic and operational needs
Nature of information	Objective, auditable, reliable, consistent and precise	More subjective and judgmental, valid, relevant and accurate
scope	Highly aggregated information about the overall organization	Disaggregated information to support local decisions
Behavioural implications	Concern about adequacy of disclosure	Concern about how reports will affect employees behavior
Features	Must be accurate and timely Compulsory under company law Is an end in itself	Usually approximate but relevant and flexibleExcept for few companies, it is not mandatory Is a mean to the end
Segments of organisation	It is primarily concerned with reporting for the company as a whole.	Segment reporting is the primary emphasis.
	Financial Accounting	**Cost Accounting**
Objective	It provides information about financial performance and financial position of the business.	It provides information on ascertainments of costs to control costs and for decision making about costs.
Nature	It classifies records, presents and interprets transactions in terms of money.	It classifies, records, presents and interprets in a significant manner materials, labour and overhead costs.
Recording of data	Records historical data.	Records and presents estimated, budgeted data. It makes use of both historical costs and predetermined costs.
Users of information	External users like shareholders, creditors, financial analysts, government and its agencies,etc.	Used by Internal management at different levels.
Analysis of costs and profits	It shows profit/loss of the organization.	It provides details of costs and profit of each product, process, job, etc.
Time period	They are prepared for a definite period, usually a year.	They are prepared as and when required.
Presentation of information	A set format is used for presenting financial information.	There are no set formats for presenting cost information.

Management accounting

Planning & control are essential for achieving good results in any business. Firstly, a budget is prepared and, secondly, actual results are compared with budgeted ones. Any difference is made responsibility of the key individuals who were involved in (i) setting standards, (ii) given necessary resources and (iii) powers to use them. In order to streamline the process, the entire organization is broken into various types of centers mainly cost centre, revenue centre, profit center and investment centre. The organizational budget is divided on these lines and passed on to the concerned managers. Actual results are collected and displayed in the same form for comparison. Difference, if any, are highlighted and brought to the notice of the management. This process is called Responsibility Accounting.

A formal definition of responsibility accounting

Responsibility accounting involves the creation of responsibility centres. A responsibility centre may be defined as an organization unit for whose performance a manager is held accountable. Responsibility accounting enables accountability for financial results and outcomes to be allocated to individuals throughout the organization. The objective is to measure the result of each responsibility center. It involves accumulating costs and revenues for each responsibility centre so that deviation from performance target (typically the budget) can be attributed to the individual who is accountable for the responsibility centre.

Responsibility Centers and Their Evaluation

Responsibility centers	Evaluation methods
Revenue centre	Sale price variance
	Sale quantity variance
	Sale mix variance
Cost centre	Raw material variances:
	Labor variances
	Overhead variances
Profit centre	Gross profit
	Contribution margin
Investment centre	ROI
	Residual income
	Economic value added
Advantages	**Disadvantages**
Helps manage a large and diversified organization	May create conflicts between various divisions
Motivate managers to optimize their performance	Undue competition may become dysfunctional
Provide manager freedom to make local decisions	Narrows down vision as overall company prospective are not considered by individual managers.
Top management get more time for policy making and strategic planning	May prove costly due to duplication
Supports management and individual specialization based on comparative Advantages	Problem in coordination across divisions

Managerial performance and economic performance

All businesses operate in a complex environment. The traditional approach of centralized control is not possible. There is a shift towards decentralization. At the same time, the management wants to retain some sort of control over activities of its managers. When authority is decentralized and passed on to managers, there is a problem of goal-congruence. This means that the management will constantly review all operations and activities of individual divisions to insure that none of them is working against the overall objectives of the company. Such a behavior is called dysfunctional and is damaging to the company. While evaluating performance of an individual manager, two factors have to be considered:

1. Should the manager's job be separated and a manager is rewarded or penalized only for those activities over which the manager has control.

2. Should the manager's decision be seen in a wider prospective and final judgment is given only after reviewing full impact of such decisions.

It is obvious that a manager's decisions should be evaluated after seeing their impact on the bottom line i.e. profitability of the company. But such policy would not be motivational for the individual manager and the good results may be nullified by the factors not under the control of the particular manager. Hence, the company follows first approach i.e. managerial performance.

Break even analysis /point (BEP)

Break-even analysis is a technique widely used by production management and management accountants. It is based on categorizing production costs between those which are "variable" (costs that change when production output changes) and those that are "fixed" (costs not directly related to the volume of production). Total variable and fixed costs are compared with sales revenue in order to determine the level of sales volume, sales value or production at which the business makes neither a profit nor a loss (the "break-even point").
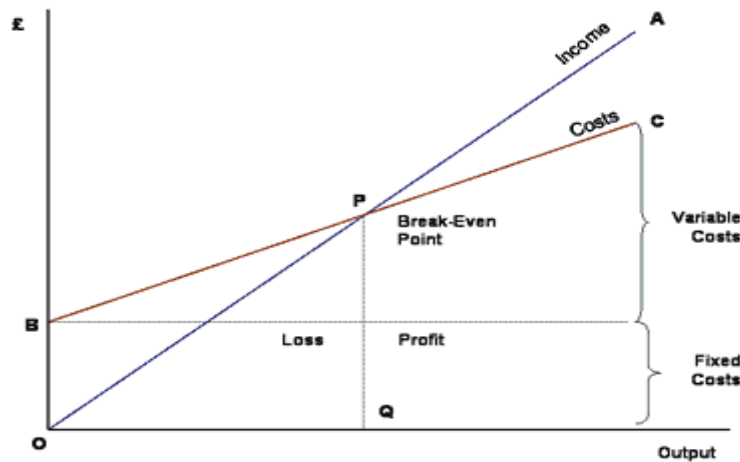
In the diagram above, the line OA represents the variation of income at varying levels of production activity ("output"). OB represents the total fixed costs in the business. As output increases, variable costs are incurred, meaning that total costs (fixed + variable) also increase. At low levels of output, Costs are greater than Income. At the point of intersection, P, costs are exactly equal to income, and hence neither profit nor loss is made.

Computation
At BEP, TR=TC; we have BEP in terms of **quantity and in terms of revenue**.
BEP (Revenue) = P X Q where Q is the quantity at BEP
If TR = TC, Profit = 0 since Profit = TR-TC
Given that P is the selling price of Q
TR = PQ.. (i)
TC= Fixed Cost (FC) + TVC

TVC =Variable cost per unit x quantity =VC X Q

TVC=VCQ

TC= FC + VCQ.. (ii)

At break even point TR=TC

Substituting (ii) in equation (i)

PQ= FC + VCQ

FC= PQ-VCQ

FC= Q (P-VC)

Q = FC/(P-VC) This is the formula for break even point in terms of quantity

BEP in terms of Revenue (sales) =P X Q

Exercise

1. Firm XYZ is a manufacturer of reams of paper whose fixed cost is shillings 5,000,000 and selling price per ream is 8,000/=; variable cost per ream is 7,500/= each. Find the BEP in terms of quantity and revenue.

Verify that the BEP in terms of quantity is FC (I/P-VC)

S.P is 8,000/= each ream

VC/Ream = 7,500/=

Therefore Q = FC/ (P-VC) = 5,000,000/8,000-7,500

5,000,000/500 =10,000 reams per annum

Therefore this company has to sell approximately 10,000/365 = 30 reams per day making neither losses nor profits until you break even.

2. ABC is a manufacturer of shoes whose marginal costing is as follows:

Direct labour 5000/=

Direct material 3000/=

SP of a pair of shoes is 10,000/=

If the fixed cost for ABC is Shs 10,000,000, find the BEP in terms of quantity and price

a) If direct labour increases by 20% but others remain constant, what is the new BEP?

BEP in terms of quantity Q = FC/(P-VC)

= 10,000,000/{10,000- (5000+3000)}

10,000,000/2,000

= 5,000 pairs of shoes per annum

Around selling 5,000/365= 14 pairs daily making neither losses nor profits until it breaks even.

b) New direct labour 120/100 x 5,000 = 6,000/=

Therefore variable cost per unit = 6,000 + 3,000 = 9,000/=

Q= FC/P-VC = 10,000,000/10,000-9,000   = 10,000,000/1,000

=10,000 pairs

BEP in terms of revenue = P XQ = 10,000 X 10,000

=   SHS 100,000,000

More Exercise:

A company is a manufacturer of tiles whose marginal costing is as follows:

      Direct labour 50,000/=

      Direct material 32,000/=

      SP of a pair of shoes is 100,000/=

a) If the fixed cost for the company is shillings 10,000,000, find the BEP in terms of quantity and price

b) If direct labour increases/reduces by 30% but the others remain constant, what is the new BEP?

c) Comment on the usefulness of break even analysis

      It categorises production costs between those which are "variable" (costs that change when the production output changes) and those that are "fixed" (costs not directly related to the volume of production).

      It helps to identify the point at which a firm starts to make profits

Project budgeting

Introduction to project budgeting

Once an organization has identified beneficiary needs & changes through forecasting, needs assessments, baselines; it needs to determine if implementation can be undertaken effectively and efficiently. This can be accomplished through effective budgeting process. Knowing how to budget is certainly part of this process. A budget is a master financial plan or a "blueprint for action" in the future & has 3 parts:

– Operating budget

– Cash flow budget

– Capital expenditure budget

The purpose of a budget

A. A budget is a formal estimate of future revenues, benefits & costs

1. A detailed breakdown of all costs, benefits and revenues is necessary for attaining effective and efficient goals: Project team members have to analyze operations to develop reliable estimates of benefits, revenues & costs.

2. If budgeting is done right, it forces better thinking about the project's goals & purpose & how to achieve them. It forces management to ask what to be done if certain project target levels are to not being realized.

B. Making realistic budgets requires clear thinking; As a financial plan of project's expectations over time, it should be an assessment of what each phase of the project can accomplish being aware that projects consume resources to generate outputs.

1. Make separate budgets for each part of the project phases: inception, detailed planning, execution, monitoring and evaluation and closure.

Performance analysis, budgeting and budgetary control

A budget is when a plan is expressed quantitatively while budgeting is the process of converting plans into budgets. Budgets need to be shown in monetary terms ie financial budgets.

When budgets are being drawn up, two main objectives must be uppermost in the mind of management that is that the budgets are for:

1. Planning: This means a properly coordinated and comprehensive plan for the whole business. Each part must be interlocked with other parts
2. Control: Just because a plan is set down on paper does not mean that the plan will carry itself out. Control is exercised via the budgets thus the name budgetary control. Responsible manager has to follow the guide to help him to produce certain desired results and the actual achieved results can be compared against the expected ie actual compared with budget.
3. Budgets help us in cost monitoring

Steps in control process

1. Measuring performance
2. Comparing performance measure to budget
3. Taking corrective action

Tasks in cost control

Make sure that no commitments are made:

1. That exceed their budget allocation
2. Or if they do, make immediate adjustments elsewhere
3. Ensure that all commitments have the venture manager's approval
4. Regularly collect actual costs to date including work in progress
5. examine cost trends
6. Forecast the cost of the remaining work to complete the current phase or stage
7. Compare total estimated final cost with approved budget
8. Calculate the cost variances line by line to identify specific problem areas
9. Sum up all totals to determine the overall total venture cost variance status
10. Compare that variance with the previous reported variance

Cost control

1. Is a necessary management activity in every phase
2. Most rigorous in the execution phase where most money is spent
3. effective cost control is much more than just collecting expenditures and issuing reports

4. main objective is to ensure that all expenditures are as per the budget

Steps involved in cost monitoring
a) Establish a control budget
Budget must be consistent with the way money id going to be spent and thus must follow budgeting principles:
   1. Comprehensive
   2. Participatory
   3. Flexible
   4. Contestable
   5. Accountability
b) Conversion process to align the budget with the internal organizational arrangements or procurement or contract strategy
c) Study what the venture budget covers in terms of scope and content

Cost monitoring skills
a) Allocating skills i.e. scheduling tasks and allocating resources
b) Organizing skills i.e. networking to match problems as they occur
c) Interacting skills-managing people
d) Monitoring skills i.e. setting up an efficient feedback system to facilitate analysis of progress and taking corrective action-re-planning to recover original budget. Consider tradeoffs - compromise on schedule, quality and scope; revise budget to accept current situation
e) Decision making skills i.e. terminate project in extreme conditions BCWS, ACWP, BCWP

Earned value concept
During cost monitoring a PM wants to ensure earned value-a method of measuring performance.
It is based on the C/SCSC-cost/schedule control system criteria
Inputs of EV are WBS, project schedule, project budget, budget baseline, work results.
BCWS=budgeted costs of work scheduled.
This represents a total of three components:
1. Budgets for all work packages, scheduled to be completed
2. Budgets for the portion of in-progress work, scheduled to be accomplished
3. Budgets for the overheads for the period

The planned budget for activities scheduled within a given period of time is the baseline
Example: One month project has a budget of Shs 100,000; BCWS-a scheduled cost, predicted cash flow or a baseline figure of 100,000; The sum is the BCWS.

BCWP=Budgeted cost of work performed (EV) also equal to the sum of three components

1. Budgets for work packages actually completed
2. Budgets applicable to be completed in-process work
3. Overhead budgets

   Represents what was done-earned value

   EV is used to avoid confusion with money or labour or committed

ACWP=Actual cost of work performed

   This is what was paid for=actual

   The actual costs incurred in accomplishing the work performed within a given period; ACWP-accrual or actual cash flow-what was paid for i.e. 85,000/=

Example: After one month, 80% (i.e. Shillings 80,000) of the work has been completed. This is the budgeted cost of work performed (BCWP) is earned value or what was done in a given period of time-or physical accomplishment

What are the possible causes of variation between BCWS and ACWP?

What are the possible causes of variation between ACWP and BCWP?

BCTW (budgeted cost for total work) is the budgeted cost for the entire project work

ACC (additional cost for completion) represents estimate for additional cost required for completing the project

The project may then be monitored basing on the following lines:

Cost Variance   :   BCWP-ACWP

Schedule Variance in cost terms: BCWP-BCWS

Cost performance index   :   BCWP/ACWP

Schedule performance index :   BCWP/BCWS

Estimated cost performance index   BCTW/ (ACWP + ACC)

Illustration:

A project was begun on 1st January 2012 and was expected to be completed by 30th December 2012. The project is being reviewed this month when the following information has been developed:

BCWS	shillings 1,500,000
BCWP	shillings 1,400,000
ACWP	shillings 1,600,000
BCTW	shillings 2,500,000
ACC	shillings 1,200,000

Cost variance: BCWP-ACWP

1,400,000-1,600,000

                              -200,000

Schedule variance in cost terms: BCWP-BCWS

                              : 1,400,000-1,500,000

                              -100,000

Cost performance index   : BCWP/ACWP

                              1,400,000/1,600,000

                              0.875

Schedule performance index : BCWP/BCWS

                              =1,400,000/1,500,000

                              =0.933

Estimated performance index : BCTW/(ACWP + ACC)

                              =2,500,000/1,600,000 + 1,200,000

                              = 0.893

Reasons for time and cost overruns

1. Delay in the erection of major equipment
2. Delay in placing orders for critical machinery
3. Delay in delivery of imported and or indigenous equipment
4. Shortage of critical items in the advanced stage of commissioning
5. Shortfall in acquisition of equipment
6. Delay in finalization of foreign or indigenous suppliers
7. Shortage of construction equipment
8. Land acquisition
9. Technical and skilled labour
10. Strikes
11. Delay in release of funds

Cash budget
What is a cash budget?

- Definition: this is an estimation of the cash inputs and outputs of a person or a business over a specific period of time.
- Most often, cash budgets are used to assess whether or not a business has a sufficient amount of cash to fulfill regular operations. It can also be used to determine whether too much of a business' cash is being spent in unproductive ways.

By creating a cash budget - wherein a firm develops a summary of the anticipated revenues, operating expenditures, purchase and sale of assets, and settlement or admission of debt – one can determine when there will be a need for more cash resources, and when there will be an excess of cash.

Preparing a cash budget

List items that will bring in cash and take out cash

a) Present cash balance (including bank balance) Shs 800
b) Receipts from debtors will be: July 2000 August 2600 September 5,000 October 7000 November 8000 and December 15000
c) Payments will be July 2500 August 2700 September 6900 October 7800 November 9900 December 10300.
d)

	July	August	Sept.	Oct.	Nov.	Dec.
Balance at start of month	800	300	200			
Deficit at start of month	-	-		-	(1700)	(2500) (4400)
Receipts	2000	2600	5000		7000	8000 15000
	2800	2900	5200	5300	5500	10600
Payments	(2500)	(2700)	(6900)		(7800)	(9900) (10300)
Balance at end of month	300	200				300
Deficit at end of month			(1700)	(25000)	(4400)	

Advantages of cash budgets

The advantages of a cash budget are as follows:

1) Help us to plan ahead
2) How much to borrow
3) Surpluses can be determined
4) Deficits can be determined

Disadvantages

Cash budgets may also cause distortions. Cash inflows do not equate to profit. Cash inflows resulting from security deposits, fines, the sale of capital assets, or any other one-off, non-sustainable activity do not necessarily represent reliable ongoing sources of revenue. On the other hand, reduced cash flow need not always be a cause for concern. At times, selling items with long credit periods might result in a much larger profit in the long run and will more than cover the interest associated with securing short-term loans to meet immediate obligations. Managerial judgment is necessary to interpret the results.

Cash budgets are susceptible to manipulation. For instance, making a huge payout a day or two before the end of period, instead of a day or two after the start of the next period, may be misleading. It restricts cash flow for one period and inflates cash flow for the other period. Even if

company operations are experiencing a loss, postponing payouts might show a positive cash flow. Similarly, making payments early might result in negative cash flows, even when operations remain profitable.

A bigger disadvantage is the reliance on estimates. Cash budgets use cash flow one year to allocate cash for the next year, when there is no guarantee that cash flow levels, or revenue and expenditure levels, will remain the same. Moreover, with cash budgets, management commits funds for various projects and expenditures and there is little opportunity to reallocate the funds based on changed circumstances, unless management decides to revise the budget as a whole.

At times, non-financial factors have a major impact in decisions. For instance, a product might not generate much cash flow, or generate negative cash flow. People, however, might have a favorable association with the product, and equate the product with the company, providing intangible value. Making decisions based solely on a cash budget would leave this product as a prime candidate for the chopping block. Similarly, one bank may charge a slightly higher rate of interest, but also offer better customer service than a bank that charges low interest. With a cash budget, only the low interest rate counts.

Timing of cash and receipts
In drawing up a cash budget, bear it in mind that all payments for units produced would very rarely be at the same time as production itself ie raw materials might be bought in March and incorporated in goods being produced in April and paid in May.

Prepare a cash budget using the following information:
The Human Resource Department in your organization has a monthly budget of shillings 15 million shillings to cater for the following monthly department needs.

1. Monthly staff salaries for the department staff shillings 5 million
2. Stationery shillings 500,000
3. Staff break tea shillings 150,000
4. Cleaning materials shillings 300,000
5. The Department needs 2 printers and the Head of Department has identified a supplier who will deliver these printers in January 2013 at a cost of shillings 500,000 each.
6. The Head of Department is excited about computerizing the Department. A computer and software packages worth shillings 3 nillion has been ordered and will be paid in February 2013. This will make work more efficient and will cut the stationer costs by 20% per month, with effect from February 2013.
7. The Administration Department is in charge of the only vehicle that consumes 500 litres of petrol per month, in addition to a monthly service cost of shillings 500,000. Petrol currently costs shillings 3,500 per litre but with the volatile economic trend, petrol price will be shillings 4,000 as from February onwards.

8. Because of the poor cash flow situation in the Organization, there will be a 20% budget cut for every Department as from 1st March 2013.
9. The Department has cash balance of shillings 100,000 at January 2013.

Required

1. Prepare a six months cash budget for the period January-June 2013
2. Recommend any suitable actions for the Head of Department to take to address the poor cash flow position the Administration Department is likely to encounter in the six months.
3. What are the limitations of cash budgeting?

Summary outputs for initiation and planning phase

At initiation or concept phase, the output is a concept note or concept paper or project charter whereas at detailed planning is a technical and financial proposal (budget).

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CHAPTER SEVEN

PROJECT INTEGRATION MANAGEMENT

By Stephen Kyakulumbye

</div>

Introduction

Project integration management is the main knowledge area that maps throughout the five process groups: initiating process group, planning process group, executing process group, monitoring and controlling process group and closing process group. It includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups. In the context of project management, it includes characteristics of unification, consolidation, communication and integrative actions that are crucial to project success. It also includes the management of interdependencies among the project knowledge areas. Project integration management processes are: develop the project charter during initiation process group, develop project management plan during the planning process group, direct and manage project work during the executing process group, monitor and control project work; perform integrated change control during the monitoring and controlling process group and finally close project or phase during the closing process group. This section highlights the inputs, tools and techniques and outputs during the various process levels.

4.1 Develop the project charter

Develop Project Charter is the process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities. The key benefit of this process is a well-defined project start and project boundaries, creation of a formal record of the project, and a direct way for senior management to formally accept and commit to the project.

4.1.1 Develop the project charter: Inputs

4.1.1.1 Project statement of work (sow)

The project statement of work (SOW) is a narrative description of products, services, or results to be delivered by a project. For internal projects, the project initiator or sponsor provides the

statement of work based on business needs, product, or service requirements. For external projects, the statement of work can be received from the customer as part of a bid document, (e.g., a request for proposal, request for information, or request for bid) or as part of a contract. The SOW references the following:

a) **Business need.** An organization's business need may be based on a market demand, technological advance, legal requirement, government regulation, or environmental consideration. Typically, the business need and the cost-benefit analysis are contained in the business case to justify the project.

b) **Product scope description.** The product scope description documents the characteristics of the product, service, or results that the project will be undertaken to create. The description should also document the relationship between the products, services, or results being created and the business need that the project will address.

c) **Strategic plan.** The strategic plan documents the organization's strategic vision, goals, and objectives and may contain a high-level mission statement. All projects should be aligned with their organization's strategic plan. Strategic plan alignment ensures that each project contributes to the overall objectives of the organization.

4.1.1.2 Business case

The project charter highlights the business case. A business case or similar document describes the necessary information from a business standpoint to determine whether or not the project is worth the required investment. Within the business case is the business need and the cost-benefit analysis that justify and establish the boundaries of the project. The business case is created as a result of the following: market demand, organizational need, customer request, technological advance, legal requirement, policy shift, social need, environmental impacts among others.

4.1.1.3 Agreements

Agreements are used to define initial intentions of the project. They may take forms of contracts, memorandum of understandings (MoUs), service level agreements (SLA), letter of agreements, letter of intent, verbal agreements, email and other written agreements. When a project is to be performed for external customer, a contract is used. Agreements may contain though not limited

to: about the contacting organization, project limits and exclusions, project objectives, deliverable definition, rights, copyrights, patents and other proprietary rights, obligations of stakeholders among others.

4.1.1.4 Enterprise environmental factors

Enterprise environment factors that can influence the Develop Project Charter include: organizational standard operating procedures (SOPs), policies and process definitions; project charter template; historical information and lessons learned from previous projects.

4.1.2 Develop the project charter: Tools and techniques

4.1.2.1 Expert judgment

Expertise is special level of knowledge or competency attributed to the holder of a profession. Expert judgment is therefore used to assess the inputs used to develop the project charter. It is applied to technical and managerial details during this process. For example, for an ICT based project like e-learning project expert judgment can be sought from: education specialists, ICT experts, education policy makers, consultants in the area, project management office, stakeholders including customers and sponsors among others.

4.1.2.2 Facilitation techniques

On the broadest level, facilitation is using knowledge of group dynamics to design and deliver a process to help a group achieve desired results.

- – Planning meetings.
- – Staff meetings.
- – Committee meetings.
- – Conflict resolution
- – Problem solving

Facilitation techniques have broad application within project management processes and guide the development of the project charter.

4.1.3 Develop the project charter: Outputs

4.1.3.1 Project charter

A Project Charter is a concise and clear framework that summarizes the work done in the concept phase of the project. It is in the presentation format of a project proposal though more

summarized. It answers some of the following questions: What is the organisational rationale for the project? Are the project objectives (outputs and expected accomplishment) clear and unambiguous? What actions need to be done? Who is going to do them? What resources are required? What is not going to be done? Is everything feasible and realistic`? Are outputs, expected accomplishment and obcectives „measurable"? If so what measures should be used?

Project charter outline example

The following may form some of the componets of the project charter:

Project Name:

Background / Problem to be addressed:

Intervention Logic (Project Objectives, Expected Accomplishment and Outputs):

Scope (point out „borderline issues"):

Team/ Resource roles: Who does what?

Budget summary? How much is needed to execute the project?

Project Risk Assessment: Which ones have we anticipated? How are we planning to react to the major risks (design!!!)

(Project Milestones: What needs to happen when? Include project review dates in this section)

(Achievement Measurement: How will we know if we've succeeded?)

4.2 Develop the project management plan

Develop Project Management Plan is the process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan. The key benefit of this process is a central document that defines the basis of all project work. The outputs of the develop project charter become the inputs of this process. They include: project charter, output from other processes, enterprise environmental factors, organizational process assets like Standardized guidelines, work instructions, proposal evaluation criteria, and performance measurement criteria. The tools and techniques of the develop the project management plan are: expert judgment, facilitation techniques. The outputs for this process will

depend on the nature and complexity of the project and may include: Project baselines include, but are not limited to: Scope baseline, Schedule baseline, and Cost baseline.

Subsidiary plans include, but are not limited to: Scope management plan, Requirements management plan, Schedule management plan, Cost management plan, Quality management plan, Process improvement plan, Human resource management plan, Communications management plan, Risk management plan, Procurement management plan and Stakeholder management plan. In summary, the key processes of Project Integration Management processes are as follows:

Develop Project Charter—The process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

Develop Project Management Plan—The process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan. The project's integrated baselines and subsidiary plans may be included within the project management plan.

Direct and Manage Project Work—The process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.

Monitor and Control Project Work—The process of tracking, reviewing, and reporting project progress against the performance objectives defined in the project management plan.

Perform Integrated Change Control—The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition.

Close Project or Phase—The process of finalizing all activities across all of the Project Management Process Groups to formally complete the phase or project.

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PROJECT STAKEHOLDER MANAGEMENT
Godfrey Kyasanku

Project Stakeholder Management

According to the Project Management Institute (PMI), the term **project** stakeholder refers to, 'an individual, group, or organization, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project' (Project Management Institute, 2013). A stakeholder is an individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project. Stakeholders may be actively involved in the project or have interests that may be positively or negatively affected by the performance or completion of the project. Different stakeholders may have competing expectations that might create conflicts within the project. Stakeholders may also exert influence over the project, its deliverables, and the project team in order to achieve a set of outcomes that satisfy strategic business objectives or other needs. Stakeholders include all members of the project team as well as all interested entities that are internal or external to the organization. The project team identifies internal and external, positive and negative, and performing and advising stakeholders in order to determine the project requirements and the expectations of all parties involved. The project manager should manage the influences of these various stakeholders in relation to the project requirements to ensure a successful outcome.

Project stakeholder classified
1. Actors are a collective team
2. Stakeholders are particular
3. Factors are situations, conditions, non-human scenarios that affect projects
4. Primary stakeholders: Primary stakeholders are the people and groups most affected by the outcome of the project and the outcome may be positive or negative. In research analysis, they are often divided into groups based upon certain demographic factors such as gender, socioeconomic status, age and ethnicity.
5. Secondary stakeholders: Secondary stakeholders are individuals or groups not directly affected by the outcome of the project, but still having an interest in it. They often help provide aid to the primary stakeholders. These groups may include government agencies, money-lending institutions or monitoring agencies.

Composition of stakeholders
Beneficiaries: Both targeted and untargeted. They form the user group, people who use the resources or service in an area.

Interest groups: People who have an opinion about or who can affect the use of a resource or a service.

Decision makers: People who want to make project decisions.
Key stakeholders are those that can significantly influence or are important to the success of the project.

The following are some examples of project stakeholders:

• **Sponsor.** A sponsor is the person or group who provides resources and support for the project and is accountable for enabling success. The sponsor may be external or internal to the project manager's organization. From initial conception through project closure, the sponsor promotes the project. This includes serving as spokesperson to higher levels of management to gather support throughout the organization and promoting the benefits the project brings. The sponsor leads the project through the initiating processes until formally authorized, and plays a significant role in the development of the initial scope and charter. For issues that are beyond the control of the project manager, the sponsor serves as an escalation path. The sponsor may also be involved in other important issues such as authorizing changes in scope, phase-end reviews, and go/no-go decisions when risks are particularly high. The sponsor also ensures a smooth transfer of the project's deliverables into the business of the requesting organization after project closure.

• **Customers and users.** Customers are the persons or organizations who will approve and manage the project's product, service, or result. Users are the persons or organizations who will use the project's product, service, or result. Customers and users may be internal or external to the performing organization and may also exist in multiple layers. For example, the customers for a new pharmaceutical product could include the doctors who prescribe it, the patients who use it and the insurers who pay for it. In some application areas, customers and users are synonymous, while in others, customers refer to the entity acquiring the project's product, and users refer to those who will directly utilize the project's product.

• **Sellers.** Sellers, also called vendors, suppliers, or contractors, are external companies that enter into a contractual agreement to provide components or services necessary for the project.

• **Business partners.** Business partners are external organizations that have a special relationship with the enterprise, sometimes attained through a certification process. Business partners provide specialized expertise or fill a specified role such as installation, customization, training, or support.

• **Organizational groups.** Organizational groups are internal stakeholders who are affected by the activities of the project team. Examples of various business elements of an organization that may be affected by the project include marketing and sales, human resources, legal, finance, operations, manufacturing, and customer service. These groups support the business environment where projects are executed, and are therefore affected by the activities of the project. As a result, there is generally a significant amount of interaction between the various business elements of an organization and the project team as they work together to achieve project goals. These groups may provide input to requirements and accept deliverables necessary for a smooth transition to production or related operations.

• **Functional managers.** Functional managers are key individuals who play a management role within an administrative or functional area of the business, such as human resources, finance, accounting, or procurement. They are assigned their own permanent staff to carry out the ongoing work, and they have a clear directive to manage all tasks within their functional area of responsibility. The functional manager may provide subject matter expertise or their function may provide services to the project.

• **Other stakeholders.** Additional stakeholders, such as procurement entities, financial institutions, government regulators, subject matter experts, consultants, and others, may have a financial interest in the project, contribute inputs to the project, or have an interest in the outcome of the project.

Project stakeholders and stakeholder engagement are further defined in Section 13 on Project Stakeholder

Project Stakeholder Management

Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution. Stakeholder management also focuses on continuous communication with stakeholders to understand their needs and expectations, addressing issues as they occur, managing conflicting interests and fostering appropriate stakeholder engagement in project decisions and activities. Stakeholder satisfaction should be managed as a key project objective.

Stakeholder management is a critical component to the successful delivery of any project, programme or activity. A stakeholder is any individual, group or organization that can affect, be affected by, or perceive itself to be affected by a programme. Effective Stakeholder Management creates positive relationships with stakeholders through the appropriate management of their expectations and agreed objectives. Stakeholder management is a process and control that must be planned and guided by underlying principles. Stakeholder management within businesses, organizations, or projects prepares a strategy utilizing information (or intelligence) gathered during the following common processes.

Stakeholder analysis

This is a process of identifying a project's key stakeholders, their interests in the project and the ways those interests affect the risks or viability of the project. It helps in identifying the key persons or groups affected by a project and contribute to good project design and implementation and hence project success. Stakeholder management includes the strategy to take in order to understand and deal with the various interest groups. Structured means process or stepwise way of doing work.

Why do a stakeholder analysis?
- Helps PMs to assess project environment
- Draw out the interests of stakeholders in relation to problems which the project is seeking to address
- Identify and resolve conflicts of interests between stakeholders which may influence the success of the project
- Identify relations between stakeholders that can be built upon to improve success
- Assess the appropriate type of participation by different stakeholders at successive stages of the project
- Improve the project's understanding of the needs of those affected by the problem
- Identify the potential winners and losers as a result of the project
- To reduce or hopefully remove potential negative project impacts
- To identify those who have rights, interests, resources, skills and abilities to take part in or influence the course of the project
- Identify full alliances which can be built upon
- Identify who should be encouraged to take part in the project planning and implementation
- Identify and reduce risks

When should SA be done?
- Always at the beginning of the project to draw out the main assumptions which are needed to make a project viable
- Also when the project is reviewed or revised and when it is evaluated
- In other wards throughout the project life cycle to check that the needs are being adequately addressed

The 5 concerns of the Stakeholder Analysis
Identification of:
1. Need: What is needed from stakeholders for your success?
2. Support: What support do you have from the stakeholders? Are they for you, against or they are neutral?
3. Impact: What is the effect of your success on the stakeholders?
4. Power: What is the degree of power which the stakeholders have in relation to your ability to achieve your goal?
5. Influence: What degree of influence do they have in relation to project goal achievement?

Stakeholder Identification
The first step in your stakeholder analysis is to brainstorm who your stakeholders are. As part of this, think of all the people who are affected by your work, who have influence or power over it,

or have an interest in its successful or unsuccessful conclusion. Remember that although stakeholders may be both organizations and people, ultimately you must communicate with people. Make sure that you identify the correct individual stakeholders within a stakeholder organization. So in a nutshell, the stakeholder management comprises four steps, which are below:

- Identify, recognize and acknowledge stakeholders: The process of identifying the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.
- Determine their influence and interest: The process of developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests, and potential impact on project success.
- Establish communication management plan: To guide the process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle.
- Influencing and engaging stakeholder: Control Stakeholder Engagement—The process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders.

Framework of the Analysis

Stakeholders	Interests	Likely to impact on project	Priority
Primary	Determine e.g. high	Determine	High/low
Secondary	Determine the level	Determine	High/low

Prioritize Your Stakeholders
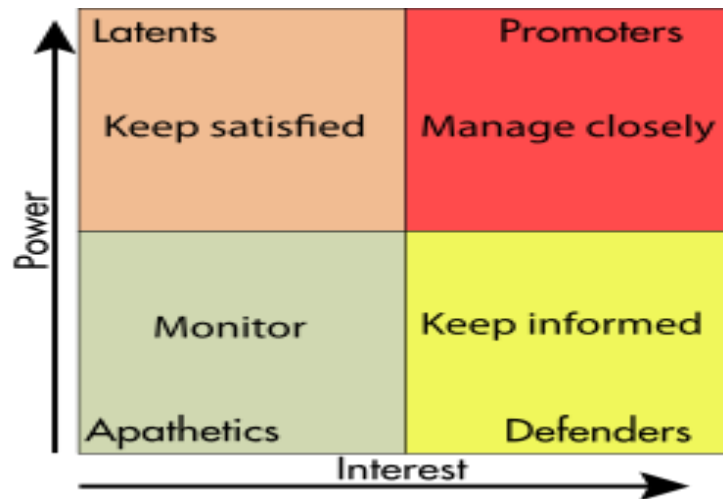
A stakeholders' matrix showing which strategies to use
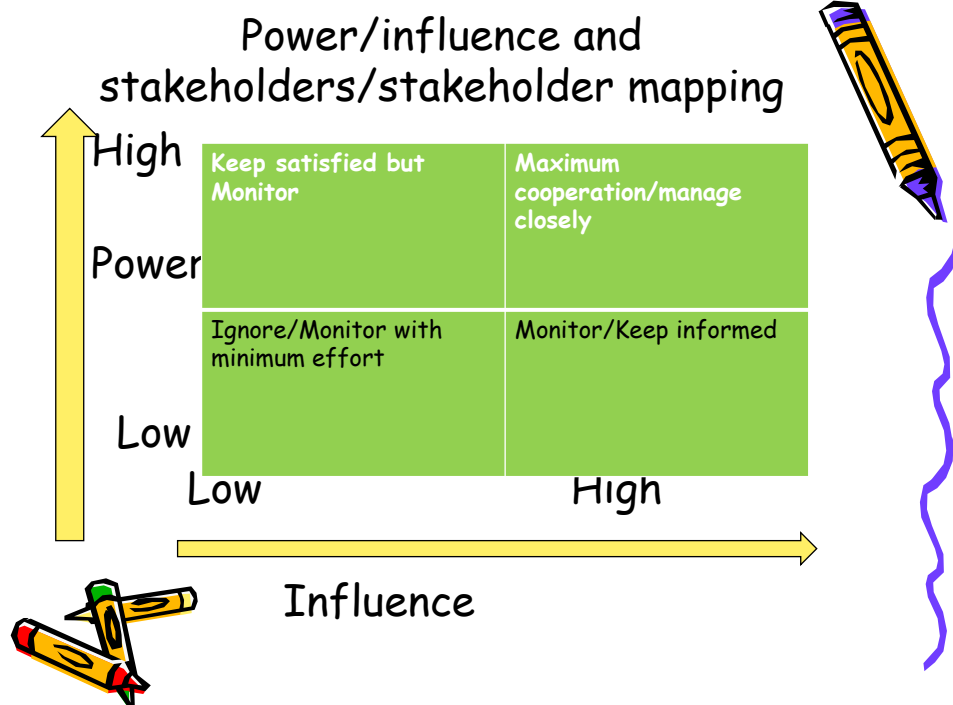
You may now have a long list of people and organizations that are affected by your work. Some of these may have the power either to block or advance. Some may be interested in what you are doing, others may not care. Map out your stakeholders on a Power/Interest Grid as shown by the image, and classify them by their power over your work and by their interest in your work. There are other tools available to map out your stakeholders and how best to influence then.

For example, your boss is likely to have high power and influence over your projects and high interest. Your family may have high interest, but are unlikely to have power over it. Someone's position on the grid shows you the actions you have to take with them:

- **High power, interested people:** these are the people you must fully engage and make the greatest efforts to satisfy.
- **High power, less interested people:** put enough work in with these people to keep them satisfied, but not so much that they become bored with your message.
- **Low power, interested people:** keep these people adequately informed, and talk to them to ensure that no major issues are arising. These people can often be very helpful with the detail of your project.
- **Low power, less interested people:** again, monitor these people, but do not bore them with excessive communication.

Understanding Your Key Stakeholders

You now need to know more about your key stakeholders. You need to know how they are likely to feel about and react to your project. You also need to know how best to engage them in your project and how best to communicate with them. Key questions that can help you understand your stakeholders are:

- What financial or emotional interest do they have in the outcome of your work? Is it positive or negative?

- What motivates them most of all?

- What information do they want from you?

- How do they want to receive information from you? What is the best way of communicating your message to them?

- What is their current opinion of your work? Is it based on good information?

- Who influences their opinions generally, and who influences their opinion of you? Do some of these influencers therefore become important stakeholders in their own right?

- If they are not likely to be positive, what will win them around to support your project?

- If you don't think you will be able to win them around, how will you manage their opposition?

- Who else might be influenced by their opinions? Do these people become stakeholders in their own right?

Key principles of Stakeholder engagement

- Communicate: To ensure intended message is understood and the desired response achieved.
- Consult, early and often: To get the useful information and ideas, ask questions.
- Remember, they are human: Operate with an awareness of human feelings.
- Plan it: Time investment and careful planning against it, has a significant payoff.
- Relationship: Try to engender trust with the stakeholders.
- Simple but not easy: Show your care. Be empathetic. Listen to the stakeholders.
- Managing risk: Stakeholders can be treated as risk and opportunities that have probabilities and impact.
- Compromise: Compromise across a set of stakeholders' diverging priorities.
- Understand what success is: Explore the value of the project to the stakeholder.
- Take responsibility: Project governance is the key of project success

Organizational Stakeholders

It is well acknowledged that any given organization will have multiple stakeholders including, but not limited to, customers, shareholders, employees, suppliers, and so forth. Within the field of marketing, it is believed that customers are one of the most important stakeholders for managing its long-term value, with a firm's major objective being the management of customer satisfaction. Others see employee management, though employee job satisfaction and pay, as the key issue. More recently, it has been shown that organizational stakeholder management as a multi-faceted activity. Thus, it has been shown that organizations can be more successful if they manage both their customers and employees jointly, rather than in isolation.

Engaging and Communicating with Stakeholders

With a clear understanding of your Stakeholders, engaging and communicating can be achieved through a variety of channels based upon who the stakeholder is.

- **High power, interested people:** Manage closely. Best channels: Issue, Change Logs, Status Meetings
- **High power, less interested people:** Keep satisfied. Best channels: Steering Committee, Board Meeting Updates
- **Low power, interested people:** Keep informed. Best channels: In-Person, Video, Email Updates
- **Low power, less interested people:** Monitor. Best channels: Send Email, Status Reports

Stakeholder Impact on Project Success

Effective project managers understand that to get results they must create an atmosphere of enablement. This concept is reinforced in research published in The Standish Group's famous Chaos report which revealed that the majority of information technology projects fail, and for

those that succeed, what constitutes the top reasons for success. The number one reason for project success is cited as user involvement. Healthy user involvement is supported by an emphasis on quality relationships (trust and structure), expectation management (achievable metrics, timing), and clear business communications (talking and writing plainly). Other stakeholder-based contributions to project success include executive support (visible sponsorship toward the core values of the project); the emotional maturity of the project manager (ability to rally stakeholders to the common purpose); and effective use of the organization's ecosystem (infrastructure, procurement, facilities, legal, etc.) to support the project. Next is the process to help you define this universe of stakeholders and what is needed to gain their support.

Conducting a Stakeholder Analysis
Your list of stakeholders can be very large, and you probably don't want to expend equal emphasis or energy on every stakeholder. Stakeholder analysis involves three key steps:
- Identify the relevant information for each stakeholder: relevant information are things like their particular interest in the project, their role in the project, their level of authority (position), needs, and expectations of the project.
- Identify the potential impact or support of each stakeholder: this can be simple like using two measures low and high.
- Assess how key stakeholders are likely to react to various situations: another measure like low sensitivity or high sensitivity

Your analysis can be plotted into a 2x2 grid that shows the stakeholder's relationship to the project. This helps categorize stakeholders and determine where project management should direct its efforts. It is also a key input into the communications, risk and scope plans.
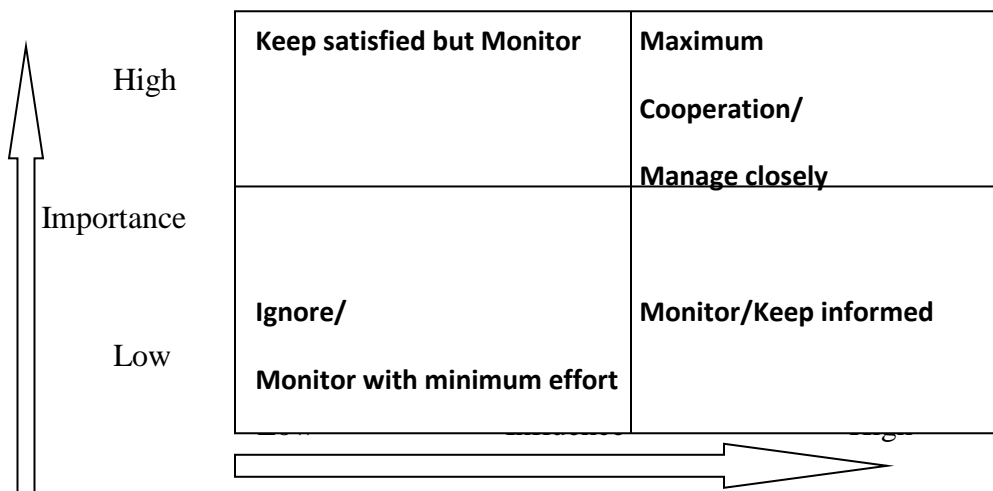
In the 2x2 grid, the X horizontal axis identifies the level of *interest*. This is the measure of how much they will be affected by the outcome of the project from low to high. The Y vertical axis of the grid identifies the level of *power*. This is the measure of how much a stakeholder can affect the outcome of a project from low to high. So in a 2x2 grid there are four squares.

Stakeholders' analysis should be done when possible projects are identified. It should be reviewed at later stages of the project cycles to check that the needs of the stakeholders are being adequately addressed.

Step 1: Stakeholders Table

Stakeholders	Interest	Likely impact of the project	Priority
Primary			
Secondary			

Step 2: Table Showing Influence and Stakeholders

	Keep satisfied but Monitor	Maximum Cooperation/ Manage closely
High		
Importance		
Low	Ignore/ Monitor with minimum effort	Monitor/Keep informed

Stakeholders' participation in decision-making throughout the whole project cycle (project planning, implementation, monitoring and evaluation) is likely to result in:

- **Improved effectiveness**; Participation increases the sense of ownership of the project by beneficiaries, which increases likelihood of project objectives being achieved.
- **Enhanced responsiveness;** If people participate at the planning stage, the project is more likely to target effort and inputs at perceived needs.
- **Improved efficiency;** If local knowledge and skills are drawn on, the project is more likely to be of good quality, stay within budget and finish on time. Mistakes can be avoided and disagreements minimized
- **Improved sustainability and sustainable impact;** More people are committed to carrying on the activity after outside support has stopped
- **Empowerment and increased self reliance**; Active participation helps to develop skills and confidence amongst beneficiaries.
- **Improved transparency and accountability;** Because stakeholders are given information and decision-making power.

- **Improved equity;** If the needs, interests and abilities of all stakeholders are taken into account

How Does Stakeholder Management Work?

Stakeholder management, in a business project sense, works through a strategy. This strategy is created using information gathered through the following processes:

- **Stakeholder Identification -** It is first important to note all the stakeholders involved, whether internal or external. An ideal way to do this is by creating a stakeholder map.
- **Stakeholder Analysis -** Through stakeholder analysis, it is the manager's job to identify a stakeholder's needs, interfaces, expectations, authority and common relationship.
- **Stakeholder Matrix -** During this process, managers position stakeholders using information gathered during the stakeholder analysis process. Stakeholders are positioned according to their level of influence or enrichment they provide to the project.
- **Stakeholder Engagement -** This is one of the most important processes of stakeholder management where all stakeholders engage with the manager to get to know each other and understand each other better, at an executive level.
  Thus communication is important for it gives both the manager and stakeholder a chance to discuss and concur upon expectations and most importantly agree on a common set of Values and Principals, which all stakeholders will stand by.
- **Communicating Information -** Here, expectations of communication are agreed upon and the manner in which communication is managed between the stakeholders is established, that is, how and when communication is received and who receives it.
- **Stakeholder Agreements -** This is the Lexicon of the project or the objectives set forth. All key stakeholders sign this stakeholder agreement, which is a collection of all the agreed decisions.

  In today's modern management project practice, managers and stakeholders favor an honest and transparent stakeholder relationship.

Failures in Stakeholder Management
Some organizations have poor stakeholder management practices and this arises because of:

- Communicating with a stakeholder too late. This does not allow for ample revision of stakeholder expectations and hence their views may not be taken into consideration.
- Inviting stakeholders to take part in the decision making process too early. This results in a complicated decision making process.
- Involving the wrong stakeholders in a project. This results in a reduction in the value of their contribution and this leads to external criticism in the end.
- The management does not value the contribution of stakeholders. Their participation is viewed as unimportant and inconsequential.

Whatever way stakeholder management is approached, it should be done attentively so as to achieve the best results.

Achieving Good Stakeholder Management

Insufficient involvement and ineffective communication with stakeholders can lead to project failure. The following are a few ideas that can be used to achieve good stakeholder management practices:

- Management and stakeholders should work together to draw up a realistic list of goals and objectives. Engaging stakeholders will improve business performance and they take an active interest in the project.
- Communication is the key. It is important for stakeholders and management to communicate throughout the course of the project on a regular basis. This ensures that both parties will be actively engaged and ensure smooth sailing during the course of the project.
- Agreeing on deliverables is important. This makes sure there is no undue disappointment at the end. Prototypes and samples during the course of the project helps stakeholders have a clear understanding regarding the end project.

Managing Stakeholders

Often there is more than one major stakeholder in the project. An increase in the number of stakeholders adds stress to the project and influences the project's complexity level. The business or emotional investment of the stakeholder in the project and the ability of the stakeholder to influence the project outcomes or execution approach will also influence the stakeholder complexity of the project. In addition to the number of stakeholders and their level of investment, the degree to which the project stakeholders agree or disagree influences the project's complexity. A small commercial construction project will typically have several stakeholders. All the building permitting agencies, environmental agencies, and labor and safety agencies have an interest in the project and can influence the execution plan of the project. The neighbors will have an interest in the architectural appeal, the noise, and the purpose of the building.

Relationship Building Tips

Take the time to identify all stakeholders before starting a new project. Include those who are impacted by the project, as well as groups with the ability to impact the project. Then, begin the process of building strong relationships with each one using the following method.

- **Analyze stakeholders:** Conduct a stakeholder analysis, or an assessment of a project's key participants, and how the project will affect their problems and needs. Identify their individual characteristics and interests. Find out what motivates them, as well as what provokes them. Define roles and level of participation, and determine if there are conflicts of interest among groups of stakeholders.

- **Assess influence**: Measure the degree to which stakeholders can influence the project. The more influential a stakeholder is, the more a project manager will need their support. Think about the question, "What's in it for them?" when considering stakeholders. Knowing what each stakeholder needs or wants from the project will enable the project manager to gauge his or her level of support. And remember to balance support against influence. Is it more important to have strong support from a stakeholder with little influence, or lukewarm support from one with a high level of influence?
- **Understand their expectations**: Nail down stakeholders' specific expectations. Ask for clarification when needed to be sure they are completely understood.
- **Define "success"**: Every stakeholder may have a different idea of what project success looks like. Discovering this at the end of the project is a formula for failure. Gather definitions up front and include them in the objectives to help ensure that all stakeholders will be supportive of the final outcomes.
- **Keep stakeholders involved**: Don't just report to stakeholders. Ask for their input. Get to know them better by scheduling time for coffee, lunch, or quick meetings. Measure each stakeholder's capacity to participate and honor time constraints.
- **Keep stakeholders informed**: Send regular status updates. Daily may be too much; monthly is not enough. One update per week is usually about right. Hold project meetings as required, but don't let too much time pass between meetings. Be sure to answer stakeholders' questions and emails promptly. Regular communication is always appreciated – and may even soften the blow when you have bad news to share.

These are the basics of building strong stakeholder relationships. But as in any relationship, there are subtleties that every successful project manager understands – such as learning the differences between and relating well to different types stakeholders.

How to Relate to Different Types of Stakeholders

By conducting a stakeholder analysis, project managers can gather enough information on which to build strong relationships – regardless of the differences between them. For example, the needs and wants of a director of marketing will be different from those of a chief information officer. Therefore, the project manager's engagement with each will need to be different as well.

Stakeholders with financial concerns will need to know the potential return of the project's outcomes. Others will support projects if there is sound evidence of their value to improving operations, boosting market share, increasing production, or meeting other company objectives.

Keep each stakeholder's expectations and needs in mind throughout each conversation, report or email, no matter how casual or formal the communication may be. Remember that the company's interests are more important than any individual's – yours or a stakeholder's. When forced to choose between them, put the company's needs first.

No matter what their needs or wants, all stakeholders will respect the project manager who:
- Is always honest, even when telling them something they don't want to hear
- Takes ownership of the project
- Is predictable and reliable
- Stands by his or her decisions
- Takes accountability for mistakes

Supportive Stakeholders are Essential to Project Success

Achieving a project's objectives takes a focused, well-organized project manager who can engage with a committed team and gain the support of all stakeholders. Building strong, trusting relationships with interested parties from the start can make the difference between project success and failure.

Tools to Help Stakeholder Management

There are many project decelerators, among them lack of stakeholder support. Whether the stakeholders support your project or not, if they are important to your project, you must secure their support. How do you do that?

First, you must identify who your stakeholders are. Just because they are important in the organization does not necessarily mean they are important to your project. Just because they think they are important does not mean they are. Just because they don't think they need to be involved does not mean they do not have to be. The typical suspects: your manager, your manager's manager, your client, your client's manager, any SME (subject matter expert) whose involvement you need, and the board reviewing and approving your project. Note that in some situations there are people who think they are stakeholders. From your perspective they may not be, but be careful how you handle them. They could be influential with those who have the power to impact your project. Do not dismiss them out of hand.

Second, you need to determine what power they have and what their intentions toward your project are. Do they have the power to have an impact on your project? Do they support or oppose you? What strategies do you follow with them?

Third, what's the relationship among stakeholders? Can you improve your project's chances by working with those who support you to improve the views of those who oppose you? Figure 5.2 summarizes the options based on an assessment of your stakeholders' potential for cooperation

and   potential   for   threat.

Potential for Threat

Potential for Cooperation		Low	High
	Low	Type: Marginal Strategy: Monitor	Type: Non-Supportive Strategy: Defend
	High	Type: Supportive Strategy: Involve	Type: Mixed Blessing Strategy: Collaborate

Figure 1.2 Stakeholder Analysis

Now that you have this information, you can complete a stakeholder analysis template (Table 1.1) that will help you define your strategies to improve their support:

Stakeholder Names and Roles	How important? (Low – Med – High)	Current level of support? (Low – Med – High)	What do you want from stakeholders?	What is important to stakeholders?	How could stakeholders block your efforts?	What is your strategy for enhancing stakeholder support?

Table 1.1 Stakeholder Analysis Template

Finally, a key piece of your stakeholder management efforts is constant communication to your stakeholders. Using the information developed above, you should develop a communications plan that secures your stakeholders' support.

SH Management strategies

Two basic approaches
1. Buffering: how to protect the project from stakeholder influence/power
2. Bridging: How to cooperate and build interdependencies with key stakeholders

Actions used in buffering
- Dealing with the press cautiously/with care
- Physical barriers and security systems, protecting the project assets
- Signing agreements on matters decided upon

- ▪ Generating baseline information to guard against challenging the project success
- ▪ Setting up one group against the other to avoid joint action

Actions that can be used in bridging
- ▪ Regular meetings
- ▪ Consultations on major decisions
- ▪ Use of liaison officers/public relation officers
- ▪ Networking/collaboration and partnering
- ▪ Daily briefs to key stakeholders
- ▪ Stakeholder participation in decision making throughout the whole project cycle. This is likely to results in improved effectiveness, enhanced responsibility and improved sustainability

Conclusion: steps in carrying out SHA

In conclusion, stakeholder management is the effective management of all participants in a project, be it external or internal contributors. In order to achieve an outcome from the projects, good stakeholder management practices are required. Arguably, the most important element in stakeholder management is communication where a manager has to spend his 99% time in doing meetings, checking and replying e-mails and updating and distributing reports, etc.

1. Scan the project environment and identify potentially relevant actors and factors
2. Screen actors and factors for:
- ✓ Dependency: how important are actors and factors to the successful outcome of the project
- ✓ Risk: The likelihood of something going wrong
- ✓ Power: How much control or influence can be exerted over the actor or factor

3. Identify potential problem of actors and factors. Pay attention to those with these characteristics: high dependency, high risks and power

4. Develop strategies to deal with problem actors or factors and act on them. In general your goal should be to reduce dependency and risks and increase your low power over key factors

5. Repeat these steps throughput implementation. This type of context analysis should not be one time activity. Conditions in the environment are always changing so mgt strategies need to change.

Reference

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CHAPTER NINE
PROJECT HUMAN RESOURCE MANAGEMENT
Sebbowa Ephrance and Aryamanya Aston

Introduction

In today's highly competitive environment, managing people effectively has a significant impact on the results of a project, most major project failures are related to social issues (Hubbard, 1990). Projects are complex in nature and therefore managing human resources in an appropriate manner is a key to success in project implementation, these people challenges are considered to be more difficult to manage than the technical difficulties encountered (Tadinen, 2005). Human resource management is being renewed in organisations and has become one of the fundamental functions of the project management, it has changed from an inactive and problem-solving role to a strategic function, focusing on the retention and development of the best human resources (Clemmons & Simon, 2001).This chapter is to examines the role of human resource management in promoting project success since *Tom Peters, management consultant and writer quotes* "*The difference in productivity between an average team and a turned-on, high performance team is not 10%, 20% or 30%, but 100%, 200% even 500%!*"

Background

Human Resource Management (HRM) is a strategic and coherent approach to the management of an organization's most valued assets, the people working there who individually and collectively contribute to the achievement of organizational goals and objectives (Armstrong, 2006). The strategic role of HR means that HR professionals are proactive in addressing business realities like project issues and focusing on future project needs such organizational planning, compensation strategies, performance management, talent retention and ensuring result oriented management in the project life cycle. Project human resource management involves the processes required to make the most effective use of people involved in the project. The processes involves planning for the human resources in the project, identifying and documenting project roles for the different individuals, assigning them responsibilities, designing the organizational structure, clearly showing the reporting relationship, acquiring the project team, getting the needed personnel assigned to and working on the project, developing the project team, building individual and group skills to enhance project performance, managing the project team through tracking team member performance, motivating team members, providing timely remuneration to the project team and providing an open door policy to listen to employee grievances during the process of executing the project.

Rationale for a project human resource knowledge area

HRM plays a key role in the different stages of the project lifecycle and therefore is a strategic contributor to project success, human resources should be seen as strategic partners rather than

administrative costs because during project management the human resource function has a direct impact on achieving the vision, mission, goals and objectives of a project. Managing human resources in an appropriate manner is a key for successful implementation of a project, project implementation results into inevitable change process, which accordingly brings in many behavioral and managerial challenges such as user resistance, management resistance, employees lack of motivation, high labour turnover of key personnel, lack of expertise, insufficient human assets and inadequate training.

Several studies agree that the biggest obstacle to project success are people, organisational issues and change management (Chen 2001; Gulla and Brasethvik 2000; Kumar et al 2003; Markus et al 2000).People challenges are considered to be more difficult to manage than the technical problems (Kumar et al 2003; Skok and Legge 2001; & Aladwani 2001). The success of all the different stages in the project life cycle depends on human factors like people management, organisational issues, change management, effective communication, empowerment of team members, frequent organized meetings, team building, motivation of team members (Hauschildt, 2000).

The life cycle of a project is comprised of four main phases namely the conceptual phase, design Phase, execution phase and finishing phase. The conceptual phase includes idea generation; the initiation and roll out of the project; the completion of a feasibility study; and defining the purpose of the intended project. This is the first phase and its main task is primarily to evaluate the proposed project aroused from a recognized need, opportunity or problem in relating to the realization of an organization's strategic objectives. The development phase involves planning, designing and appraising the concept of the project. during this phase, the management will appoint a project manager and key members to participate in the project. The activities in this phase involve the development of the works, such as scope, tasks, resources, budget and cash-flows, creation of a timeline, and other activities that need to be undertaken to successfully achieve the planned project.

The execution phase involves implementation, management, control and construction of the project. The activities include: setting up the project organization; producing detailed documentation; procuring materials and services; and organizing, directing and controlling the project activities toward accomplishing the project's purpose and objectives. The finishing phase is the final phase of a project life cycle where the project will be completed, tested and commissioned, then closed-out and handed over to the client or main stakeholder. This phase marks the finalization of the project. The activities may include: checklists of outstanding work; ending the contracts; transferring of the project and responsibility to client who is the end-user; post-completion review, evaluation and feedback, disbanding the project team, a final statement of account; and commencing the defect liability obligations. The phase of a project represents the completion of one or more deliverables.

Recent evidence shows that projects are failing because of inappropriate use of human resource policies and practices during project management life cycle for example, among the reasons for the perceived failure of National Agricultural Advisory Services Project (NAADS-Uganda) was the bureaucratic organizational structure which was ineffective as far as reaching out to and empowering individual farmers was concerned, instead of using field-based hands-on training, NAADS officials used classroom-based training which farmers dodged deliberately because they disliked its theoretical nature, Its leadership was characterized by incompetence, most of the NAADS employees were recruited without considering merit and expertise. They were hand-picked by bigwigs in government based on patronage, nepotism, and influence peddling, this culminated into project failure (Kiyita, 2014)

When employees are not recruited on merit and expertise but under conditions of patronage, influence peddling and corruption, it is difficult for them to manage a project competently and effectively. Research indicates that instead, such employees serve the interests of those who give them the jobs and they become incompetent to accomplish the project successfully. Teamwork is at the core of project success, but the level at which it was demonstrated within the NAADS project was very insignificant. When employees view their managers /or leaders as incompetent, they are not motivated enough to be effective as they execute their project tasks.

Similarly, Enterprise Resource Project (ERP) implementation fail due to mainly human resource issues such as behavioural and management related challenges, in the implementation process many ERP projects have been terminated. The reasons being: end-user not being ready, resistance to change, lack of user education and training, high turnover of key personnel, lack of communication and support documentation, the long layer of consultants, technological problems such as software bugs and configuration difficulties (Kumar et al 2003; Sumner 2000).

Sumner (2000); Welt (1999); Holland et al (1999) have listed people issues in their critical success factors recommendations when dealing with enterprise resource planning projects. The human activity issues and problems that companies are encountering should be looked from the different sides of the staff, internal and external experts, system professionals, management, vendors, users and other people involved in such projects. Also the skills people possess influence the outcome of the project. Human factors come into play starting with the pre-planning stage, before a project is approved, the approval process, project planning and project implementation through the transition to production status (Burke, Kenney, Kott, & Pflueger, 2001).

Ohashi (2010) reported the seriousness of staff turnover in the donor community projects in Ethiopia, implementation of development projects was slow and costly because the project

offices kept losing key staff and often had difficulty filling vacancies, Staff turnover in projects led to loss of investments in training and experience this was a cost to the project management.

Evans 1994; Zucchi &Edwards (1999): Marjanovic (2002)also concur that the major reason for failure of projects is the lack of attention towards the human issues, Olson (2004) lists the foremost reasons of BPR project failures from the study of Sutcliffe's (1999),these include ; employee resistance to change, inadequate attention to employee concerns, inadequate and appropriate staffing, inadequate developer and user tools, mismatch of strategies used and goals, lack of oversight and failure of leadership commitment.

According to O'Leary (2000) the reason why large number of software implementation projects fail is because management is paying too little attention to human factors hence in order to succeed in project implementation, human needs and concerns have to be addressed .Training of new employees must remain a continuous effort, the importance of training cannot be neglected and it is not something that should be conducted only before or after the implementation but rather it has to be present in each part of the project life cycle.

If project success is measured both in terms of bringing the project on time and within budget as well as the satisfaction with and the ability of the users to benefit, then managing these "human factors" is the real key to the success of any project. This puts a lot of pressure on the project leadership and perhaps even more pressure on those who appoint that leadership team to ensure success.

Human factors that cause problems in project implementation include but are not limited to:
1. Little or no involvement/commitment by project team members in decision making
2. Poor skills among team members, were technical people do not exist expect to provide a level of support that will get ensure their work can get done.
3. Resistance to change – refusing to see benefits of a new system for all because what is known works for an individual
4. Lack of role clarity among team members
5. Inadequate staffing – Both technical and functional
6. Scope creep – implementing features outside original scope
7. Inadequate communication by the project managers to their subordinates
8. Conflicts between team members
9. Inadequate training of project team members
10. Inadequate motivation of project team members
11. Inadequate supervision and monitoring by the project management team
12. Lack of planning for the human resource needs in the project life cycle process.
13. Poor recruitment and selection procedure of employees by the project leaders

Unless management pays more attention to human resource issues during the different stages of the project life cycle, project failure will continue to persist and organisations will continue to incur losses.

The role of human resource policies and practices in promoting project success in different stages of the project life cycle
Organizational planning / Job analysis in the planning phase of the project
To enable the project succeed project managers together with HR managers should carry out job analysis to enable effective recruitment and selection of team members, establish performance standards, enable salary administration and employee training, there is need to collect and record information about all the jobs in the project , Job analysis involves compiling the Job descriptions in terms of duties, responsibilities, reporting relationship and working environment of all project team members this promotes role clarity and authority.

Job specification involves identifying the qualifications, skills, project experience, and personal characteristics an individual must have to perform the project tasks this promotes selection of competent and skilled team members.
Job evaluation also pays a significant role at this stage, it involves attaching pay to jobs in terms of salaries and wages basing on skills, experience, seniority and the nature of the working environment this enables the project leadership have proper planning for employee remuneration and incentives.

Designing the project organizational chart is similarly important at this stage, the organisational chart shows the different departments/ functional units, job functions and personnel in those units, it promotes team work among employees, effective monitoring and supervision by the project manager and shows authority in project management. The project manager should use the responsibility assignment matrix to show the people responsible for performing the project tasks.

Human resource planning in project management
The concentration of cost and staffing are slight at the beginning, increasing toward the completion and decreasing rapidly toward the finishing phase of the project. Human resource planning should be aligned with the overall project planning phase. Human resource planning enables the project managers forecast the future human requirements/ needs for the project in terms of quality and quantity in line with the project goals. The process ensures that ensures that there is neither surplus nor shortage or human resources in the project life cycle, a surplus or shortage of human resources is a cost to the project stake holders.

Projects experience staff turnover as a result of promotions, deaths, resignations and transfers due to failure to develop a departmental human resource strategy and lack of recruitment and

retention strategy (Mokonyama, 2009). Human resource plans such as the recruitment plan which looks at the number and nature of skills of people to be employed, the departments in which they will work and their positions is very significant to ensure that the right people are recruited for the right jobs at the right time, The redundancy plan also shows who will be redundant, when the employee will be redundant and the department where he works during the project lifecycle, plans can be made to lay off those become redundant or retraining them for new jobs required during project execution, the retention plan, training plan, succession plan and productivity plan are equally significant at this stage.

Human resource forecasting during project planning requires the project manager to ask the following questions:
1. How many employees will be required to achieve the project strategic goals?
2. Are these people available within the organization or they are outside?
3. Which employees are likely to leave their jobs and create vacancies?
4. What jobs will need to be filled?
5. What type of skills must the staff have?
6. Which new jobs will be created when the project is initiated?
7. Which jobs will be eliminated?
8. How will situations such as resignations, retirements, dismissals, transfers, promotions, accidents and death of the employees' impact on the HR needs during the project lifecycle?
9. How will the external environment - political, economic, social, technological and legal requirements impact on HR needs during the project life cycle?
10. How many people are expected to stay with the organization until project completion?
11. How and where will the organization get people to fill the vacant jobs to perform the project tasks?

Answering the above questions enables the manager carry out successful human resource planning and identifies the HR needs during the project planning stage.

Integrating HR strategies with strategic goals and objectives of the project
The ability to control costs and add value to the project's output is at its greatest during the Conceptual Phase, during this stage the human resource manager should align the project strategy with the human resource strategy, focusing on future project needs such as strategic planning, compensation strategies, performance management and expected results after closing the project. HR costs in terms of compensation and reward, recruiting the right, skilled and competent personnel are minimized while optimumly using the human resources to maximize output / performance to meet the vision, goals and objectives of the project. In the process of project implementation there is need for induction training of new employees to their jobs, introducing them to the working environment, communicating to them company rules and regulations and the expected performance standards to that the employees meet the set project

goals, objectives, project mission and vision. This enables the HR strategy produce results through executing projects that create value.

Project Leadership

Top Management Support and the project team are the two human resource related factors that have been rated as highly critical to project success (Young & Jordan, 2008). The magic and power of teams is captured in the term "synergy," which is derived from a Greek word *sunergos*: meaning working together. Project team managers functioning within any form of organizational structure may have positive synergy and negative synergy. Based on a systems approach, positive synergy can be found in the phrase "The whole is greater than the sum of its parts" whereas negative synergy occurs when the whole is less than the sum of its parts. During an interview with one of the organizational members as to why the enrolments in a certain school was dropping, a respondent mentioned, "*Instead of operating as one big team, we divided into a series of groups: academics, finance, marketing and a lot of time was taken gossiping and complaining against each other. As the problem worsened, everyone started covering their tracks and trying to pass the blame (blame game scenario) on to others. After a while, direct conversation was avoided and the teams resorted to emails which even escalated the problem too further since team members started to abandon the school because of poor project leadership*."

To such a negative experience, a positive experience would be one where problems and setbacks are shared and dealt with straight on. There is need to care about the project and look out for each other and challenge each other to do better. Meanwhile during project leadership, the project manager should clearly understand the tools, techniques and practices within the project human resource management processes which are as follows:

a) **Plan Human Resource Management**—The process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan.
b) **Acquire Project Team**—The process of confirming human resource availability and obtaining the team necessary to complete project activities.
c) **Develop Project Team**—The process of improving competencies, team member interaction, and overall team environment to enhance project performance.
d) **Manage Project Team**—The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance

Plan human resource management

The essence of this process is to acquire the project team / recruit and select the best employees with the right skills and competences to perform project tasks. It is essential to have people with right set of business skills, technical skills, interpersonal and information technology skills to ensure the success of a project because human resource competences have a direct impact on the outcome of the project. The input at this phase are project management plan, activity resource

requirements, enterprise environmental factors and organizational process assets. At this phase, the tools and techniques are organization charts and position descriptions, networking, expert judgment and meetings. The output will be a human resource management plan.

Acquire project team

The process of locating and encouraging potential applicants to apply for existing job openings requires maximizing all opportunities in the internal and external sources of recruitment these include job posting, Promotions, walk ins, website recruitment, gate hiring contractors, universities, using employment agencies, advertising on radios, television and newspapers, among others, this is followed by conducting interviews basing on merit and capability and choosing the best candidate out of the many suitable for the job. Selecting a wrong person for the job without relevant qualifications for that particular job and at the wrong time is a project cost, leads to poor quality services, incompetence and project failure. For instance during acquire project teams phase, some examples of selection criteria that can be used to score team members are shown as follows:

a) **Availability.** Identify whether the team member is available to work on the project within the time period needed. If there are there any concerns for availability during the project timeline.
b) **Cost.** Verify if the cost of adding the team member is within the prescribed budget.
c) **Experience.** Verify that the team member has the relevant experience that will contribute to the project success.
d) **Ability.** Verify that the team member has the competencies needed by the project.
e) **Knowledge.** Consider if the team member has relevant knowledge of the customer, similar implemented projects, and nuances of the project environment.
f) **Skills.** Determine whether the member has the relevant skills to use a project tool, implementation, or training.
g) **Attitude.** Determine whether the member has the ability to work with others as a cohesive team.
h) **International factors.** Consider team member location, time zone and communication capabilities.

The input of this phase are human resource management plan, enterprise environmental factors and organizational process assets. The tools and techniques are pre-assignment, negotiation, acquisition, multi-criteria analysis. The outputs are project staff assignments, resource calendars and project plan management updates.

Develop project teams

This is the process of improving competencies, team member interaction, and overall team environment to enhance project performance. The key benefit of this process is that it results in improved teamwork, enhanced people skills and competencies, motivated employees, reduced staff turnover rates, and improved overall project performance. Team work is a critical factor for project success, developing effective project teams is one of the responsibilities of the project manager. The composition of project teams with competent and skilful project team members and external consultants influences directly the output of the project.

Welti (1999) recommends that while structuring the project team including a project leader, project members and consultants' trust has to be established among the project team members, steering committee and consulting company to ensure success of the project. The projects are more difficult to implement when distrust exists among the project team members, Close personal communication among the team members, regular meetings, honest and open information policy, good coaching, support by the project leader and project manager is significant in the process of team building.

Allocation of responsibility to project members and giving them incentives are some the measures that help to build trust among team members, all teams involved in the project must understand, be dedicated, be strongly committed to achieving, maintaining and fulfilling project goals. They must understand the project management process, its purpose and values, and be committed to following the steps and necessary procedures. They should also possess adequate capability, including skill and experience (Ammeter & Dukerich, 2002).

Hoe (2002-2012: 2) outlined that personal problems is a failure factor of project management. Team members' problem can affect the schedule of project management. De-motivation is a killer in project management this requires the project manager to find out the causes and take immediate action to motivate the team members (Hoe, 2002-2012:1). In Mabula, a community garden kept running due to the reason that the level of motivation among team members was very high, On the contrary, in Pepela lack of motivation among the youth was a problem for the success of a community garden (Maharjan *et al*, 2003: 3-3). Employees must have necessary customer service skills to interact effectively with clients.

Work force diversity especially in multinational organization projects leads to a large number of human resource issues especially with getting team work and producing good results. When the project has people belonging to different cultures, gender, races, religions, sex then there is need to be extra careful as there are differences in the points of view and behavior by the different team members, in this case, something which is considered legal or good by one team member can be disliked by another member, this affects overall employee performance. Efforts should be made by project managers to accommodate the different culture diversities at work place a lot of counseling and employee training is needed to help the diverse workforce adapt to the organizational culture so as to achieve a common goal through synergy. Team members must have intercultural sensitivity in order to understand that one's own preferred way of doing things is but one of several possible approaches and those other cultures may have different perspectives and preferences, they must demonstrate comfort with other cultures and be trained to accept these differences in the working environment to enable project success.

One of the models used to describe team development is the Tuckman ladder (Tuckman, 1965; Tuckman & Jensen, 1977), which includes five stages of development that teams may go through. Although it's common for these stages to occur in order, it's not uncommon for a team

to get stuck in a particular stage or slip to an earlier stage. Projects with team members who worked together in the past may skip a stage.

  a) **Forming.** This phase is where the team meets and learns about the project and their formal roles and responsibilities. Team members tend to be independent and not as open in this phase.

  b) **Storming.** During this phase, the team begins to address the project work, technical decisions, and the project management approach. If team members are not collaborative and open to differing ideas and perspectives, the environment can become counterproductive.

  c) **Norming.** In the norming phase, team members begin to work together and adjust their work habits and behaviors to support the team. The team learns to trust each other.

  d) **Performing.** Teams that reach the performing stage function as a well-organized unit. They are interdependent and work through issues smoothly and effectively.

  e) **Adjourning.** In the adjourning phase, the team completes the work and moves on from the project. This typically occurs when staff is released from the project as deliverables are completed or as part of carrying out the Close Project or Phase process.

The inputs at this phase are: human resource management plans, project staff assignment, resource calendars, appraisals and project performance review meetings. The tools and techniques are: interpersonal skills, training, team building activities, ground rules, recognition and rewards, personnel assessment tools. The outputs are team performance assessments.

Management project teams

HRM creates transformational leaders who are people oriented, empower employees, encourage participatory management, promote corporate culture, have a shared mission and vision with project team members. An effective leader is one who is able to exert influence over subordinates successfully towards achievement of project goals he or she should have an open door policy that welcomes subordinates to discuss problems with them freely any time. Hauschildt (2000) identifies seven key sets of talents and abilities that must be present on the project leadership team to ensure project success: If you are putting together a project implementation team or if you are the project leader a key first step is to build a team that contains these talents and abilities:

1. The ability to organize in a situation in which there is some conflict and/or criticism.

2. Experiential knowledge of the appropriate procedures

3. Decision making based on systematic, analytical thinking

4. Creativity and idea generation linked to an ability to carry out the ideas

5. Ability to plan and organize in a way that includes others, with stress on effective interpersonal skills

6. Ability to motivate others in a context of cooperation and effective communication

7. Ability to attend to the ideas of others and bring disparate thoughts together

A study by Todryk (1990) revealed that a well-trained project manager is a key factor linked with project success because as a team builder, he/she can create an effective team. This view is supported by other studies on project-team training (Rogers, 1990: Thornberry, 1987). People management drives project success more than technical issues do (Scot-Young & Samon, 2004).

Successful projects require strong leadership skills, it is important to communicate the vision and inspire the project team to achieve high performance. Project leaders must be influencing since project managers often have little authority over their team members in a matrix environment, their ability to influence stakeholders on a timely basis is critical to project success. Key influencing skills include: Ability to be persuasive and clearly articulate points and positions, high level of active and effective listening skills, consideration of the various perspectives in any situation, and gathering relevant and critical information to address important issues and reach agreements with project team members.

The project manager should be a person, who can create and lead a stimulated and aggressive team, must be people oriented, be concerned with the behaviour of his team members and their reactions (Pieterse, 2001: 43). The project manager must possess the necessary basic management skills and be well versed in project management (Pieterse, 2001: 70). Martin and Tate (2001: 12-13) outlines the approach to project management which are as follows:

Directive project management; This approach assumes that the project manager can do the best job of planning and controlling the project. The project manager delegate tasks to team members and make follow ups to make sure that team members are completing tasks in time. Martin and Tate (2001: 12) indicated that the approach has the following disadvantages: execution of project takes longer due to confusion, misunderstanding and network. Team members have little understanding of the project as a whole and there is little team commitment and ownership to the project.

The second approach is participating in project management; in this approach the project leader or manager facilitates the projects management process, leading the team through the steps of planning and the team monitors the progress of the project under the direction of the project manager. According to Martin and Tate (2001: 13) advantages of participating in project management i.e. the second approach are that, each member of the team understands how his or her individual piece of the project fits to the big picture, more ideas are generated, better decisions are made, participation creates ownership, which strengthens commitment and accountability by all team members. Participatory management is a key to project success.

Shonhiwa (2006: 94) laments that lack of management skills leads to deficiency in project management. Low productivity may go unnoticed for a long time if management does not have the skills or ability to detect it. What is not known cannot be managed by the manager. If a manager lacks management skills, his/her response to turmoil within an organization often

manifests itself in staff de-motivation, lack of team effort, sabotage and absenteeism. Where there is no cohesion among followers, managers often become rigid and disinterested, as they are compelled to become permanent referees between warring factions.

The project manager must possess interpersonal skills, interpersonal skills mean how we interact and respond with others through the days using communication and personal skills (Michaels, 2012: 1). An interpersonal skill is referred to as soft skills and includes communication customer relations, selling and teamwork (Werner and De Simone, 2009: 297). The project manager must have interpersonal skills of dealing with people, facing conflicts and persuading people to perform project tasks. It also means being able to behave in a manner appropriate to the situation and to the person and group involved (Knipe, van der 41 Walt, Van Niekerk, Burger and Nell, 2010: 131). Human resources must be treated professionally and strictly in terms of labour legislation and the project manager together with his employees need high level of interpersonal skills. They must be able to handle problems i.e. analysing and solving the problems together (Eksteen et al, 2005: 332).

One of the important aspects of management of any project is to understand people and be able to maintain good human relations, being flexible, humble, accessible, friendly and gracious, The project manager should be able to give guidance to team members and should take the right decisions during project execution, must emphasize the satisfaction of the personnel, personnel development and organisational stability (Eksteen et al, 2005: 338-340).

According to Project Management Institute (2008: 240) the project manager should capitalise on the strengths of project team members using appropriate interpersonal skills which cover mostly the following: The project leader must always carry out effective decision making, this involves the ability to negotiate and influence the organisation and the project management team. guidelines for decision making include focusing on goals to be served, following a decision-making process, studying the environmental factors, developing personal qualities of the team members, stimulating team creativity and managing opportunity and risk in the project life cycle.

The project manager must have relationship-building skills, Rothmann & Cooper (2008: 89) outlined relationship-building skills which include Self-disclosure and feedback, self-disclosure involves the individual sharing his or herself, thoughts, feelings and experiences with another individual and is necessary for effective communication and interpersonal relationship in project execution.

Cooperation means that individuals engage in joint action to accomplish a goal that both want and it contributes to teamwork in the project. Trust constantly changes as individuals interact and individuals who lack trust tend to overprotect themselves and their environment, withhold information and avoid risk taking. Self-presentation, the goal of self-presentation is for one to present himself or herself the way in which he or she would like to be thought of by the individual or group he or she is interacting with. Social influence involves persuading and

politics that can be used to change others attitudes and behaviours. It is a process used to guide other people towards the adoption of an idea, attitude or action by rational and symbolic means. It is a problem solving strategy and relies on appeals rather than force this approach can be used by project managers to manage teams.

Increasing employee productivity and job satisfaction through job design in project planning and implementation

Job design is the process of determining the tasks to be performed, the methods to be used in performing the tasks in terms of techniques, systems and procedures and the relationship between the jobholder and his or her superiors, subordinates and peers (Armstrong, 1998). During project execution the following techniques of job design can be used for increasing productivity and getting job satisfaction in project teams, Job simplification/ specialization involves employing people in well-defined and highly specialized tasks, job rotation were workers are introduced to various jobs but within their skills ability, they are able to acquire multiple skills, this caters for quick replacements in case of employee exit before project completion.

Job enlargement requires adding tasks to a worker but within the same level of ability, senior project managers can delegate tasks to their subordinates through job enrichment, project team members can be given flexible working hours especially working mothers with family responsibilities, Job sharing can also be done to mitigate layoffs during the project life cycle. Telecommuting strategy can also be used to enable employees perform scheduled tasks outside the office, work is sent to office on line, this saves transport costs, hiring office space, motivates the project members for better performance.

Performance management, performance appraisal and performance based pay in project life cycle.

Organisations are now moving towards result oriented management in projects, their focus is on the output. Performance management in projects involves aligning the project resources, systems and employees to the strategic goals and objectives of the project. Project managers must ensure that there is effective and efficient utilization of the project resources to come up with the desired output. Project team members should be rewarded according to their contribution towards achievement of the project goals and objectives at different stages in the project life cycle. Cook-Davis (2002) asserts that top management needs to constantly monitor the progress of the project and provide direction to the implementation teams for success. Evaluating the performance of the project team members to determine how well or how poorly they are performing their tasks is very significant in the all stages of the project life cycle.

Project functional managers should manage performance through using performance measurements and performance appraisals to evaluate employee performance basing on the

project targets. They should set short term but challenging targets by using the approach of management by objective (MBO), monitor employee performance, give feedback, recognize and reward competent teams and find ways of improving performance in weak teams. Project managers should discuss and counsel team members who have not met the project targets find out the problem and get a solution together with the concerned team members for further improvement. There must be on-going monitoring, giving feedback / correcting, discussing, coaching, counseling, mentoring of project team members to meet the expected project goals at all stages in the project life cycle.

Performance based pay is also significant in project management, it's an addition to the basic pay, the pay increases are tied to the achievement of a certain output level / performance in the project life cycle. Performance based pay should be encouraged to motivate hard working project team members. It is an additional motivator to the wage or salary after achieving the set project target. Team based pay is becoming valuable in project management since project managers are taking on team work as a basic standard to achieve project goals. If the set target is met by the project team members then the group should be rewarded for their effort. Team based incentive plans should be used to reward hard working project teams. The payment system encourages cooperation and team work among the project team members.

Employee training in project implementation
Training is a systematic and planned effort to develop or modify knowledge, skills, attitudes through learning experiences to achieve effective performance in a particular activity (Dessler, 2004). Training in projects involves all activities designed to enhance the competences of project team members to complete the project activities. There are many challenges related to training in projects as each user group has different needs, preferences and learning potential. For instance, the steering committee members need to have a good project overview and general idea about the functionality of the system. Project leaders instead require in-depth knowledge about system's functionality and project team members have to learn only those functions that are related to their tasks in addition to understanding the new processes and procedures (Welti, 1999).

The importance of training all project participants cannot be neglected and it is not something that should be conducted only before or after project implementation but rather it has to be present in each part of the project life cycle (O'Leary, 2000).Other issues to take into account with training include assessing the training needs after discovering the performance gap, measuring training performance and effectiveness, providing the support for training project managers and teams, documenting the training process, preparing employees for change during project implementation.

Different types of training for team members and project managers can be used on the job or off the job, induction training is used in the initial stages of project implementation it introduces new employees to the job, organisational culture and working environment, other methods of training include: case study, demonstrations, brain storming among teams, role play, understudy techniques, job rotation, assessment centres, coaching, lectures, mentoring, videos, field trips, group work, computer based training among others the rationale of on-going training in all stages of the project life cycle is to improve performance of project teams and managers so that they can meet the project targets.

Employee compensation, reward system and motivation in project management

Retaining talent in project management is a big challenge, project leaders must design an integrated practice of remunerating employees in accordance to their performance, skills, knowledge, and experience and market worth, they have a task of retaining the key people with broad range of skills and specific knowledge in project management. Retaining competent human resources is closely related to the company's compensation and reward policy which requires using both monetary and non-monetary rewards in form of wages, salaries, incentives and employee benefits, these include allowances such as transport allowance, housing allowance , medical allowance, salary increment, recognition, training, promotion, certificates of merit, commission / bonus, autonomy, assigning team leaders extra responsibility, profit sharing, giving competent teams awards, Project leadership awards, workshops /conferences among others, this motivates team members to achieve project goals. Motivation of project teams can also be based on Maslow's hierarchy of needs theory, Herzberg's two factor theory, Vroom's expectancy theory, equity theory and goal setting theory which project managers can use to motivate human resources and sustain project achievements.

Effective communication in project implementation

Toney & Power (1997) proposed and validated a measure of top management support, their measure consists of level of support for the project frequency of attendance at project meetings, level of involvement in information requirements analysis, and level of involvement in decision-making relating to the project. The information developed during the conceptual and development phases is used in the execution and finishing phases. Thus, it is important to ensure that the project management information system and communication plans are established early. Open communication and collaboration are essential as these help to clarify expectations and reduce ambiguity, and build acceptance and employee commitment across departments in the project. An appropriate network ensures that all the key players in the project are well informed and are aware of the system and their responsibilities.

Effective communication to project team members is one of the key factors for project success, the need for adequate communication channels is extremely important in creating an atmosphere

for successful project implementation (Toney & Power, 1997). Communication is not only essential within the project team itself, but between the team and the rest of the organization as well as with the client. Communication refers not only to feedback mechanisms, but the necessity of exchanging information with both clients and the rest of the organization concerning project goals.

Project managers must effectively communicate the project changes, change in policies, procedures and status reports to project team members, this is one of the biggest ways of motivating project team members and making them more confident of what can be achieved (Dvir et al 1998.; Larkin, 1996). Horizontal and vertical communication helps to reduce employee resistance and has a high impact to the acceptance of the organisational culture and project changes throughout the project life cycle.

Change management in the project life cycle
As the project progresses errors are identified, and the need to implement changes arises similarly, the cost to change increases as the project progresses through the Project Life Cycle. Change usually involves learning of new skills, knowledge and expertise. Individuals need to feel competent and continuously develop their competences. The people who perceive change as negative wish to hold on to the old way of doing things, feel uncomfortable to trust the computers, are afraid of failure and have a common belief that their jobs are threatened by the new automated system (Welti1999;Sumner 2000; Ross 1999).
Middle level managers feel uncomfortable with the change because their jobs can be eliminated as decision making is pushed down to operational level (Ross, 1999). Other sources for resistance are project team members not being aware of all the aspects of the change process as they have not been involved from the beginning, unclear strategic vision, extensive project schedules, modest financial return, higher costs exceeding the budgeted amount, no value added to the company's performance.

Project managers initiate change that causes employee resistance and confusion. Without proper change management, project implementations can fail. Change management activities must be done in the early stages of the implementation process and continue throughout adaptation and acceptance stages. It's important to prepare employees for change, let them participate in initiating changes, the project manager should communicate the need for change, the benefits of change, sharing the change message with employees reduces resistance and makes the implementation process much smoother more so when the changes are not implemented simultaneously.
When project team members are involved in the early stages of the major change process, the quality of solutions is increased, the employees show greater commitment and acceptance to change, counseling becomes easier for the affected employees, conflicts are reduced and the

likelihood of smooth implementation is greater, employee fears that their jobs will be eliminated have to be addressed, since they may be uncertain of job security. Throughout the change process, project managers must ensure that team members participate in the change process from initiation/ planning for change up to the implementation stage, they should continuously give feedback to project teams on the progress of the changes made during the project implementation process and minimize the negative effect of the changes.

Occupational health and safety in project management

The wide range of project operations has brought into existence new and complex techniques of completing projects in respect to time and quality as such this has increased risks and hazards in the working environment, with the advancement in technology there is need for proper attention to health and safety of the workers performing their tasks at different stages of the project life cycle, these workers are exposed to workplace hazards, risks and ill health especially in construction projects and health sector projects. Project managers should ensure that no hazards harm workers as they perform their tasks, they should work hand in hand with safety officers to ensure that there is risk assessment at the work place.

Risk Assessment is the process of estimating the probability of a hazard and the magnitude of its consequences over a specified period of time. It involves determining the hazards that are significant, minor, fatal, non-fatal at the work place, deciding which worker might be harmed, how many workers might be harmed, how and where the workers might be harmed, evaluating the risk, recording all accidents and implementing control measures to eliminate or minimize the risks, hazards and accidents, it also requires continuously monitoring hazards and reviewing the measures implemented to make sure they are working effectively.

Workers should be trained to identify and mitigate hazards at the work place, a lot of sensitization to workers is required to enable them report hazards, accidents and work place illnesses to the concerned personnel, the project team members working in a risky environment should be provided with protective gear such as helmets, ear plugs, safety shoes, safety gloves, overalls etc., they must read safety precautions before operating machines or plant, read and follow safety messages and comply with the company's health and safety policy, they should be aware of emergency procedures in case of fire, explosions, exposure to chemical hazards etc. Project managers must make use of the Occupational health and safety act of 2006 and safety manuals to promote a health and safe working environment throughout different stages of the project life cycle.

PROJECT RISK MANAGEMENT

Peter Opio

Introduction

There are no guarantees on any project. Even the simplest activity can run into unexpected problems. Any time there's anything that might occur on your project and change the outcome of a project activity, we call that a risk. Therefore you can use risk planning to identify potential problems that could cause trouble for your project, analyze the likelihood of their occurrence, take action to prevent the risks you can avoid, and minimize the ones that you can't.

Definition of risk

Risk is a chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood. A chance that outcomes will not turn out as planned. Exposure to the possibility of loss or damage to people, property, or other interests

What is project risk?

This is an uncertain event or condition that, if it occurs, has a positive or negative effect on a project objective. A risk has a cause and, if it occurs, a consequence.
Project risk includes both threats to the project's objectives and opportunities to improve on those objectives

What is risk management?

Risk management has different definitions from different Perspectives.
The insurer or the brokers define it as "The management of pure or non-speculative risks to which the assets, personnel and income of a business are exposed". Wideman defines it as "The art and science of identifying, assessing and responding to project risk throughout the life of a project and in the best interests of its objectives "

Project management consists of two types of work

Getting all things in the plan done or the administration and Handling all the things that could go wrong or managing the risks.Risk Management is a facilitating function
If there was no risk in a project the need for project management would fade away, It would become an administrative task

Risk attributes/ characteristics
- Risk has a future focus

- Risk has alternative possibilities
- Risk deals with probabilities
- Risk requires information – ranging from total uncertainty to total certainty
- Risk emphasizes the down side
  - Risk = threats + Opportunities;
  - Risk = threats,
  - Risk = threats-opportunities
- Risk must affect the project objectives

Risk Components		
1. Causes	2. Events	3. Effects

Events

This is an incident or a situation which occurs in a particular place during a particular interval of time. Any specific identifiable action or an act of nature that might happen and that could affect the outcome of the project. Discrete occurrences e.g. A natural disaster or the departure of a specific key team member that may affect the project. What may happen to the detriment or in favour of the project.

Causes

How and why it can go wrong. Only by influencing the causes can the risk be pro-actively managed

Effects

What are the consequences? project conditions. level of risk. project risk classification.

Project Risk Management Process

Risk Management Planning involves deciding how to approach and plan the risk management activities for a project. Risk identification -determining which risks might affect the project and documenting their characteristics. Qualitative Risk Analysis - performing a qualitative analysis of risks and conditions to prioritize their effects on project objectives. Quantitative Risk Analysis - measuring the probability and consequences of risks and estimating their implications for project objectives. Risk Response Planning - developing procedures and techniques to enhance opportunities and reduce threats to project's objectives. Risk Monitoring and Control - monitoring residual risks, identification new risks, executing risk reduction plans, and evaluating their effectiveness throughout the project life cycle.

Figure: Risk Management Feedback Loop

Identify, Assess & Prioritize risk

Develop strategies to Measure risks

Revise policies &procedures as necessary

Design operational policies & procedures to mitigate risks

Test the effectiveness of the internal controls & evaluate result

Implement controls into operations & design Responsibilities for Oversight
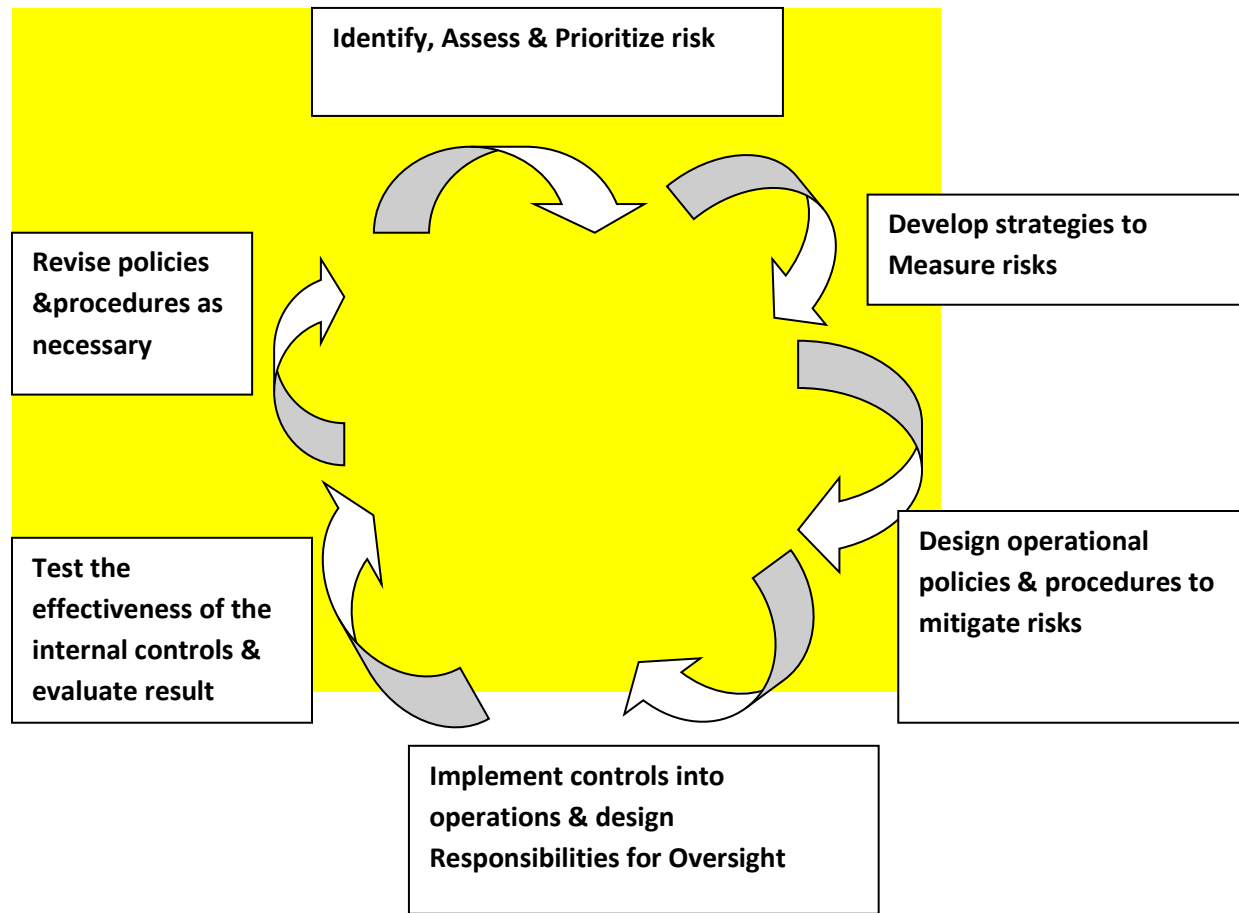
Steps in Risk Assessment and Management
Step 1: Identify the risks. Examine the various analyses you may have done; stakeholder, economic, environmental, social, problem etc. These will usually give many clues.
Step 2: Estimate and evaluate the risks using an Impact / Probability Matrix.
Step 3: Where possible design measures to reduce or eliminate the risk. This is especially important for risks scored medium or high. Some risks are controllable, others uncontrollable.
Step 4:   Return to your Objectives. Redesign your Activities, Output, Objectives and Goals in the light of the risk analysis. Incorporate your measures to reduce or eliminate risks.

Risk Response (Risk Management, Risk Treatment)
After risk identification and analysis, then one has to. Select and implement appropriate options for dealing with risk. The strategies include:
  – Risk Avoidance
  – Risk Reduction

–   Risk Retention
–   Risk Transfer

Risk Avoidance
- Eliminate task or do it differently
- Not undertaking a project
- Undertaking an alternative project
- By eliminating the condition that is causing the risk. For instance, risks associated with a particular service provider can be avoided if another one is sourced.
- In another perspective, you may have a project associated with implementing a solution in multiple locations. Once the risk is identified, the sponsor may change the scope of the project, e.g., to only implement in one location. In this way, the risk of implementing at multiple locations has been avoided.

Risk Reduction (-Reduce Probability, - lower chance that risk will occur, -Risks with high probability)

Reduce Impact (- Minimize severity of consequences of risk event should it occur, - Undertake contingency planning and recovery programme)

Risk Retention (- Planned/Voluntary -conscious and deliberate retention of identified risks, - Unplanned/Involuntary - retainer has not identified the existence of risk and unwittingly retains the risk)

Accept the risk and learn from it
In this approach, the project manager might look at the risk and decides to do nothing. This can happen because of one of the reasons below:
The project manager may notice that the potential impact of the risk on the project is not substantial enough to require a risk response. This would typically be in the case for low-level risk that may have a low impact on the project.

Retention
The project managers may feel that the risk should be managed, but the negative impact of the risk is not worth the cost of the effort required to manage the risk.
There may not be any reasonable and practical activities available to manage the risk. This is different from the prior reason where the cost is more than the benefit. In this case, there is no practical way to manage the risk, even if it has been identified as high. E.g.

Risk Transfer
- • By Contract
- – In some instances, the responsibility for managing a risk can be removed from the project by assigning the risk to another entity or third party. For instance, subcontracting a function to a third party might eliminate that risk for the project team.
- – The third party might have a particular expertise that allows them to do the work without the risk.
- – One can only indemnify against consequences
- – Insurance is a clear example of moving the risk to another party.

Note: The risk remains
- • But can be contained by undertaking an Insurance Policy

Risk Response by Contingency
Contingency Reserve
Contingency Plans
Have a risk contingency budget
- • This should be based on the qualitative and quantitative risk analysis.
- • Reflect on the would be cost and then the risk contingency.

Principles for Risk Management
- • Create value.
- • Be an integral part of organizational processes & part of decision making.
- • Be systematic and structured, i.e. based on the best available information.
- • Be flexible, dynamic and responsive to change. Thus, it should be capable of continual improvement and enhancement.
- • Take into account human factors.
- • Be transparent and inclusive.

Risk Management-Some Tips for Project Managers
- • Do not take a risk if;
- - The benefits are not identified
- - There appears to be a large number of alternatives
- - There is not sufficient data.
- - A contingency plan for recovery is not in place, should the results prove to be less satisfactory.
- • Do not risk a lot for a little
- • The organization cannot afford to lose something
- • Always plan ahead

- Always analyse both the sources and consequences of the risks
- Be prepared to seek advice from experts.
- Consider the controllable and uncontrollable parts of the risk.

Project Risks Management- Skill Requirements
- Project related experience
- Impartiality and objectivity
- Operational analysis
- Data management techniques
- Finance and costing skills
- Interview skills
- Brainstorming skills
- Communication and presentation skills
- Diplomacy
- Sense of humor
- Imagination

Risk: Component and Classification In Project Management:
- A risk can be taken as a chance of something happening that will have an impact on the project objectives.
- A condition that if it occurs, will have a positive or negative effect on the set project objectives.

Risk is every where!

Driving in traffic, breathing air in town, expressing your views –demonstrating on opposition, changing jobs, falling in love etc

Household, companies, NGOs local and central governments are also exposed to risks

Projects inherently contain risks because

Change, multiple use of resources, finite and dynamic

Risk and Project management are integral

Risk Component
Risks have three major components which project managers must understand. These components are closely related to each other and include the following:

Cause
A cause is a reason why the event can go wrong. In risk management, it is usual to first generate a list of risk events possible and then a consideration of their possible causes and effects.

Event

- Usually, when we talk about a risk, we mean an event.
- A risk event is an incident or situation that occurs in a particular place during a particular interval of time. E.g. Floods, death of a staff member.
- Specifically, a project risk event is any specific identifiable action or an act of any nature that may happen and that will affect the outcome of the project.
- What may happen to the detriment or in favour of the project

Note

- Events can cause other events, which will create event chains. These event chains can significantly affect the course of the project.
- For example, requirement changes can cause an activity to be delayed. To accelerate the activity, the project manager may allocate a resource from another activity, which then leads to a missed deadline. Eventually, this can lead to the failure of the project.

Effects/consequences

- These are the consequences or the outcomes of an event or situation.
- In project risks, the consequences of a risk event are usually expressed in terms of time, cost and performance/quality attributes.

Risk Classification

There are a number of risks that are likely to affect the realization of the project objectives. It is, therefore, important to understand how they are classified.

According to Project Objectives

- Time risks- Failure to meet deadlines
- Quality risks- Failure to meet technical performance requirements
- Cost risks- Failure to accomplish the project within the budget approved
- Scope Risks- Failure to accomplish the intended outcomes

Risk According to Sources

Risks according to sources, includes political risks, economic risks, human behavior risks, natural events (death of a person), technological risks, management activities and controls etc.

Risks according to the project life cycle

For example, if we consider the Generic Project Life Cycle of CDEF= Conception, Development, Execution & Finish/Termination, Then we could have:

- Conception risks
- Development risks
- Execution risks
- Termination/finish risks

According to the process groups
- Initiation process group
- Planning process group
- Execution process group
- Monitoring & controlling process group and
- Closing process group

Degree of control
Controllable and uncontrollable risks. External Vs internal environment. For controllable risks, the causes and effects can be controlled eg, timely recruitment, staff reporting etc. Uncontrollable risks on the other hand, are beyond the control of Project Managers as they arise from the external environment. For example, inflation, politics, technological changes. Just accord appreciation?

Pure and speculative risks
Pure risks are also called insurable risks, with no potential for gain .e.g. insurance against accidents, fire etc. They are usually caused by external factors. Speculative have both threats and opportunities e.g. gambling.

Availability of information
According to the level of information available. We could, thus, have Known or Unknown risks.

Degree of spread
Particular vs fundamental risks, i.e., affecting a single entity of the project or the whole project.

According to the level of Risks and Probabilities
Level of Risks
- High, medium or low risks

Probabilities
- Highly likely to occur, medium likely to occur and unlikely to occur risks.

Risk Identification and Analysis
It is vital for project managers to be risk-aware. By being aware of possible risks, project managers are in position to respond quickly if a problem occurs. Identifying project risks helps project managers to focus efforts on the risks that may cause the greatest disruption

What is risk?
A chance of something happening that will have an impact upon objectives. A Risk by its very nature always has a negative impact. Risk is measured in terms of consequences and likelihood.

What is project risk? It is an uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objective. Project risk includes both threats to the project's objectives and opportunities to improve on those objectives.

What is risk identification?
Risk identification is the process of determining risks that could potentially prevent a project from achieving its objectives. It includes documenting and communicating the concern.

Project Risk Identification
Risk identification involves establishing which risk events are likely to affect the project. The pre-requisite for successful risk identification exercise lies on a thorough availability of accurate and reliable information and a solid understanding of the project particularly the scope and its objectives. The main objective of risk identification is to determine the risks that may affect the project and document their characteristics. The risk identification process should cover all risks, regardless of whether or not such risks are within the direct control of the project management.
The process of identifying risk needs to be done in a methodological and logical manner, to ensure that the correct decision can be made as how we treat each risk.

Who does the identification of risks?
The project team, beneficiaries/end users, donors, other department managers & stakeholders, hired experts.

Project Identification Methods
The chosen method of identifying risks may depend on culture, industry practice and compliance. The identification methods are formed by templates or the development of templates for identifying source, problem or event.
Project risk identification methods
   • Objective-Based risk identification
   • Scenario-Based risk identification
   • Taxonomy-Based risk identification
   • Common-Risk checking
   • Risk charting
(i) Objective-Based risk identification
   • Projects have objectives. Any event that may endanger achieving an objective partly or completely is identified as a risk.
   • The analysis follows a systematic step of each objective the project is set to achieve.
(ii) Scenario-Based risk identification
   • The scenarios may be the alternative ways to achieve an objective, or an analysis of the interaction of forces.

- Any event that triggers an undesired scenario alternative is identified as risk.
- Project management scenarios are created, especially the strategies for implementing the project activities
- Each strategy is evaluated

(iii)Taxonomy-Based risk identification

- This is a breakdown of possible risk sources and their classification based on the taxonomy and knowledge of the best practices.
- A questionnaire is designed and filled by the relevant stakeholders. The answers to the questions reveal the possible risks.
- May require historical information/sources.

(iv) Common- based risk checking

In several industries, lists with known risks are available. Each risk on the list can be checked for the application to a particular situation. This depends on the nature of the industry/organization, tasks at hand/nature of the project.

(v) Risk charting

This method combines the above approaches by listing resources at risk. Threats to those resources modify factors which may increase or decrease the risk and the associated consequences. One can begin with resources and consider the threats they are exposed to and consequences of each. Alternatively one can start with the threats or risk event and examine which resources they would affect

Inputs to Risk Identification

Enterprise Environmental Factors:

These are both internal and external factors that surround or influence a project's success. The factors that are relevant in our identifying risks area are : Published information–commercial databases, academic studies, benchmarking and other published studies may be available.

Organizational Process Assets:

Historical information from prior projects (Project files) —organizations involved in the project may maintain records of previous project results that can be used to identify risks. These may be final project reports or risk response plans. They may include lessons learned that describe problems and their resolutions. Project managers can utilize this information to ensure that they do not commit the same mistakes as their predecessors.

Risk management plan:

Explains how risk management activities are to be carried out in our project, it is an indispensable resource

The following will be used from the risk management plan for risk identification:

- Assignment of Roles & Responsibilities

- Budget and Schedule provisions & allocations to Risk Management activities
- Risk Breakdown Structure

The Project Management Plan:
Risk identification requires an understanding of the project's mission, scope, and objectives of the owner, sponsor or stakeholders. The following project planning documents (areas) should be reviewed to identify possible risks: the project charter, project scope, work breakdown structure, project schedule, cost estimates, resource plan, procurement plan, assumptions list and constraints list.

Risk identification tools & techniques
These include documentation reviews, brainstorming, Delphi technique, interviewing, expert judgment, questionnaires and SWOT analysis.

Documentation Reviews
This involves performing a structured review of project plans and assumptions. Start with prior project files.

Brainstorming
Here the facilitator encourages random inputs from the group. Group members verbally identify risks that provide the opportunity to build on others' ideas. To achieve the desired outcome, it is essential to select participants that are familiar with the topics discussed, relevant documentation is provided and a facilitator that knows the risk process leads the group.

Interviews
These are an effective way to identify risk areas. Group interviews can assist in identifying the baseline of risk on a project. The interview process is essentially a questioning process. It is limited by the effectiveness of the facilitator and the questions that are being asked.
Expert judgment
With this technique, individuals who have experience with similar project in the not too distant past may use their judgment through interviews or risk facilitation workshop.

SWOT analysis
An effective method for prospective risk identification is a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis. A SWOT analysis is a tool commonly used in planning and is an excellent method for identifying areas of negative and positive risk.

Delphi technique

- Here a facilitator distributes a questionnaire to experts, responses are summarized (anonymously) & re-circulated among the experts for comments.
- This technique is used to achieve a consensus of experts and helps to receive unbiased data, ensuring that no one person will have undue influence on the outcome
- The Delphi technique is a method by which a consensus of experts can be reached on a subject such as project risk. Project risk experts are identified but participate anonymously.
- The Delphi technique helps reduce bias and minimizes the influence of any one person on the outcome.

Check lists
- Organizations may develop checklists of risks based on information collected from past procurements.
- The checklist is a quick way to identify risks.
- A checklist should not be considered as complete and the possibility of other risks should be addressed.

Assumptions analysis
- Consider the assumptions or scenarios used in the project plan.
- Assumptions analysis is a technique that explores assumptions' accuracy.
- It identifies risks to the project from inaccuracy, inconsistency or incompleteness of assumptions

Diagramming techniques
- Cause-and-effect diagrams useful for identifying causes of risks.
- System or process flowcharts—show how various elements of a system interrelate and the mechanism of causation.

Outputs from Risk Identification (Risk Register)
- A risk register provides an easy but effective means for tracking risks once they have been identified,
- It is a simple template document that records each risk, its status in terms of impact and probability and indicating the controlling action taken, or required to be taken, together with a record of monitoring and review having taken place.

What is a risk register?
- A risk register is a comprehensive risk assessment system, used as a formal method of identifying, quantifying and categorizing risks and providing the means of developing a cost-effective method of controlling them.

Components of a risk register
- List of identified risks with description,
- List of potential responses (added after responses are developed,
- Root causes of risk,

- Updated risk categories. Process could lead to recognition of a new risk category.

Risk analysis

Risk analysis may be undertaken using, qualitative or quantitative techniques
Qualitative techniques are subjective, usually based on individual's perception of risk which is shaped by numerous influences including experiences, psychological factors, cultural factors and social factors.

Qualitative risk analysis
- Qualitative methods are usually used first in risk analysis to obtain a general indication of the risk issues which may be faced.
- These methods are used certainly when numerical data is insufficient or too difficult to obtain.
- Qualitative methods are used to generate hypotheses for quantitative testing.
- The methods are simple descriptors (high, medium, low) which are assigned to the probability of a risk occurring and the impact it may have on the organization
- Quantitative methods are objective, use statistical analyses which aid the measurement of risks and rely on the thesis that risks are readily quantifiable as long as appropriate numerical values can be assigned to the probability of a risk event occurring and its impact on the organization

Quantitative risk analysis methods
- These take the subjectivity out of risk assessment.
- The quantitative methods rank risks by using a single rating comprising the financial value of a risk multiplied by a weighted probability factor to give the expected value.
- The highest expected value then gives either the best opportunity or the worst risk outcome.

Risk maps
- These illustrate the complementary nature of impact and probability of a risk.
- The map is a pictorial representation of the risks which have been identified.
- The risks are plotted on the impact against probability graph.
- Risks that most need management action (high impact and high probability risks) are concentrated on.

Probability/impact of risk occurrence
- There is need to define the probability of occurrence of each risk and its impact.

- Statistical analysis is used to determine the probability of an event occurring.
- The impact of risk on a project is usually converted into terms of cost and time or other resources.
- The impacts can be classified as catastrophic, serious, minor and insignificant.

IMPACT	Risk Management Actions		
Significant • Financial Loss > $5MM • Stakeholder faith impacted and lasts > 18 months • Isolated or Multiple Loss of Life • Multiple events of fine, fraud or legal action • Complete system crash with loss of critical data • Inability to recruit, retain staff to operate • Labour disruption that impacts graduation	Considerable Management Required	Must manage and monitor risks	Extensive management essential
Moderate • Financial Loss < $5 MM • Stakeholder faith impacted and lasts 6-12 months • Significant injury to one or more • Isolate incidents of fine, fraud, or legal action • System crash during a peak period • Difficulties in recruiting and retaining staff • Labour disruption that impacts operations of any duration	Risks may be worth accepting with monitoring	Management effort worthwhile	Management effort required
Minor • Financial Loss < $500,000 • Stakeholder faith impacted and lasts < 6 months • Isolated injury • Civil or criminal action threatened • System off-line periodically during non-peak periods	Accept risks	Accept but monitor risks	Manage and monitor risks
	Low > 36 months	**Medium** 18 to 36 months	**High** 12 to 18 months
	LIKELIHOOD		

Categories of possible impact
- Loss of revenue
- Costs and penalties
- Reputation
- Environmental damage

- Quality failure
- Health and safety issues
- Legal issues
- Production and distribution issues

Risk Analysis

Project management decisions are made under conditions of certainty, risk, or uncertainty. Risk refers to a situation where there is more than one possible outcome to a decision and the probability of each specific outcome is known or can be estimated. Certainty refers to the situation where there is only one possible outcome to a decision and thus outcome is precisely known. Uncertainty is the case where there is more than one possible outcome to a decision and the probability of each specific outcome occurring is not known.

Probability
- The probability of an event is the chance that the event will occur.
- When an event is absolutely certain to happen; we say that the probability is 1.
- When an event can never happen we say probability is zero.
- There is no such a thing as a negative probability (less than impossible)
- Neither a probability greater than 1 (more certain than certain).
- $0 \leq P(A) \leq 1$ Where $P(A)$ is probability of an event A occurring.

Risk
- Risk is part of any project undertaken. It's a significant, permanent reality faced by virtually every project manager.
- Project managers need to take risks in order to compete, grow, and capture benefit.

What is risk?
- Risk is a chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (probability).
- Risk is any event which may prevent or impair the achievement of objectives.
- Risk is the potential that a chosen action or activity will lead to an undesirable outcome.

What is project risk?
- Risk is the expression of the likelihood and impact of an uncertain, sudden and extreme event that, if it occurs, has may impact positively (opportunity) or negatively (threat) on the achievement of a project or programme objective.

Risk Analysis
- Risk analysis allows a manager to examine the risks that the organization faces.

- It is based on a structured approach to thinking through threats followed by an evaluation of the probability and cost of events occurring.
- Risk analysis forms the basis for risk management and crisis prevention. Here emphasis is on cost effectiveness.

Quantitative risk analysis
- Quantitative Risk Analysis is performed on risks that have been prioritized by the Qualitative Risk Analysis process.
- It involves measuring the probability and consequences of risks and estimating their implications for project objectives.
- Quantitative Risk Analysis gives the project manager ability to see how project schedule will be affected if certain risks occur. As a result, project managers are able to mitigate risk factors and manage their projects better.

Measuring Risk with Probability Distributions
- By listing all the possible outcomes of an event and the probability attached to each, we get a probability distribution.
- If we multiply each possible outcome or profit of an investment by its probability of occurrence and add these products we get the expected cost or profit of the project.
- The expected profit of an investment is a very important consideration in deciding whether or not to undertake the project or which of the two or more projects is preferable. Expected value of $X = E(X) = \sum Xi.Pi$

Where Xi is the outcome, Pi is the probability of outcome, i=1 to n refers to the number of possible outcomes.

Example 1
- An investor has two projects A and B. The present value of possible profits and their respective probabilities are shown in the table below. Which project would be preferred by investor basing on the expected profit?

Example 1

	Project A		Project B		
Outcome	$15,000	$7,000	$3,250	$5,000	$20,000
Probability	0.6	0.4	0.4	0.3	0.3

Example 1

- The expected profit of project A is:

$(15{,}000 \times 0.6) + (7{,}000 \times 0.4)$

$= (9000 + 2800)$

$= \$11{,}800$

- The expected profit of project B is:

$(3{,}250 \times 0.4) + (5{,}000 \times 0.3) + (20{,}000 \times 0.3)$

$= (1300 + 1500 + 6000)$

$= \$8{,}800$

The investor would prefer project A since it makes more profit than project B

Example 2

- If only three states of the economy are possible (boom, normal, or recession) and probability of each occurring is specified. Given the corresponding investment profits for project A and project B under the three states of the economy, Calculate the Expected profits of two projects

Example 2

		Project A	Project B
State of the Economy	Probability of occurrence	Possible profit	Possible profit
Boom	0.25	$600	$800
Normal	0.50	$500	$500
Recession	0.25	$400	$200

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Project A

PROJECT A

State of economy	Probability [P(x)]	Possible profit (x)	Expected outcome [xP(x)]
Boom	0.25	$600	$150
Normal	0.50	$500	$250
Recession	0.25	$400	$100
Expected profit E(x_A) from project A			$500

Project B

Project B

State of Economy	Probability P(x)	Possible profit (x)	Expected value xp(x)
Boom	0.25	$800	$200
Normal	0.50	$500	$250
Recession	0.25	$200	$50
Expected profit E(x_B) from project B			$ 500

In this case, the expected value of each of the 2 projects is $500, but the range of outcomes for project A (from $400 in recession-$600 in boom) is much smaller than for project B (from $200 in recession to $800 in boom). Thus, project A is less risky than and is preferable to project B

Absolute Measure of Risk: The Standard Deviation

The tightness or degree of dispersion of a probability distribution can be measured by the Standard deviation. The Standard deviation (σ) measures the dispersion / distribution of possible outcomes from the expected value.

Standard deviation = $\sqrt{[\sum(Xi – E(x))2.Pi]}$

- The smaller the standard deviation, the tighter or less dispersed is the distribution, and the lower the risk.

Example: 1

Example: Project A

X	$X_i - E(x_A)$	P_i	$(X_i - E(x_A))^2$	$[X_i - E(X_A)]^2 \cdot P_i$
$600	100	0.25	10.000	2,500
500	0	0.50	0	0
400	100	0.25	10,000	2,500
Variance				= 5,000

Note: We given the mean x as 500
Standard deviation = √5,000
= ± $70.71

Example: 2

Project B

X	$X_i - E(x_B)$	$[X_i - E(x_B)]^2$	Pi	$[X_i - E(x_B)]^2 \cdot Pi$
800	300	90,000	0.25	$22,500
500	0	0	0.50	0
200	-300	90,000	0.25	22,500
Variance				45000

- Standard deviation = √45,000

$$= \pm\$\,212.13$$

- The standard deviations of the probability distribution provide a numerical measure of the absolute deviations of profits from the mean for each project and confirm a greater dispersion of profit and risk for project B than project A

Relative Measure of Risks (The Coefficient of Variation)

- The standard deviation is not a good measure to compare the dispersion (relative risk) associated with two or more probability distributions with different values of means

- The distribution with the largest expected value or mean may have a larger standard deviation. To measure relative dispersion we use the Coefficient of Variation(V)

The coefficient of variation

- Coefficient of Variation $= (\sigma/X) \times 100$

= standard deviation X 100

Expected cash flow

It is used to compare the relative risk of two or more projects. The project with the largest coefficient of variation will be the most risky

Example: 3

The following are the possible net cash flow of projects M and N and their associated probabilities over a period of one year operation

Example 3

Condition	Project M		Project N	
	Cash flows	Probability	Cash flow	Probability
A	40m	0.2	80	0.2
B	50m	0.4	60	0.1
C	60m	0.3	50	0.4
D	70m	0.1	40	0.3

Determine for each project
1. Expected net cash flows
2. Variance and standard deviation of the cash flow
3. Compare the risks of the project

Considering project M

Condition	Cash flow (x)	Probability (P)	XP	$[X-E(x)]^2$	$P[X-E(x)]^2$
A	40	0.2	8	169	33.8
B	50	0.4	20	9	3.6
C	60	0.3	18	49	14.7
D	70	0.1	7	289	28.9
Totals			$\sum PX= 53$		= 81

- Variance of cash flow of project M is 404.5m
- Standard deviation   = √81
                 =±9m
- Coefficient variation = shs 9m X 100
                shs 53m
           = 16.98%

Considering project N

Condition	Cash flows	Probability	PX	$[X-E(x)]^2$	$P[X-E(x)]^2$
A	80m	0.2	16	676	135.2
B	60m	0.1	6	36	3.6
C	50m	0.4	20	16	6.4
D	40m	0.3	12	196	58.8
Totals			$\sum Px = 54$		204

- Coefficient of variation of project N is

CV = shs 14.28m x 100
        shs 54m
      = 26.44%
   Project N is more risky than project M

- However whether project M or project N should be accepted will depend on the investor's attitude towards risk

Incorporating Risk in Capital Budgeting Decisions

- In practice, managers use a number of techniques to incorporate risk in the capital budgeting decisions, among which is the inclusion of a risk premium in the discount rate.

What is Capital budgeting/ capital investment?

- Capital budgeting refers to the process of evaluating and selecting long term investments that are consistent with a firm's goals of maximizing shareholder value.

- Capital budgeting tries to answer the question "will future benefits of this project be large enough to justify the investment given the risks involved?"

Inclusion of a risk premium in the discount rate

The technique incorporates risk in capital budgeting decisions by adding a risk premium to the normal rate or the risk free rate to cover for the risk associated with the investment. The sum gives the risk-adjusted discount rate

The risk-adjusted discount rates

The risk-adjusted discounted rates method deals with an investment project subject to risk. Risk premium is the difference between the expected rate of return on a risky investment and the rate of return on a riskless asset.

Net Present Value (NPV)
This is the sum of all the discounted cash out flows and cash inflows of a capital investment project using a chosen required rate of return or cost of capital as the discount rate. It is the difference between the present value of the cash inflows and the present value cash out flows that have been discounted at the investor's cost of capital. This is the profitability of the project in present value terms. The NPV is the present value of the net cash inflows less the project's initial outlay. An investment project is undertaken if it is NPV is greater than or equal to zero, or larger than that for an alternate project
Example 4

An investment project requires initial cost of shs 50,000,000 and it is expected to generate cash flows in years one through four of shs 25,000,000, shs 20,000,000, shs 10,000,000 and shs 10,000,000.

Required

a) Determine the NPV at 10% risk free rate

b) Assuming that the project is risky, what will be the NPV if a rate of 15% is required to allow for the perceived risk? Comment on your results

NPV at risk free rate

Year	Cash flows (Shs)	Present value factor at 10%	Present value (Shs)
0	(50,000,000)	1.000	(50,000,000)
1	25,000,000	0.909	22,725,000
2	20,000,000	0.826	16,520,000
3	10,000,000	0.751	7,510,000
4	10,000,000	0.683	6,830,000
Total			NPV = 3,585,000

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NPV at the risk adjusted discount rate

Year	Cash flows(Shs)	Present value factor at 15%	Present value (Shs)
0	(50,000,000)	1.000	(50,000,000)
1	25,000,000	0.870	21,750,000
2	20,000,000	0.756	15,000,000
3	10,000,000	0.658	6,580,000
4	10,000,000	0.572	5,720,000
Total			NPV = (830,000)

- Example 4

c) We observe that the project will be accepted when no allowance for risk is granted, but it is unacceptable if a risk premium is added to the discount rate.

The risk-adjusted discount rates

- The Net present value of investment

$$n = \sum_{t=1} \frac{Rt}{(1+k)t} - Co$$

Where Rt is the net cash flow or return from the investment in each of the n time periods

K is the risk-adjusted discount rate= (risk free discount rate + risk premium) and Co is the initial cost of the investment

Example 5

Suppose a firm is considering undertaking an investment project that is expected to generate a net cash flow or return of \$45,000 for the next 5 years and costs initially \$100,000 and the risk adjusted discount rate of the firm for this investment project is 20%. Determine the NPV. Should the firm undertake the investment?

- $NPV = \sum_{t=1}^{5} Rt /(1.20)t - Co$

$= \sum_{t=1}^{5} \frac{\$45,000}{(1.20)t} - \$100,000$

$= \$45,000 \left(\sum_{t=1}^{5} 1/ (1.20)t - \$100,000 \right.$

$= \$45,000 (2.9906) - \$100,000$

$= \$ 34,577$

- The investment may be taken since the NPV is greater than zero

Note:

An investment project is undertaken if its NPV is greater than or equal to zero or larger than that for an alternative project

Exercise 1

Suppose a company is evaluating an investment proposal involving adding a photocopying section and the investment is to cost 185m with the cash flows given in the table below. Determine the NPV. Should the company invest in this business?

Year	1	2	3	4
Cash inflows (millions)	68.81	56.17	51.07	71.71

Exercise 2

ABC Company is considering two mutually exclusive projects. The initial cost of project A is $4200 and $3800 for project B. Each project has an expected life of four years. Under three possible states of economy, their annual cash flows and associated probabilities, as shown in table below. If the risk adjusted discount rate is 10% for project A and 8% for project B which project should the company implement?

Exercise 2

Economic state	Probability	Project A	Project B
Good	0.3	$2500	$2400
Normal	0.4	$1800	$2500
Bad	0.3	$1500	$1600

A company is considering Projects X and Y with the following information

Project	X	Y
Expected Net Present Value	$60000	227,000
Standard Deviation	$40000	135,000

a. Which Project will you recommend for implementation?
b. Will you answer change if you use coefficient of variation as a measure of risk instead of standard deviation?
c. With clear reasons, which measure is more appropriate in this situation?

Risk Analysis: Measuring probabilities with the normal distribution

The probability distribution of many strategies follow a normal distribution, so that the probability of a particular outcome falling within the specified range of outcomes can be found by area under the standard normal distribution, within the specified range. Unlike discrete

random variables, it is not possible to assign probabilities to particular possible outcomes, so we produce a continuous probability distribution

Example 1
- Find the probability that the profit from project A (assumed to be approximately normally distributed and with mean $500 and standard deviation $70.71 falls between $600 and $500.
  Using

  $$Z = (X- \text{mean})/\text{standard deviation}$$
  $$Z = (600 – 500)/70.71$$
  $$= 1.42$$

  From the normal distribution tables, area between Z=0 and Z = 1.42 is
  $$0.4222$$

  Exercise

  a) Determine the probability that profit will fall between $500 and $650 for a project A with expected value $480 and standard deviation of $71.

  b)   Determine the probability that the profit for project A will fall between $300 and $650.

Daily profit made by Nejusa project in the month of November 2013

Profit ('000) $	No. of days
20 – 24	2
25 – 29	3
30 – 34	6
35 – 39	5
40 – 44	10
45 - 49	4

Assuming the daily profits are normally distributed

- Determine the:
  - Mean profit generated by the firm.
  - The standard deviation of the profits
  - The probability of the project generating profit between 23,000 and 27,000 US dollars.
  - The probability of the profit falling between 42,000 and 46,000 US dollars.

Expected Monetary Value (EMV)
- Risk is inherent in any investment because the future can never be predicted with absolute certainty.
- To deal with this uncertainty, mathematical techniques such as expected value can help.
- Expected value is the expected outcome multiplied by the probability of its occurrence.

Calculating the EMV of each possible decision path is away to quantify each decision in monetary terms

When using EMV, you can follow these steps
1. Assign a probability of occurrence for the risk
2. Assign Monetary Value of impact of the risk when it occurs
3. Multiply 1 and 2

Example
- A firm is supposed to be undertaking one of the two mutually exclusive contracts, K and L, with each contract leading to only three possible outcomes as indicated in the table below.

On the basis of EMV, which project should the firm undertake?

Example

Contract K		Contract L	
Probability	outcome	Probability	
0.6	$80,000	0.5	$50,000
0.1	$10,000	0.3	$30,000
0.3	-$30,000	0.2	-$10,000

- EMV (K) = (0.6x80,000)+(0.3x30,000)+
  (0.3x-30,000)
  = $40,000
- EMV(L) = (0.5x50,000) +(0.3x30,000) +(0.2x-10,000)
  = $32,000

On the EMV basis the firm will undertake project k since its expected profit is higher than the expected profit of project L

Decision Trees

- Managerial decisions involving risk are often made in stages, with subsequent decisions and events depending on the outcome of earlier decisions and events.
- A decision tree shows the sequence of possible managerial decisions and their expected outcomes under each set of circumstances or state of nature.
- These are probability trees adapted so that they can be used for making business decisions.
- A decision tree is a schematic model of the sequence of steps in a problem and conditions and consequences of each step.
- In solving decision tree problems, we work from the end of the tree backwards to the start of the tree.
- As we work backwards, we calculate the expected values at each step. This process solves the decision problem.
- Calculating Expected Monetary Value using Decision trees is a recommended Tool and Technique for Quantitative Risk Analysis

Steps to Use Decision Trees Analysis

1. Document a decision in a decision tree

2. Assign a probability of occurrence for the risk pertaining to that decision

3. Assign monetary value of the impact of the risk when it occurs

4. Compute the Expected Monetary Value for each decision path

Example

- A bus operator has a choice of entering into a maintenance contract for a new bus he has acquired that will cost him $ 2,500 with the contract in operation there is only a 0.1 probability of a break down over the contract period but without it the probability is 0.3.

- The operator reckons that if he can avoid a break down his profit will be $20,000 but this will drop to $10,000 in the event of such a breakdown. Should he enter into the contract?

- If he enters the maintenance contract

    His expected profit will be;

    (0.9x 20,000) + (0.1x10, 000) –2,500

    = $16500

- If he does not;

    His profit is expected to be;

    (0.7x20, 000) + (0.3x10, 000)

        = $ 17,000.

        Decision: no entering contract.

Example 2

- Suppose your organization is using legacy software and some influential stakeholders believe that by upgrading this software your organization can save millions, while others feel that staying with the legacy software is the safest option. The stakeholders supporting the upgrade of the software are further split into two factions;

    Those supporting buying the new software and those that support building the new software – in house

    Building the new software is associated with a cost of $500,000

    Buying the new software is associated with a cost of $ 750,000

- Staying with the legacy software is associated with a maintenance cost of $100,000

- The impact if the buying of the new software or building the new software is unsuccessful is $2m. The probability that buying new software will be unsuccessful is 0.05 and the probability of building new software being unsuccessful is 0.4.

- The stay with legacy software option will only lead to one impact which is $2m because the legacy software is not currently meeting the needs of the company.

From the Decision tree:

The Expected Monetary Value associated with each risk is calculated by multiplying the probability of the risk with the impact

    Building the new software: $2,000,000 X 0.4

        = $ 800,000

    Buying the new software: $ 2,000,000 X 0,5

        = 100,000

From the Decision tree attached:

Staying with the legacy: $2,000,000 X 1

= 2,000,000

Adding the set up costs to each Expected Monetary Value

Build the new software: $500,000 + $800,000

= $1,300,000

Buy the new software $750,000 + $ 100,000

= $850,000

Staying with the legacy software:

= $100,000 + $2,000,000

= $2,100,000

Decision:

Buying the new software is actually the most cost efficient option even though its initial set up cost is highest

Example 3

Draru Limited wants to move into a new sales region and must determine which of the two plants to build. It can build a large plant that costs $4million or a small plant that costs $2million. The company estimated that the economy will be booming, normal, or in recession is 30%, 40% and 30%, respectively. The company also estimated the present value (millions of dollars) of net cash flows for each type of plant under each state of economy to be as indicated in the following payoff matrix. Construct a decision tree for the firm to show which of the plants the economy should build. Assume the company is risk neutral

Example 3

State economy /type of plant	Large plant	Small plant
Boom	$10m	$4m
Normal	$6m	$3m
recession	$2m	$2m

Usefulness of Decision tree approach

- It clearly brings out the impact assumption and calculation
- It allows a decision maker to visualize assumptions and alternatives in graphic form which is usually much easier to understand than the more abstract analytical form.

Risk Analysis (Utility Theory): Risk Attitude

Risk attitude influences how project managers make decisions in relation to risk. For some managers, the prospect of loss weighs heavier than the prospect of a gain. For others the reverse is true. Risk attitude explains why different people make different decisions within the same risk environment. The fact that project managers have different risk attitudes means that a project with a given level of risk exposure might be economically acceptable to one who is a risk taker, but totally unacceptable to another manager who is risk averse. There are three types of risk attitudes: risk taking, risk aversion and risk neutral

- Risk averter: the threat of a loss has a greater impact on a decision than the possibility of an equivalent gain.

- Risk seeker: will take the risk if a situation avails a higher gain even though there is a high possibility of a larger loss

- Risk-neutral: is more concerned about the expected return on his or her investment, not on the risk he or she may be taking on.

An Illustration

Suppose a project manager is faced with a choice between receiving, say, either $100 with 100% certainty, or a 50% chance of getting $200.

- The risk-averse manager would generally settle for the "sure thing" or 100% certain $100.
- The risk-seeking manager will opt for the 50% chance of getting $200.
- The risk-neutral manager in this case would have no preference either way, since the expected value of $100 is the same for both outcomes.

Utility Theory

- Utility theory provides a concept and process for dealing with and measuring a decision-maker's preferences to decisions made under risk conditions- "utility theory endeavors to formulate management's attitude towards risk".

- The aim of utility theory is to adjust monetary values, or other variables such as time, to reflect the decision-maker's attitude towards those values. So outcomes are measured in (utils) not Shillings.

- If a decision-maker has a neutral attitude towards risk, this implies that every Shilling spent or received has a utility measured by its face value.

- However, this may not be in reality, since people are not normally risk-neutral, but exhibit risk aversion or risk-seeking characteristics.

- This leads to the notion of a utility function that enables monetary values or other variables to be converted to equivalent utility values.

Diminishing Marginal Utility of Money

- Managers being risk seekers, risk neutral or risk averters is as a result of the principle of diminishing marginal utility of money

- The diminishing marginal Utility of money means that, the value of additional shilling decreases as total wealth increases.

- In other words, the change in your life when you move from 0 to 1 million shillings is larger than the change in life when you move from 1m to 2m.

Diminishing Marginal Utility of Money and risk attitudes

- A risk-averse decision maker displays a diminishing marginal utility of income or wealth.

- A risk neutral decision maker has a constant marginal utility of income or wealth. She neither seeks nor avoids risk.

- A risk-seeker`s marginal utility of income or wealth increases. The utility function for the risk seeker increases at an increasing rate

Marginal utility

- Marginal utility refers to how much additional value is derived from one additional unit of the good or service. Most goods and services are said to have "decreasing marginal utility."

- Because most people have a decreasing marginal utility of wealth, a loss of a given amount has a greater impact than a gain of the same amount

Risk aversion and diminishing marginal utility function

- As an individual gets more and more of something, she values each additional increment less and less.

- A person is reluctant to accept a bargain with an uncertain payoff rather than another bargain with more certain, but possibly lower, expected payoff.

Different forms of the utility function

- U = 10 + 2X (X = money or income) indicates a constant marginal utility of income (i.e., risk neutral)

- U = 30X - X2 indicates a diminishing marginal utility of income (i.e., risk aversion).

- U = 20X + X2 indicates an increasing marginal utility of income (i.e., risk seeking).

Utility Theory Process

Step 1 Assign a single number utility value for each possible outcome

Step 2 Calculate the expected utility value (EUV) for each alternative

Step 3 Select the alternative with the maximum EUV

Example 2

From Hertz & Thomas (1984)
A firm is deciding whether or not to undertake one or two contracts, K and L that have been offered to it. It cannot undertake both and suppose that each contract can lead to only three possible outcomes.

Contact K		Contact L	
Probability	Outcome	Probability	Outcome
0.6	$+80000	0.5	+$50,000
0.1	$+10000	0.3	+$30,000
0.3	$-30000	0.2	-$10,000

Under the Expected Monitory Value approach, the appropriate calculations are;

EMV (K)

$= (0.6x \ \$80,000) + (0.1x\$10,000)+ (0.3x-\$30,000)$

$= \$40,000$

EMV (L)

$= (0.5x\$50,000) + (0.3x\$30,000)+ (0.2x-\$10,000)$

$= \$32,000$

On this basis, contract K would be accepted. However, since K shows a 30% chance of a fairly large loss of $30,000 whereas L has only a 20% chance of a much smaller loss utility concept may be useful. The firm might be unwilling to consider making such a large loss as $30,000 and would tend to opt out of K. this suggests that a formal analysis using utility theory would be appropriate.

Step   1
Assigning Utility Values

In order to assign utility values to alternative outcomes that logically reflect the risk attitudes of the decision-maker the following rules must apply;

➢ The more desirable an outcome, the higher the utility value. E.g. winning $50 without risk has a higher utility value than winning $5 without risk

➢ If outcome A is preferred to outcome B, and outcome B to outcome C, then A will be preferred to C

➢ If there is indifference between two outcomes, they have equal utility

• The utility of a risk problem is represented by its 'expected utility value' (EUV)

• Assign utility values to the extreme monetary values

The first step is to select as reference points two monetary values from the alternative outcomes. For convenience these are usually the extreme values the most favorable and least favorable values.

For convenience we might assign utility values of 100 for the most favorable and 0 to the least favorable. These utility values are arbitrary and all that is necessary is that utility increases with monetary gain. It can be seen that all we are doing is substituting a shilling value by a utility value

Assign utility values to the extreme monetary values

From the example above; there are, in decreasing order, seven possible outcomes: +80,0000, +50,000, +30,000, +10,000, 0, -10,000, -30,000. (0 corresponds to taking neither contract) So we assign a utility value of 100 to the monetary value of +80,000, and 0 to the monetary value of -30,000.

ii) Assign utility values to all the other monetary outcomes lying between these two extreme monetary outcomes (method is subjective)

Assuming the following utility values for the example above were obtained as shown in the table below and the firm's objective were to utility maximization, which contract should be undertaken?

Example 2

Money	80,000	50,000	30,000	10,000	0	-10,000	-30,000
Utility value	100	90	80	50	30	20	0

Considering contract K

money	Utility value	probability	Expected utility
80,000	100	0.6	60
10,000	50	0.1	5
-30,000	0	0.3	0
Expected utility for contract K			65

Considering contract L

Money	Utility value	Probability	Expected value
50,000	90	0.5	45
30,000	80	0.3	24
-10,000	20	0.2	4
Expected utility of contract L			73

Basing on utility maximization, the firm will take up contract L

- You are considering two investment choices, each costing $5,000. Cash inflows of are considering two investment choices, each costing $5,000. possible outcomes and their associated probabilities are:

Investment A		Investment B	
Probability	Cash inflows	Probability	Cash inflows
0.25	$ 6,000	0.3	$ 5,000
0.50	8,000	0.5	9,000
0.25	10,000	0.2	10,000

Assume that your utility function is given by the following table

Money	Utility (Utils)
$5,000	125
$6,000	144
$7,000	161
$8,000	176
$9,000	189
$10,000	200

- Determine:
    - The expected value of each investment
    - The standard deviation for each investment
    - The expected utility value for each investment
- Which investment should be preferred?

Example
- Suppose an investment option A has 90% chance of yielding $100 as profit, and an investment option B has 20% chance of yielding a profit of $500
        Then;

$$EMV (A) = 0.9 \times 100 = 90$$
$$EMV (B) = 0.2 \times 500 = 100$$

If a person 1 rates $100 as 10 and $500 as 30 (demonstrating a typical Diminishing Margin Utility for Money), then;

$$EU (A) = 0.9 \times 10 = 9$$
$$EU (B) = 0.2 \times 30 = 6$$

Person 1 basing on the Expected Utility (EU) would choose option A

Person 2 may be interested more in winning $500 than $100. To person 2, $500 is more than five times as good as $100. This fellow will assign a utility of 10 to $100 and a utility of 70 to $500

$$EU(A) = 0.9 \times 10 = 9$$

$$EU(B) = 0.2 \times 70 = 14$$

According to the Expected Utility Theory, person 2 should choose B

Example

- Consider the offer to engage in a bet to win $10,000 if a head turns up in the tossing of a coin or to lose $10,000 if a tail comes up. The expected value of the money won or loss is

$$EMV = 0.5(10,000) + 0.5(-10,000)$$

$$= 0$$

Even though the expected value is zero, a risk averter (an individual facing diminishing marginal utility of money) would gain less utility by winning $10,000 than he would lose by losing $10,000. This individual may assign

-2 utils to losing $10,000 and 1 util to winning $10,000

- Expected utility $E(U) = 0.5 \times 1 + 0.5 \times (-2)$

$$= -0.5$$

In such a case, the individual will refuse a fair bet

Example
- An oil-drilling venture offers the chance of investing $10,000 with a 20% probability of a return of $40,000 if the venture is successful (i.e., oil is found). If unsuccessful, the $10,000 investment will be lost.
  (a) What is the expected monetary return of this investment?
  (b) if the utility schedule of individuals A,B, and C is indicated below, what is the expected utility of the project for each? Which individual(s) would invest in the venture? Why?

Example

Money	-$10,000	0	$10,000	$20,000	$30,000	$40,000
Utility of A	-5	0	4	7	9	10
B	-5	0	5	10	15	20
C	-5	0	6	13	21	30

(a) The expected monetary return of this investment(R) is

$$E(R) = 0.2(\$40,000) + 0.8(-\$10,000)$$

$$= \$8,000 - \$8,000$$

$$= 0$$

(b) The expected utilities of the project for individuals A, B, and C are

$$\text{E(U) of A} = 0.2(10\text{utils}) + 0.8(-5 \text{ utils})$$

$$= 2 \text{ utils } -4 \text{ utils} = -2 \text{ utils}$$

$$\text{E(U) of B} = 0.2(20 \text{ utils}) + 0.8(-5\text{utils})$$

$$= 4 \text{ utils } -4 \text{ utils} = 0 \text{ utils}$$

$$\text{E(U) of C} = 0.2(30 \text{ utils}) + 0.8 (-5\text{utils})$$

$$= 6 \text{ utils} - 4\text{utils} = 2 \text{ utils}$$

Only individual C will invest in the venture because only for him/her is the expected utility of the project positive. Because the marginal utility for money increases, individual C is a risk seeker. Individual B is indifferent to the venture because the expected utility of the project is zero. For individual B, the marginal utility is constant, so that he or she is risk neutral

- Individual A will not invest in the venture because the expected utility of the project is negative. For individual A, the marginal utility for money diminishes, so that he or she is a risk averter.

Exercise

A manager must determine which of the two products to market. From market studies, the manager constructed the following payoff matrix of the present value of all future net profits under all the different possible states of the economy as shown in the table below.
The manager's utility for money function is

$$U = 100M\text{-}M2 \quad \text{where M refers to profit}$$

Table

Product 1			Product 2	
State of the economy	Probability	Profit	Probability	Profit
Boom	0.2	$50	0.2	$30
Normal	0.5	$20	0.4	20
Recession	0.3	0	0.4	10

a) Is the manager a risk seeker, risk neutral, or a risk averter? Use a graph to explain.
b) If the manager's objective were profit maximization regardless of risk, which product should he/she introduce
c) If the manager's objective were utility maximization, which product should he/she introduce?
d) Why is maximization of the expected value not a valid criterion in decision making subject to risk? Under what conditions would that criterion be valid?

Risk Review Question
a) "Different people will make different decisions within the same risk environment". Comment (3 marks)
b) Wolokoso Company has to decide whether to use TV commercials or Radio Ads as its advertising strategy. The marketing Department has estimated the profits and the associated probabilities under each strategy as shown in the table below:
Table:

Television commercials		Radio Adverts	
Profit	Probability	Profit	Probability
40m	0.2	80	0.2
50m	0.4	60	0.1
60m	0.3	50	0.4
70m	0.1	40	0.3

Required
i.   Calculate the expected profit under each of the promotional strategy (3 marks)
ii.   Calculate the standard deviation of the distribution of profits for each promotional strategy (5 marks)
iii. Determine the coefficient of variation for each strategy (2 marks)
iv.   Taking into consideration of the risk attitudes of managers, which promotional strategy should the firm choose? (4 mark)
c) Comment on the usefulness of the analysis in (b) above (3 marks)

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CHAPTER TWELVE
PROJECT TIME MANAGEMENT
John Vianney Ahumuza

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Introduction
Have you ever wondered why some projects succeed while others fail? Project planners and implementers worldwide have often planned to have successful projects. Surprisingly projects continue to fail in meeting scheduled targets. This calls for an inquiry as to why this phenomenon exists in investment world. Whereas many factors continue to be at play, time factor continues to greatly influence the success of projects. This chapter explains the importance of time management in successful project implementation. Specific attention is put on best practices of time management in project planning and implementation. The discussion is built on the argument that undermining time factor in project planning and implementation results into unnecessary costs which undermines the success of the project. No matter how best any manager can be, if least attention is put on the time factor such project is bound to face challenges. The chapter further maps out steps for good project implementation. The principles for effective time management is also highlighted to aid the reader appreciate the discussion. Selected Case studies have been purposely included in the text to emphasize the consequences of undermining time line schedules .The chapter ends with some recommendations as alternative proposals and a conclusion.

Background to project time management knowledge area
Time is an essential resource every manager needs to achieve the goals and objectives of an organization. Its effective utilization in the context of the set goals and objectives of any established project is key. This correlates with considerations for modern project investments .In fact Adeojo (2012) clearly stipulates that Time management involves investing time to determine what one wants out of his day to day activities. He further notes that Effective time management is the investment of time in such a way that suitable results are achieved from activities within a specific time range and it emphasizes on effectiveness rather than efficiency. This makes time factor key in strategic project planning and management.

Time is a necessity for every organization in achieving its goals and objectives. Any deviation from the original project implementation plans bearers a heavy cost on the investment which would have been otherwise used for other plans. This poses a great threat to the survival of any organization. No matter who you are or the professional discipline you subscribe to, the knowledge of project planning and implementation is now a global human affair. We are often at the helm of project implementation either at organizational level or personal level. Once the aspect of time is not taken into account, the resultant consequences indirectly impacts on us. Therefore, this calls for a study of best practices in time management processes for obtaining

high performance in project planning and implementation taking into account case studies of failed projects as a result of the influence of this phenomenon and the resultant consequences.

Understanding the meaning of an entrepreneur

Time management is a critical component of managing successful businesses worldwide. Understanding the meaning of a business is key in guiding an entrepreneur to meet their targeted objectives. There are many definitions that have been fronted to define the meaning of a business. According to Saleemi (2011:7), he defines a business as an organized and systematized human activity involving production and distribution of goods and services with the object of selling them at a profit. Inside any business venture lies a critical aspect of entrepreneurship. An entrepreneur establishes and manages a business for profit making and growth. In fact Kirby (2003:10) defines an entrepreneur as characterized by principally innovative behavior and one who employs strategic management practices in business .Khanka (2007:9) defines entrepreneurship as a process involving various actions to be undertaken to establish an enterprise with innovation and risk-bearing as two basic elements involved in entrepreneurship. Irrespective of these definitions, time management is key in ensuring successful project ventures. It is true that some entrepreneurs have often relied on available capital, skilled labor and market opportunities but have often underestimated the aspect of time management. This has often increased costs of production and profit maximization and gradually affected the steady growth of business ventures worldwide. This therefore calls for a serious consideration of good time management for the sustainability of successful businesses. Project planning on whole is key in undertaking any modern task. The UK Association of Project Management (APM: 1995) have produced a UK Body of Knowledge UK (BoK) that provides a definition for project management as the planning, organisation, monitoring and control of all aspects of a project and the motivation of all involved to achieve the project objectives safely and within agreed time, cost and performance criteria. The project manager is the single point of responsibility for achieving this.

Project management: cost, time and quality viewed on the iron triangle model

For any successful project considering Cost, time and quality is vital. This is because one indirectly influences the other. The following triangular illustration explains this phenomenon.
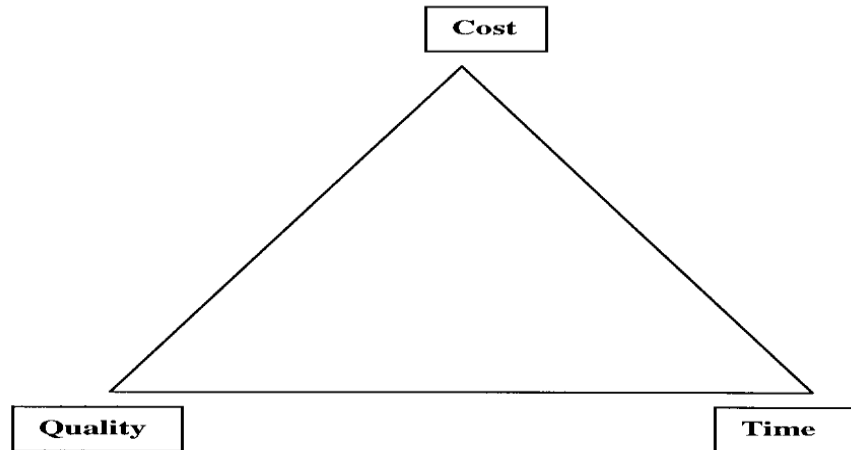
Adopted from Atkinson (1999)

This figure emphasizes the fact that for any successful project, time factor is key in determining the quality and the costs involved. Project managers need to consider these aspects as vital. Any stretched time frame influences the costs of any project which indirectly influences the quality of work. The planning, organization, monitoring and control of all aspects of a project and the motivation of all involved to achieve the project objectives safely and within agreed time, cost and performance criteria largely depend upon the project manager.

Strategic time management in project planning
In any business venture, critical reflection must be given to the concept of project time management. When it comes to project time management, it is not just the time of the project manager, but it is the time management of the project team. Scheduling is the easiest way of managing project time. In this approach, the activities of the project are estimated and the durations are determined based on the resource utilization for each activity. In addition to the estimate and resource allocation, cost always plays a vital role in time management. This is due to the fact that schedule over-runs are quite expensive. *Tutorials Point simply easy leaning website[1]* notes the following Steps of the Time Management Process each addressing a distinct area of time management in a project:

a. Defining Activities
When it comes to a project, there are a few levels for identifying activities. First of all, the high-level requirements are broken down into high-level tasks or deliverables. Then, based on the task granularity, the high-level tasks/deliverables are broken down into activities and presented in the form of WBS (Work Breakdown Structure).

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[1] *Tutorials point simply easy leaning website revised in 2005.This guidelines indicate that the the aspect of time management is very key in the implementation of any projec.*

b. Sequencing Activities

In order to manage the project time, it is critical to identify the activity sequence. The activities identified in the previous step should be sequenced based on the execution order. When sequencing, the activity interdependencies should be considered.

c. Resource Estimating for Activities

The estimation of amount and the types of resources required for activities is done in this step. Depending on the number of resources allocated for an activity, its duration varies. Therefore, the project management team should have a clear understanding about the resources allocation in order to accurately manage the project time.

d. Duration and Effort Estimation

This is one of the key steps in the project planning process. Since estimates are all about the time (duration), this step should be completed with a higher accuracy. For this step, there are many estimation mechanisms in place, so your project should select an appropriate one. Most of the companies follow either WBS based estimating or Function Points based estimates in this step.Once the activity estimates are completed, critical path of the project should be identified in order to determine the total project duration. This is one of the key inputs for the project time management.

e. Development of the Schedule

In order to create an accurate schedule, a few parameters from the previous steps are required .Activity sequence, duration of each activity and the resource requirements/allocation for each activity are the most important factors. In case if you perform this step manually, you may end up wasting a lot of valuable project planning time. There are many software packages, such as Microsoft Project, that will assist you to develop reliable and accurate project schedule. As part of the schedule, you will develop a Gantt chart in order to visually monitor the activities and the milestones.

f. Schedule Control

No project in the practical world can be executed without changes to the original schedule. Therefore, it is essential for you to update your project schedule with ongoing changes. All this calls for strategic master plan to address time factor in successful implementation of projects.

Principles for effective time management

Every successful manager must adhere to best practices of effective time management. This is because time is a scarce and rare commodity available to man. Its timeline is specific and once it is lost, it can never be gained. This calls for proper utilization of this scarce commodity.

According to European Journal of scientific research (2008), the following are principles for effective time management.

A. **Planning**: This involves the formulation of goals and definition of practical ways or steps to be taken to achieving same. If you are committed to bridging the gap between your potential and your performance, better time management should become your lifestyle choice. There are three types of plans namely: strategic plan
Intermediate plan and short term plans.

Guidelines for planning include:
1. Be specific about goals.
2. Make goals that are attainable.
3. Set quantity and time targets for same.
4. Mind the association you keep. Do not relate with dream killers.
5. Start little and with what you have.
6. Be sincere.
7. Do not isolate yourself.
8. Be flexible.

B. **Organization**: Organization means putting all resources you have into plan to achieve personal goals. Listed below are principles for personal organization at work.

1. Setting your priorities.
2. Time targets are set for priorities.
3. Allow time space for the unexpected.
4. Do not embark on more than one project at a time.
5. Be a productive thinker.
6. Separate duties properly.
7. Work according to your temperament.
8. Do not develop impossible systems.
9. Allow time for idle minute between meetings and major jobs.
10. Focus on results not in activity.

C. **Responsibility**: The essence of modern management borders on responsibility and accountability. It is common to find people passing the buck for every iota of failure or irregularity. Winston Churchill said "The price of greatness is responsibility. The steps towards responsibility are:
1. Being responsible for who you are.
2. Being responsible for what you can do.

3. Being responsible for what you have received.
4. Being responsible to those that lead you.

D. **Accountability and Integrity**: It is one thing to have a goal or dream; it is another thing to achieve that same goal. At the end of specific periods, it is important for every responsible person to take stock of actual results of his/her actions and compare same with plans. This calls for a greater sensitivity in planning and execution of any tasks timely. In fact in the execution of project monitoring and evaluations, accomplished tasks are correlated with stated timelines. Any project implementer who ignores timelines leaves any organization vulnerable to incurring additional expenses which would have been productively invested. Global financial systems can never be static. This means that any chance lost to implement any project within any stipulated time framework is susceptible to any fluctuation in global financial trends. This in turn influences domestic financial markets. All this calls for strategic planning to cater for this unforeseen phenomenon.

Case studies of failed projects in the context of time management
This section provides three case studies of projects that have been undermined by time management factor. The same projects reveal the high costs that accrued from this situation. These are learning lessons to project implementers to take into account time management issue as key to avoid unique losses.

Case study 1: Failed Electronic Voter Registration in Uganda
This was a citizen service to take photographs of all citizens of voting age using digital cameras. The photographs were then to be loaded onto a voters' register database. The database was supposed to be maintained on a mainframe at the Interim Electoral Commission headquarters, which would be connected to District Electoral Commission offices through the Internet. The database would be used as the basis for voter identification at polling stations for the 2001 election. The stated purpose behind the application was to weed out impostors who voted in the names of the dead and absentee voters, and to avoid double registration of voters, which was rampant in the country. One key stakeholder in the process was the Interim Electoral Commission, which some have seen as implicated in some of the shortcomings of the system. All citizen-voters were stakeholders, being affected by the registration process; and all politicians and political parties had a stake in the registration system.

A total sum of roughly US$22m was spent on equipment, consultancy services and operations. There were no formal benefits because the system was not put to use for the 2001 elections. The acrimony which arose out of the electoral process led to a number of court cases between government and opposition group. Things went wrong at an early stage with the hardware, with criticism that the tenders for procurement of the digital cameras were not transparent, leading to problems with the equipment delivered, and with reports that a number of the cameras were

stolen from what should have been a safe government store. Although citizen photographing did proceed, it took place within a very short time and many people were not captured by the system. There were complaints from opposition parties that security agency staff had intervened in the workings of the computer system. Suspicions were raised of manipulation of voter registrations in opposition strongholds. Opposition parties felt that names might be removed from the electoral roll in one place, in order to disenfranchise those who might vote for the opposition, and put back on in other districts, allowing soldiers to vote many times for the ruling candidates in the names of the disenfranchised citizens.

When sample voter registers were produced by the system, they were found to be erroneous, with some photographs not corresponding with names of voters. Coupled with opposition suspicions, this led the entire exercise to be suspended. Old voter registers were used to conduct presidential, parliamentary and civic elections in the country in 2001.

Evaluation and Analysis

This voter registration system failed largely because it was a technical instrument introduced into a highly politicized situation. The timing was not ideal. In the first place all parties needed enough time to appreciate the benefits of this new technology as win-win results. Time had already been invested in consultations prior to the project proposal. All was wasted. The fact that the project was a proposal towards elections with limited consultations from the opposition created heavy suspicion and mistrust.

Case study 2: Denver Airport Baggage System Case Study

Originally billed as the most advanced system in the world, the baggage handling system at the new Denver International Airport was to become one of the most notorious examples of project failure. Originally planned to automate the handling of baggage through the entire airport, the system proved to be far more complex than some had original believed. The problems building the system resulted in the newly complete airport sitting idle for 16 months while engineers worked on getting the baggage system to work. The delay added approximately $560M USD to the cost of the airport and became a feature article in Scientific American titled the Software's Chronic Crisis. At the end of the day, the system that was finally implemented was a shadow of what was originally planned. Rather than integrating all three concourses into a single system, the system supported outbound flights on a single concourse only. All other baggage was handled by a manual tug and trolley system that was hurriedly built when it became clear the automated system would never meet its goals.

Even the portion of the system that was implemented never functioned properly and in Aug 2005 the system was scrapped altogether. The $1M monthly cost to maintain the system was outweighing the value the remaining parts of the system offered and using a manual system

actually cut costs. Contributing factors as reported in the press included underestimation of complexity, underestimation of schedule and budget and dismissal of advice from experts.

Evaluation and Analysis

This is a clear example of what it takes when any project is delayed beyond the stipulated timeframe. For this project the monitory expenditure was colossal totaling to about approximately $560M USD. This could have been used for many other alternative needs on the project. This calls for strict adherence to stipulated time schedules to enable any project to be a success.

Case Study 3: The Bird's Nest Stadium in China

The Bird's Nest is the main venue of the 2008 Beijing Olympic Games which gives it unique position in China's history. Located at the southern part of the Olympic Green in Beijing and occupying an area of 21 hectares, it has a floor space of 258,000 square meters with seating capacity amounts to 91,000, including 11,000 temporary seats[2]. The stadium is designed to host large-scale sports and entertainment events after the Olympics.

Construction of the Bird's Nest began in December 2003 and was completed in June 2008. In December 2007, construction work had been suspended for one and a half year due to the perceived high construction costs[3]. Eventually the originally designed retractable roof was omitted and the whole project was delayed 6 months behind schedule[4]. The project also encountered cost overrun from the initial budget of 1.6 to 2 billion RMB[5] to the final cost of 3.5 billion RMB [6].

Evaluation and Analysis

This example further reveals the cost of suspending projects. A project originally budget for 1.6 billion RMB ended costing 3.5 billion RMB almost double the original price. Think about the scenario that would occur if the project had been completed in the original stipulated time. China would have saved a lot of money for other developments. Similarly every project manager must consider the aspect of sticking to deadlines. All shocks must be incorporated in the original project proposal.

7.0. Recommendations and conclusion

In light of the above, the following recommendations are proposed to aid best practices of time management in project planning and implementation.

1. There is a need to consider time as a vital primary factor to be considered in project implementation. Since it bears a monetary cost once ignored, it must be given absolute attention.

2. Drawing up of timeline schedules is key in executing a successful project. These must be consistently and regularly correlated with accomplished tasks. The quicker the project execution way ahead of timelines the better. The three listed examples in this paper have revealed a common thread of additional monetary costs once a project suspended or its designs changed.

3. Compulsory Training of all professionals in training institutions on time management in project planning and management must be emphasized. This is because project planning and management is now a human phenomenon.

4. Visualize and Communicate all Project Deliverables and Activities to all involved stakeholders. In short, the project manager and team must have a picture of the finished deliverables in the minds of everyone involved. This guides everyone in the same direction to avoid time wasting.

5. Always pay heed to three key factors for successful project implementation namely; Time, Budget, and Quality. While project management practices have changed to be more flexible and open, the foundation remains the same. Project success occurs when it is delivered on time, within budget, with a level of deliverables that are satisfactory to the client. The project manager's main role is to keep all team members aware of these three factors.

In conclusion, every project planner who factors the element of time consideration in project planning and implementation is bound to succeed. General training for all professionals on time management in project planning and implementation is key. This calls for all practitioners to consider this phenomenon vital for project sustainability.

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CHAPTER THIRTEEN
MAINSTREAMING GENDER INTO THE PROJECT LIFE CYCLE
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Introduction

Gender mainstreaming is very important in project management thus should be integrated in the project life cycle. According the United Nations Economic and Social Council (date and page), gender mainstreaming is defined as

> *"...the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated."*

Gender mainstreaming should ideally begin right from the program design and approval phase. Failure to do so results in the impossible task of measuring gendered impacts on projects that were not designed to address gender concerns in the first place. Gender mainstreaming is not merely about including women in a project. It therefore does not suffice to record the number of women attending a training, for instance because this assumes that women and men are equally able to participate. In reality, women's and men's ability to participate in projects differs due to time availability, skills, decision-making, financial capability, etc. A project could therefore be considered gender blind if sex disaggregated data is collected with no consideration as to the constraints that could hinder equal participation. Further, a project – even a women's only project - would also be considered gender blind if participating women have no voice or decision-making power. Gender mainstreaming is about redressing the unjust social and institutional structures that result in unequal benefits for men and women. Right from the design/concept phase, projects therefore need to seek to address the constraints that affect women.

Gender Mainstreaming is a strategy for making the concerns and experiences of both women and men an integral part of the design, implementation monitoring and evaluation of policies, programmes and projects. It involves the re-organization, improvement, development and evaluation of policy processes so that a gender equality perspective is incorporated at all levels and at all stages of policy making.

Gender mainstreaming: is the process of integrating a gender equality perspective (women and men's needs, interests, priorities, constraints) into the development process systematically and at every stage (planning, design, implementation, monitoring). *Gender integration* on the other hand, is the introduction of gender ('add on') in an already designed project, program or policy. This may be done without analysis and identification of gender concerns and their implications.

Gender analysis The first step to gender mainstreaming is gender analysis (gender responsive planning and programming). It involves the collection and analysis of sex-disaggregated data before embarking on design of development interventions (projects). It examines women's and men's specific activities, conditions, needs, access to and control over resources and access to development benefits and decision making. It explores the differences, commonalties and interaction between women and men so that projects and policies can identify and meet their respective needs, thus remedy gender unequal situations. Gender analysis identifies how women and men are affected by projects and policies differently.

The purpose of gender analysis during project planning and programming is that it:
1. Demonstrates that project design and implementation cannot be gender neutral
2. Reveals connections between gender relations and development interventions
3. Introduces the likely impact of gender relations on the solution to the problem
4. Indicates what the impact is likely to be and alternative courses of action to correct the inequalities thus informing project design strategy
5. Helps formulate meaningful and realistic expected results, indicators and targets
6. Helps ensure that project strategy is culturally relevant; hence increasing the chance of its success in the community it is being implemented.

Gender classification of policies
As a tool for helping practitioners and policy-makers determine to what degree a project or a policy is explicitly working towards transforming unequal gender relations, Naila Kabeer (1992) classifies policies into the following types:
Gender-blind policies: These recognise no distinction between the sexes. They make assumptions, which lead to a bias in favour of existing gender relations. Therefore, gender-blind policies tend to exclude women.
Gender-aware policies: This type of policy recognizes that women are development actors as well as men; that the nature of women's involvement is determined by gender relations which make their involvement different, and often unequal; and that consequently women may have different needs, interests, and priorities which may sometimes conflict with those of men. Within this category, Kabeer further distinguishes between gender-neutral, gender-specific, and gender-redistributive policies.

Gender-neutral policies: use the knowledge of gender differences in a given society to overcome biases in development interventions, in order to ensure that interventions target and benefit both sexes effectively to meet their practical gender needs. Gender-neutral policies work within the existing gender division of resources and responsibilities.

Gender-specific policies: use the knowledge of gender differences in a given context to respond to the practical gender needs of women or men; they work within the existing gender division of resources and responsibilities.

Gender-redistributive policies: are intended to transform existing distributions of power and resources to create a more balanced relationship between women and men, touching on strategic gender interests. They may target both sexes, or women or men separately.

The History of gender concerns in projects and other development efforts

A concern for gender equality in development is sufficiently well established to be the subject of historical accounts. Such accounts often describe an evolution in development policy and planning from a so-called welfare approach, to one which prioritized equity, then efficiency, and finally to one which espouses women's empowerment as its goal (Moser 1993). Such approaches are also seen to coexist, either as single policies of a particular government or agency, or mixed-and-matched within one organisation, in the hope that they will form a coherent whole (Andersen 1992). There are two well documented gender mainstreaming policy shifts: WID (Women in Development), which aims to include women in development projects in order to make them more efficient, and GAD (Gender and Development), which addresses inequalities in women's and men's social roles in relation to development efforts.

The question of how to integrate women effectively into the development process both as agents and as beneficiaries has evolved considerably over the past thirty years and has presented a paradigm challenge to development agencies. The approach taken up internationally in the 1970s, which is referred to as "Women in Development" (WID) focused on women in relation to the economy and the development process from which women were perceived as being largely excluded. Central to the thinking on WID was how to conceptualise the nature of the problem as well as the measures required to achieve real transformation in the lives and position of women relative to men. With this perspective, measures were taken to integrate women in development activities though targeted projects or separate components.

More literature reveals that the exclusive focus on women ignored the political, economic and social relations that men and women were engaged in, and which shape their lives, livelihood strategies, prospects and well-being. In the African context, this was very critical since the roles and status assigned to men and women were, and still are, largely culturally determined. In such a situation, discounting women's relations with men incurred resistance as it threatened culturally established patterns of behaviour. In retrospect not only did the WID approach fail to

challenge or transform unequal gender but it also left the structures, processes and mechanisms that sustain gender inequality intact.

Due to the limitations of the WID strategy, a new policy framework referred to as GAD emerged in the early 1990s. Unlike WID, it requires the restructuring of the development mainstream through the incorporation of the visions, needs and interests of women and men in the definition of development policies, priorities and strategies. Its focus was not centred on women, but on the social, political and economic relations as well as the structures and processes that create, reinforce and sustain inequality on one hand and result in different outcomes for both women and men on the other hand.

The GAD approach emphasizes the fundamentally social nature of gender differences and introduces the concept of "gender mainstreaming" as a key strategy for analyzing the relationship between women and men both within the public as well as the private spheres. It seeks to be holistic and take account of the link between culture and development, which has complementary as well as conflictual dimensions. The underlying assumption of the GAD approach is that women as well as men may be privileged or disadvantaged by social and economic structures. In this context a better understanding of women's as well as men's perceptions, position and scope for changing gender relations is seen as indispensable. The gender approach has an agenda to transform unequal gender relations through the empowerment of both women and men, by enabling them to question cultural values, practices and structures (*African Development Bank Gender Policy*, 2001).

The international gender context
A number of international treaties and agreement have been reached in a bid to mainstream gender into development interventions. These include the following:

The International Covenant on Economic and Cultural Rights (year) which states that men and women have equal right to work, favourable working conditions, to form and join trade unions, to social security, to an adequate standard of living and to the highest attainable standard of physical and mental health.

The Fourth World Conference of Women of (1995) called for gender mainstreaming in the areas of poverty, human rights, economy, violence against women and armed conflict.

Beijing Platform of Action The Beijing Platform of Action established that gender analysis should be undertaken on the respective situation and contributions of both women and men before undertaking development policies and programmes (Mehra & Gupta, 2006).

Millennium Development Goals had a goal on gender equality and the empowerment of women in the Millennium Development Goals (MDGs) which re-established the commitment voiced in Beijing. In outlining the way forward towards achieving that goal, the report of the **Task Force on Education and Gender Equality of the UN Millennium Project** (year), reinforced the importance of investing in gender mainstreaming as a tool. The report reiterated the need to expedite mainstreaming responses and actions as well as the need to create systems to hold institutions accountable.

The World Development Report (2012) clearly states that there has been a substantial increase in the female labor force especially in informal sectors and low wage industries. The challenge however, is that these women experience inefficiencies, limitations and investment challenges more than their male counterparts. It is also important to note that throughout the world women are largely absent from corporate board rooms. Programs for promoting good corporate governance recognize the need to work towards raising awareness, building capacity, expanding the discussion on gender diversity on corporate boards and supporting women leaders in those roles.

OCED DAC Network on Gender Equality (2011) highlights the particular challenges relating to women's empowerment that include the need to reach women in remote communities including cross border traders, factory and domestic workers; support women farmers; support women's enterprises including linking rural producers to urban markets; promote women's access to credit; design infrastructure programmes that maximize poor women's and men's access to the benefits of such programmes; promote more equitable access, assets and services such as technology, innovation, credit, banking and financial services; give more attention to unpaid care; and increase the focus on women's employment.

The African Legal and Policy gender Context
The African Gender Equality and Women's Rights Monitor (AGM) was formed in 2006 by gender activists in African countries. They aimed to contribute to the full realization of women emancipation, the eradication of all forms of discrimination oppression, and abuse and to uplift women's rights as human rights. This was to be achieved through the monitoring and implementation of the international women's human rights instruments, research and documentation of good practices on the implementation of those instruments and by supporting the African Union in addressing gender, family, research, and capacity building. Other initiatives include the Gender Impact Analysis tool by the Foundation of Women Lawyers in Kenya to measure government compliance with the International Covenant on Economic Social, Cultural Rights (ICESCR).

The East African legal and policy context on gender

The major objective of the East African Community (EAC) is to "develop policies and programmes aimed at widening and deepening cooperation among the partner states in political, economic, social and cultural fields, research, and technology, defense, security and legal and judicial affairs, for their mutual benefit. The enhancement of the role of women in cultural, social, political, economic and technological development is at the core of EAC activities. Article 121 of chapter 122 of the Treaty requires partner states to make special provisions for the increased participation of women in decision-making, business and policy formulation. Additionally, Kenya, Rwanda and Uganda (need to confirm list of countries) have national gender policies that seek to redress historical imbalances in women's access to resources and opportunities. In spite of the above enabling legal context, women in the EAC face a number of challenges in projects including but not limited to:

1. Underlying poverty and gender inequalities, uncertain land rights, low literacy and education, the responsibility of caring for family members and a lack of time for personal development (time poverty).
2. Men tend to move into positions usually held by women as sectors become mechanized, such as the case in agriculture, fishing and forestry.
3. Small volume traders who are mainly women lack access to information relating to markets, rights and obligations, safety and accountability at borders and in customs.
4. Energy, infrastructure and transport studies on the Northern and Central Corridor regions reveal that transport initiatives can work to reduce the spread of HIV/AIDS.
5. Women make up the majority of informal border workers/cross-border informal traders and primarily use illegal routes to smuggle food stuffs, cattle, hides and skins. Such illegal practices put women at risk for heavy fines, the confiscation of their goods, imprisonment and sexual exploitation by male smugglers and border officials.

There remains much to be done in order to ensure that both men and women enjoy equal access to resources and opportunities from development efforts. Fortunately, the legal frameworks are in place. Organizations can make a significant contribution in leveling the playing field in projects among the East African member states by mainstreaming gender in all activities.

Gender analysis and gender mainstreaming frameworks

Gender analysis is the process of assessing the impact that a development activity may have on females and males, and on gender relations (the economic and social relationships between males and females which are constructed and reinforced by social institutions). It is the first step to gender responsive planning and programming also called gender mainstreaming.

It can be used to ensure that men and women are not disadvantaged by development activities, to enhance the sustainability and effectiveness of activities, or to identify priority areas for action to promote equality between women and men.

During implementation, monitoring and evaluation, gender analysis assists to assess differences in participation, benefits and impacts between males and females, including progress towards gender equality and changes in gender relations.

Gender analysis can also be used to assess and build capacity and commitment to gender sensitive planning and programming in donor and partner organisations; and to identify gender equality issues and strategies at country, sectoral or thematic programming level.

Gender mainstreaming

The precise meaning of' mainstreaming' as an aim, and the ways in which this can occur, are contested terrain. Many authors have conceptualized 'mainstreaming' as making gender concerns the responsibility of all in an organisation, and ensuring that they are integrated into all structures and all work. This is seen as an alternative to making gender concerns the sole responsibility of a smaller specialist team or unit. Critics of this approach have pointed out the disadvantages of trying to achieve the goal of 'mainstreaming' gender by making it everyone's responsibility .They argue that this may lead to diluting or distorting these issues, or making them disappear altogether, as a result of lack of consistent attention and resources, sustained commitment on the part of decision-makers, and of male resistance. In contrast, it is argued that a specialist team, although it may be working in the 'margins', may oblige organisations to develop and maintain a more visible and radical commitment to gender equality.

Confusingly, (Del Rosario, 1995) notes that others use a different approach in trying to achieve 'mainstreaming': one which separates out the systems and tasks necessary to address gender concerns, by establishing national 'machineries' or specialist teams (such as ministries, special units, and so on). The author asserts that his has been a way in which governments and organisations can signal their acknowledgement of the importance of women's issues. Yet this approach, too, has been found wanting. In particular, national machineries have often been 'proven to be weak, under-resourced, vulnerable to changing political fortunes and to co-optation by political parties' (Byrne & Laire 1996).

Mukhopadhy et al (2015) reveals that the current consensus seems to be that organisations need to use both approaches - integrating gender concerns throughout the organisation, as well as maintaining specialist departments or units - in order to avoid marginalization and co-optation of gender issues. In general, 'mainstreaming' is understood as a welcome departure from an 'integrationist' approach, which is simply concerned with allowing women access to development activities and bureaucracies. 'Mainstreaming gender is both a technical and political process which requires shifts in organisational cultures and ways of thinking, as well as in the goals, structures, and resources allocation of international agencies, government, and NGOs (Kardam 1998).

Gender mainstreaming: A conceptual framework

To be effective, a gender mainstreaming strategy should initiate and sustain change processes at multiple levels.

- The **organisation** itself – its policies, procedures, culture and people.
- The **development interventions** supported by the organisation, which lie within the intersection of its own work with the work of its partners.
- The **larger national context**, including the socio-economic, cultural and political environment in the country; the policies and programmes of development partners; and the perspectives and strategies of the women's movements and other civil society actors.

Within the organisation as well, gender mainstreaming can be conceptualised as playing out in different domains.
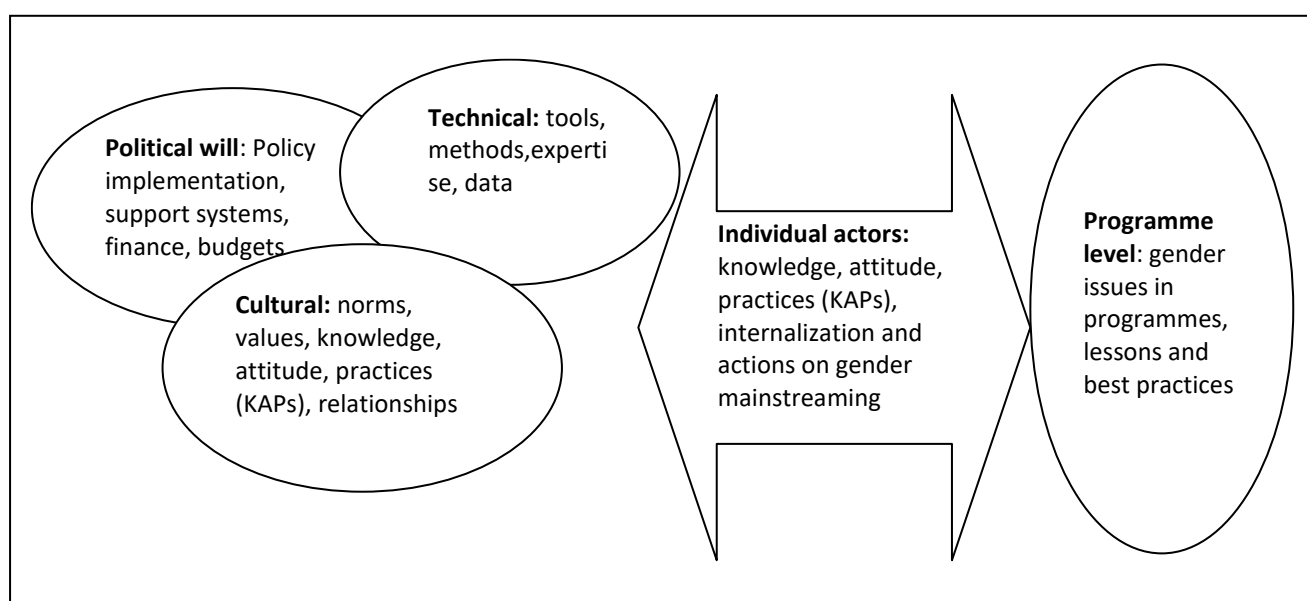
a) The **technical domain** is constituted of the capacities, tools and instruments for gender mainstreaming. Gender experts, guidelines and tools for integrating gender into the project cycle, gender training modules and materials are all located within this domain.

b) The **political domain** is the site for integration of gender equality concerns into processes of planning and decision-making within the organization. This is the domain within which hierarchies are institutionalized, which in turn determines access and control over resources and decision-making in the organisation.

c) The **cultural domain** is the arena in which the environment and daily practice of the organisation are defined, shaped and validated. While processes in this domain may not be guided by clearly articulated rules and procedures, they are nonetheless critical to gender mainstreaming. Since it is in this domain that the gap between policy and practice is created, it is also the space where it can be negotiated and contested.

Each of these domains is intricately linked to the other. In turn, each domain and the system as a whole are influenced by multiple factors in the external environment – national development agendas, global discourses, civil society, women's movements, donor priorities and geo-political processes and issues.

Power relations are woven into each domain and are manifested in different ways. In the **political** domain power is visible in forms of leadership, ability to influence processes of decision-making and creation and maintenance of hierarchies and the control of resources and priorities. In the **technical** domain, unequal power relations are reflected in the ways in which concepts, discourses and methodologies are defined and shaped – in deciding what is "valid" and what is not, what is 'sound' and what is not, what is 'objective' and what is not. In the **cultural** domain value systems, attitudes, and relationships all reflect power relations that perpetuate gender inequality. The implications and impact of each of these, as well as the ways in which they intersect, should ideally be factored into strategies for gender mainstreaming.

Conceptual model: Interrelated interventions for mainstreaming gender equality concerns

During any project design and conceptualization, there is need to assess the inter-related interventions through the administration of a Gender Audit that examine: Political Will and Commitment, Financial Resources and Technical Capacity, Human Resources, Organizational Accountability and Organizational Culture and Values. See the framework sample below:

Political will: Policy implementation, support systems, finance, budgets

Technical: tools, methods, expertise, data

Cultural: norms, values, knowledge, attitude, practices (KAPs), relationships

Individual actors: knowledge, attitude, practices (KAPs), internalization and actions on gender mainstreaming

Programme level: gender issues in programmes, lessons and best practices

Adopted and modified from TMEA gender audit (2015)

From the above framework, we posit that political will, culture and technical dimensions are interwoven and mediated by individual factors can influence project and programme outcomes. Within the three dimensions of culture, political and technical issues are gender concerns that need to be addressed than blindly designing interventions which can result into gender conflicts. However, it has been left to you, the reader, to decide whether the framework is applicable in your context, whether you will still use the framework, and, if so, how you can compensate for any limitations. Whenever users have reported adaptations of the gender frameworks which help to balance or counteract potential limitations, these can be included in mainstreaming efforts. A number of other frameworks exist and these include:

Harvard Analytical Framework

The Harvard Analytical Framework is often referred to as the Gender Roles Framework or Gender Analysis Framework. Published in 1985, it was one of the first frameworks designed for gender analysis. It was developed by researchers at the Harvard Institute for International Development in the USA, working in collaboration with the WID office of USAID, at a time when the 'efficiency approach' to integrating women in development work was gaining prominence in development circles. It focuses on an analysis of the division of work between women and men in productive and reproductive work within the household and the community

Gender Analysis frameworks

Before choosing or using the framework, you should consider its weaknesses which other workers and trainers have found. These potential weaknesses do not invalidate the usefulness of disaggregated by age, sex and other factors. It is normally used for baseline data collection. It is best suited for project planning rather than programme or policy planning. It can help project designers plan activities using four components: activity profile, access and control profile, influencing factors and project cycle analysis.

1. Activity profile: identifies the productive and reproductive tasks carried out by women and men.
2. Access and control profile: identifies the resources (land, equipment, labour, cash, education) women and men use to carry out their tasks, the access to and control over those resources, and the benefits (asset holding, clothing, food, education, political power) a household can receive from using these resources.
3. Influencing factors: Refers to the factors that influence the difference in the gender division of labour and access to and control over resources, including: community norms, institutional structures, economic and political factors, legal frameworks etc.
4. Project cycle analysis: Refers to four checklists consisting of key issues to consider at each stage of the project cycle: identification, design, implementation and evaluation.

Moser framework

In reaction to the Women in Development (WID) approach, which in the 1970s encouraged treating women's issues as separate concerns, the Gender and Development (GAD) approach argued for an integrated gender-planning perspective in all development work, concentrating on the power relations between women and men. This approach challenges many of the assumptions behind traditional planning methods. The Moser Framework was part of this challenge. Caroline Moser developed it as a method of gender analysis at the Development Planning Unit (DPU), University of London, UK in the early 1980s. Moving from analysis into action, Caroline Moser, with Caren Levy of the DPU, further developed it into a gender policy and planning method.

Moser's method was presented as a mainstream planning methodology in its own right, like urban or transport planning.

- The Moser Framework*, developed by Caroline Moser, explores the division of work between women and men.
- Based on the concepts of gender roles and gender needs, it is used for planning at all levels of an organisation from policies to projects in conjunction with the Harvard Analytical Framework.
- Aims to establish gender planning as a type of planning in its own right and seeks to integrate gender-planning in every project.
- Focuses on three elements:
  - Gender Roles Identification: Women's triple role.
  - Practical and strategic gender needs.
  - Women in Development (WID) and Gender and Development (GAD) policy approach matrix.

Gender roles identification: women's triple role
  a. Refers to the reproductive, productive and community managing work women engage in as compared to men who undertake mainly productive and community political activities.
  b. By using this element, the Moser framework shows that women perform multiple roles simultaneously; making visible and valuing reproductive work that is generally not considered real work.
  c. It also highlights that reproductive workload often prevents women from taking part in development projects.
  d. Reproductive work consists of the maintenance of the household and the care of the family members.
  e. Includes child bearing/rearing responsibilities and domestic tasks.
  f. Most often exclusively carried out by girls and women.
  g. The productive work involves the production of goods and services with an exchange value.
  h. This is work done by both women and men.
  i. Women's productive work is often less valued than men's.

Gender Analysis Steps

Step 1: Collect sex-disaggregated data/information
This refers to the differentiation by sex of statistical data and other information and is sometimes called gender-disaggregated data. This means that we must count both males and females when gathering information for planning, implementing, monitoring and evaluating development activities. Disaggregating information by sex is a basic good practice requirement for gender-sensitive programming. Without disaggregated information, it is difficult or impossible to assess the different impacts of development activities on males or females. It is important to disaggregate data not only by sex, but also by age (girls and boys, older men and women), race,

ethnicity, caste/social group and any other socioeconomic group which may be affected positively or negatively by a development activity.

There are many ways that development workers can gather sex-disaggregated information. Data collection methods and the quantity of data required will vary according to a range of factors, including the sector and type of development activity, the scale of the activity, the resources and time available for data collection during design, implementation and evaluation, and the institutional context. While there are now many sources of quantitative data on the status of women and girls, up-to-date and relevant information specific to the location and activity can sometimes be difficult to get. Sex disaggregated qualitative information based on consultation with key stakeholders and local women's groups is also essential.

Participatory methods may provide opportunities to hear from both women and men separately (for example, participatory ways of gathering information on the gender division of labour, or on access to resources), and for women and men to hear each other's perspectives.

The following factors may influence the accuracy and coverage of data:
• Who is present: In some cultures women will respond very differently to questions about their economic and social activities, and their views about gender relations if men are present. If men answer questions first, women may remain silent, even if they disagree, or if inaccurate information is given.
• Time of day, season and location: Women may not be available at certain times of day, and men may be less likely to be present at other times. It is important to choose both a time and place which is convenient for women, for individual and group interviews or participatory information-gathering exercises. Women and men may be less available during peak labour periods, such as harvesting or transplanting times.
• Who is the facilitator/interviewer: In some cultures and situations, responses to questions will be more accurate if women gather information from women. Training and supporting beneficiaries to collect and interpret data is also one way of involving women in project planning, implementation and monitoring, and may increase the accuracy and quality of data and its analysis. Class, age, ethnic background and occupation may also influence peoples' responses. It may be necessary to monitor whether these factors are introducing bias.
• Language difficulties: Men and women may have different proficiency in national (as distinct from local or ethnic) languages, particularly where gaps in education and literacy between males and females are significant.

• Collect information on all relevant work: Overlooking unpaid and subsistence work will result in under-reporting and misrepresentation of both women's and men's workload. Without this information, it can be difficult to identify the constraints which may face them in participating in

or benefiting from development activities. Much of women's work is under-valued or 'invisible' to men and outsiders. Typically, men may not give accurate information about what women do, how long it takes to do it, where the work is done, or who benefits from different activities.

• Local women's organisations: Women's organisations and groups can be accurate sources of information about the gender division of labour, patterns of decision making, access to resources, women's and men's needs, priorities and strengths, how gender relations are changing, and the factors causing changes in gender relations. Often, these organisations have a rich knowledge of how current development activities and trends are helping or hindering women and men. With adequate resources, they can be effective catalysts for engaging the participation of women, men, boys and girls.

• Cross-check data: It is always necessary to cross-check data for accuracy and bias, including gender bias, regardless of the data collection method used. Local women's groups and local female researchers may be good sources for cross-checking, as well as other key community informants. Cross-checking may assist with analysis of data, and may indicate differences in perception about social and economic conditions, rather than actual inaccuracy in data collected. Using a range of reliable informants knowledgeable about the target group and women's and men's experiences is critical.

• Technical and sectoral expertise: It is helpful to have a social scientist with expertise in participatory data collection and gender analysis on design, implementation and evaluation/review teams. However, it is just as important for each team member to be responsible for collecting and analysing sex-disaggregated information in their own sector or area of expertise.

Step 2: Assess the gender division of labour and patterns of decision making
This step in the gender analysis process describes who does what, within the household, community, workplace, organisation or sector. Important issues to consider include:

• What work is done, and by whom (female and male adults, elders and children)? One good rule of thumb is to ask how the gender division of labour will affect the implementation of program/project activities; and how these activities are likely to affect the gender division of labour.

• Different types of work to consider are: productive (formal and non-formal sectors), reproductive, essential household and community services, and community management and politics. It is also important to explore who makes decisions about different types of work, and how this is changing. For example, in the education sector, it is important to know in which areas and at what levels females and males predominate as learners, teachers and decision makers, and why. In the health sector, women are often traditionally responsible for providing basic health care in the family and community. It is important to know how men and women are involved in the provision of health services (formally and non-formally), and how the gender division of labour, responsibility and decision making in the family impacts on women's and men's health.

Decision making about reproduction, about who in the family is resourced to go to health centres, tolerance of violence against women, and the physical burden of work can greatly influence women's and girls' health. Understanding decision making patterns can also provide insight into who has control over labour in the community.

• How much time is needed to undertake each activity, and when is the work done? This information helps to identify periods when there is a high demand for labour, so that an assessment can be made of any extra demands that project inputs will make on women, men and children. This is particularly important for rural development projects, where the scarcest resource for low-income women is time. For example, the different domestic and productive workload of girls and boys has been identified as an important factor in both enrolment and retention rates at school, as well as in educational achievement.

• Where does each activity take place (for example, home, village, marketplace, fields, urban centre or rural area, and how far away from the household)? This gives insight into female and male mobility, and allows an assessment to be made of the impact of the program on mobility, method of travel, the travel time needed to accomplish each activity, and potential ways of saving time. For example, for women to participate in training activities, timing and location needs to be carefully considered. In a police project, it is important to know whether women are stationed in rural areas, and whether they are primarily assigned to office-based activities.

• It is important to consider all the above for each socioeconomic or ethnic group targeted by the program/project, or affected by the program/project. A good gender analysis is undertaken within the context of a broader social analysis.

• With most projects and programs, it is also important to have a sex-disaggregated employment profile of the partner organisation.

Step 3: Assess access to and control over productive resources, assets and benefits
This part of gender analysis describes who has what, within the household, community, workplace, organisation or sector, including who has power. Questions to be asked include:

• Who has access to productive resources and assets such as land, forests, water supplies, equipment, labour, capital, credit, new technology and training?

• Who has control over how these resources and assets are used, and over who uses them? It is important to distinguish between access to these resources (who uses resources informally or traditionally) and control or decision making power.

• Who belongs to formal or informal groups or organisations, who gets mentored or promoted?

Who benefits from the product of women's and men's labour, and who benefits from development activities and education and training opportunities? Questions to ask include:

– Who benefits from income earned and spent? For example, cash cropping projects often rely on the unpaid family labour of women and girls, but women are often less likely to control or have access to income from cash crops.

– Who owns and uses any assets or goods created?

– Who gains formal or informal political power, prestige or status?

– Who has access to services, for example health and education, and what factors determine access? For example, the location of facilities, and the attitudes of service providers, may influence women's access to health services.

• Who has access to program/project resources, who has access to information from the project/program, and who participates in project management processes?

Project participation and consultation processes may be designed to enhance women's and men's access to information about the project and the resources which it offers. For example, the establishment of project implementation groups (such as water user groups, credit groups or farmer co-operatives) may determine who knows about the program, and who gets control over its resources.

– How information is distributed and to whom, may determine who has access to training opportunities by a project.

– Formal education prerequisites for education and training may impact on men and women very differently.

– These factors will have an impact on women's and men's current productive activities and will often change existing gender relations.

For example, in emergency relief and post-conflict situations, it cannot be assumed that women will receive equal access to resources unless this is specifically planned for. Women may also raise different priorities for resources than those identified by the male leadership of displaced persons. For example, women in Rwandan camps in Tanzania identified a range of priorities and concerns regarding access to resources once they had gathered together in their own groups, such as how to get their proper share of food, the need to provide extra food and support to women caring for unaccompanied children, the need to ensure that single mothers and widows also receive resources, and the need to provide recreation and schooling for children (Woroniuk et al. 1997).

Step 4: Understand differences in needs and strengths

It is not unusual for men and women to have different perceptions of their needs and strengths. They may also have different ideas about who does what, who uses what resources, and who controls resources or makes decisions in other important areas of life. Women and men may also have different views about gender relations, how they have changed already, and how they should change in future.

Insights into women's/girls' and men's/boys' needs and strengths may be gained from finding out about the gender division of labour, use of and control over resources, and patterns of decision making. Consultation with participants, in a way which allows both women's and men's voices to be heard, is essential.

Step 5: Understand the complexity of gender relations in the context of social relations. Recognizing that development programming occurs in a complex and changing social context, this aspect of gender analysis considers social, cultural, religious, economic, political, environmental, demographic, legal and institutional factors and trends, and how they will impact on the program/project. Questions to be asked include:

• How will these factors and trends influence and change the gender division of labour, women's and men's access to and control over resources and benefits, and other aspects of gender relations such as decision making?
• How will these factors and trends constrain or facilitate the program/project, and the likelihood of successfully achieving objectives?
• How might the program influence these factors and trends, either positively or negatively?
• Which factors are changing and why, and which are very difficult to change?

There are many forms of discrimination, which result in violation of basic human rights to both females and males of all ages. It is important to remember that women face multiple barriers through different stages of their lives, and to understand the different types of discrimination that affect both males and females.

This analysis of social context can help to identify assumptions and risks in the logical framework matrix. Both women's and men's experiences and perspectives need to be considered when identifying critical planning assumptions and risks. Project objectives or methods may need to be modified in the light of these factors. For example:

• The experiences of boys and girls within the education system need to be considered when identifying factors which contribute to access to education, and educational outcomes.
• Demographic trends such as male migration may mean there are large seasonal variations or long-term changes in the numbers of households supported solely by women. If so, assumptions about the availability of women's and men's labour for program activities may need to be reconsidered. Such factors may also affect boys and girls access to schooling.
• Cultural factors restricting women's and girls' mobility may mean that services (for example, health, education or credit services) are under-utilised if they are located outside the immediate locality.
• For cultural and religious reasons, it may be important to establish separate groups for women and men at the community level. Training and consultation may need to occur separately with women and men, and female extension agents and community workers may be required.
• Legal factors and customary practices may make it very difficult to transfer resources directly to women (such as ownership of land or hand pumps, or access to credit).

Changing attitudes, economic circumstances and trends may provide opportunities for improving women's social, economic and legal status. Analysing such factors and trends may assist planners to identify areas where the program can address both women's practical needs, as well

as their strategic gender interests (as defined by women themselves) to redress current inequalities in the gender division of labour, and in women's access to and ownership of productive resources. Work in post-conflict areas and in humanitarian/emergency relief situations may also present opportunities for advancing gender equality.

Step 6: Assess barriers and constraints to women and men participating and benefiting equally in the program/project

Key constraints and barriers to men's and women's participation as beneficiaries and decision makers need to be identified during project design for all components and key activities, based on information gathered in the steps above. This is an essential step in the process of gender and social analysis which is often missed. Who benefits and participates, how and why/why not, also needs to be monitored closely during implementation.

Step 7: Include and resource strategies to promote gender equality in project design and implementation

Strategies and activities need to be identified to overcome barriers to women and men participating and benefiting. It is important to assess which constraints, barriers or imbalances can realistically be addressed over the life of the project. It is also essential to ensure that strategies are adequately resourced and monitored. For example, gender-sensitive communication, consultation and participation strategies need to be developed and tested. Project staff needs to consider how and when contact is made with target groups, and who may be excluded directly or indirectly by the communication strategies used.

Step 8: Assess counterpart/partner capacity for gender-sensitive planning, implementation and monitoring

Partner capacity for gender-sensitive implementation is still often overlooked. For most bilateral and multilateral development projects, the counterpart agency has already been decided long before implementation commences. Nevertheless, an assessment of counterpart institutional capacity to implement gender-sensitive activities is essential as early as possible in the project cycle, so that appropriate strategies for strengthening this capacity can be explored and costed (Hunt, 2000).

Step 9: Assess the potential for the program/project to empower women and address strategic interests

It is useful to distinguish between practical gender needs and strategic gender interests which may be addressed during program/project implementation:[1]

Practical gender needs are the immediate and practical needs women have for survival, which do not challenge existing culture, tradition, the gender division of labour, legal inequalities, or any

other aspects of women's lower status or power. Projects which focus on practical gender needs may make it easier for women and girls to carry out their traditional roles and responsibilities, and relieve their daily burden of work. These practical needs are shared by all household members. However, because women are generally responsible for providing these needs for the family, they are often more easily identified by women as their highest priority needs.

Strategic gender interests focus on bringing about equality between females and males, by transforming gender relations in some way, by challenging women's disadvantaged position or lower status, or by challenging and changing men's roles and responsibilities. Women may not always be able to articulate their strategic interests. It is important to have discussions with women about their role and place in society, their rights, and how they would like things to change. It is equally important to have discussions with men on these issues. Strategic gender interests may express women's and men's long-term aspirations for equality.

It is possible to address women's strategic interests by: working with men as well as women (for example, by raising men's awareness of the impact of their sexual behaviour and power inequalities on women's health); focusing on practical needs in an empowering way, which also promotes strategic interests (for example, by involving women in decision making in areas where they do not traditionally have a role or power, such as in the management or maintenance of water supplies); and using practical needs as an entry point for raising awareness about inequality and rights, or about women's and men's roles and responsibilities and their long term interests. What is strategic in one social and cultural context may not be strategic in other contexts. Some examples of strategic gender interests are women's rights to: live free from violence; have equal land tenure; have equal control over other productive resources such as credit, forests, water supplies; be involved in decision making; and have equal educational and training opportunities and outcomes.

Step 10: Develop gender-sensitive indicators

Gender sensitive performance indicators are essential for monitoring the impact of activities on males and females, and on changes in gender relations. To be gender sensitive, indicators need to:

• require the collection of sex-disaggregated information wherever possible on who participates and benefits;

• assess whether the program/project has different benefits and impacts for males and females, and assist us to analyse why these differences between women and men occur;

• assess whether the program/project is bringing about a change in gender relations, and assist us to analyse how gender relations are changing (positively or negatively), and how this impacts on the achievement of overall program/project objectives; and

• involve both women and men in developing indicators, and in collecting and analysing information.

It is important to include a mix of both quantitative and qualitative indicators, in order to assess benefits, changes in gender relations and other impacts. Reporting on indicators should always be accompanied by qualitative analysis, to ensure that data is interpreted correctly.

For example, a quantitative gender sensitive indicator for a HIV/AIDS program may measure the number of males and females who attend awareness-raising workshops. Qualitative indicators may assess whether females and males can identify ways to protect themselves from HIV infection, whether they are able to talk about and use condoms with sexual partners, and whether there is increased community acceptance of women and men living with HIV/AIDS. In a water and sanitation project, a quantitative indicator may be the number of women represented on water committees. Qualitative indicators may assess whether women have actively participated in management and decision making on water committees; or assess men's and women's views on the appropriateness of the location and type of water facility provided.

Step 11: Apply information and analysis through the program/project cycle and to all major program/project documents

This requires the formulation of a range of questions which will vary according to the nature and sector of the project/program, and the social and development context. Many agencies now have useful tools to assist with this process which are available electronically (for example, AusAID 1997).

Each of the above steps needs to be considered throughout the activity cycle, beginning with country and sectoral programming, and continuing through project design, implementation and evaluation. For example, during country and sectoral programming, an assessment of partner government capacity and commitment to gender sensitive programming is critical, along with other aspects of gender analysis. During project design, the gender analysis process is not complete until project-specific operational strategies and gender-sensitive indicators are devised to ensure that both men's and women's needs and priorities are systematically addressed. During implementation, as information is collected to verify indicators, it is important to be prepared to change the way we carry out programs/projects if we find that there are unintended or harmful effects, or if we find that women's or men's needs or priorities are being overlooked. This may require changes to objectives, as well as to activities.

Gender perspectives need to be systematically integrated into all major project documents, rather than confined to a separate section of a document, or to a separate Gender and Development Strategy. It is particularly important that log frames adequately reflect social and gender analysis undertaken during design. Explicit references to gender equality outcomes, or to the benefits to be gained by women and men, are needed in the first column of the log frame, in the statement of the goal, purpose, objectives or outputs. In addition to gender-sensitive indicators, means of verification need to ensure that both women's and men's voices are heard. Planning assumptions and risk assessment also need to consider gender dimensions.

Gender Related Concepts

Empowerment: Describes both the process and the outcome of people - women and men - taking control over their lives: setting their own agendas, gaining skills (or having their own skills and knowledge recognized), increasing self-confidence, solving problems, and developing self reliance. Empowerment implies an expansion in women's ability to make strategic life choices in a context where this ability was previously denied. In most cases, this requires transformation of the division of labour and of society.

A Basic Distinction - Sex and Gender: Sex refers to the *biological* characteristics between men and women, which are universal and do not change. These sets of biological characteristics are not mutually exclusive as there are individuals who possess both, but these characteristics tend to differentiate humans as males and females. **Gender** therefore refers to the socially given attributes, roles, activities, responsibilities and needs connected to being men (masculine) and women (feminine) in a given society at a given time, and as a member of a specific community within that society. Women and men's gender identity determines how they are perceived and how they are expected to think and act as men and women.

Androgyny: To say that someone is androgynous is to say that he or she combines stereotypically male and female attributes.

Disaggregated Data (Sex): For a gender analysis, all data should be separated by sex in order to allow differential impacts on men and women to be measured. Sex disaggregated data is quantitative statistical information on differences and inequalities between women and men.

Female Genital Mutilation (FGM): Female genital mutilation comprises all procedures that involve partial or total removal of the external female genitalia, or other injury to the female genital organs for non-medical reasons. The practice is mostly carried out by traditional circumcisers, who often play other central roles in communities, such as attending childbirths. Increasingly, however, FGM is being performed by medically trained personnel. FGM is recognized internationally as a violation of the human rights of girls and women. It reflects deep-rooted inequality between the sexes, and constitutes an extreme form of discrimination against women. It is nearly always carried out on minors and is a violation of the rights of children. The practice also violates a person's rights to health, security and physical integrity, the right to be free from torture and cruel, inhuman or degrading treatment, and the right to life when the procedure results in death.

Gender Awareness: Is an understanding that there are socially determined differences between women & men based on learned behavior, which affect their ability to access and control resources. This awareness needs to be applied through gender analysis into projects, programs and policies.

Gender Equality: refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not mean that women and men will become the same but that women's and men's rights, responsibilities and opportunities will not depend on whether

they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of groups of women and men.

Gender Equity: this refers to fair treatment for women and men, according to their respective needs. This may include equal treatment that is different but which is considered equivalent in terms of rights, benefits, obligations and opportunities. Gender equity denotes an element of interpretation of social justice, usually based on tradition, custom, religion or culture, which is most often to the detriment to women. Such use of equity in relation to the advancement of women is unacceptable.

Gender Mainstreaming: Gender Mainstreaming refers to a process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in any area and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension in the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and social spheres, such that inequality between men and women is not perpetuated.

Gender-Neutral, Gender-Sensitive, and Gender Transformative: The primary objective behind **gender mainstreaming** is to design and implement development projects, programmes and policies that:

1. Do not reinforce existing gender inequalities- **Gender Neutral**

2. Attempt to redress existing gender inequalities- **Gender Sensitive**

3. Transformative: attempt to redefine women and men's gender roles and relations - **Gender Positive**

Checklist for Gender Mainstreaming Projects

Checklist for mainstreaming projects

☐ **Conduct a gender analysis**
  ☐ What is the role of men and women in the economy?
  ☐ Do women and men have equitable access and control over project resources?
  ☐ What are women's and men's needs?
  ☐ What opportunities exist for increasing women's productivity and access to resources?
☐ **Define general project objectives**
  ☐ Are women's and men's needs, constraints and views reflected in the project objectives?
  ☐ Are both women and men (target groups, staff, partners) involved in setting those objectives, including in decision-making?
☐ **Identify possible negative effects**
  ☐ Might the project adversely affect the women's or men's situation any other way?
  ☐ Might the project reduce women's or men's access to or control of resources and benefits?
  ☐ What effect will the project have on women in both the short and long term?
  ☐ How can the project design be adjusted to increase the positive effects, and reduce or eliminate the negative effects on women and men?
☐ **Confirm availability of sufficient resources**
  ☐ Is the allocated budget sufficient to achieve the desired project results?
  ☐ Do implementing partners possess the necessary gender expertise to implement a gender responsive project?
☐ **Identify and select key gender indicators to measure output, outcomes and impact in line with organization's overall result framework.**
  ☐ Are qualitative and quantitative data disaggregated by sex?
  ☐ Have steps been taken to ensure that data collected is disaggregated by sex?
  ☐ Have regular performance monitoring windows been scheduled into the project timeline?
  ☐ Is the allocation of financial and human resources appropriate to adequately measure identified gender impacts?
  ☐ Have best and worst practices, challenges, achievements and lessons learned during project planning (gender analysis) and implementation documented and disseminated?
☐ **Document the process for knowledge sharing.**
  ☐ Have you prepared and posted a summary of your project gender analysis results and gender indicators (one page) in the organization's Gender Library?

CHAPTER THIRTEEN PROFESSIONALISM IN PROJECT PLANNING AND MANAGEMENT: A FOUNDATION FOR QUALITY PROJECT RESULTS

A paper presented at the 21ˢᵗ Project Management Conference organized by Institution for Professional Engineers in Uganda 2016

Stephen Kyakulumbye

Abstract

Project managers are on demand all over the world. Their demand is not limited to a specific sector or workplace as most modern organisations pursue their strategies through the implementation of projects. The need for project managers can be found in fields such as business, IT, construction, academic institutions, government, banking sector among others with paramount importance in the engineering sector. In a contemporary economy, organisations of all types practice project management. Most members appointed as project team members start their careers in project management as novices struggling to find their way in a total new dispensation of how work is done in a project environment. The need for an orientation of project members to the project management education and methodologies, processes, culture and professional conduct may have the ability to enhance productivity and quality of project results. Within the generic organizational set up there are three various levels (i.e.) the strategic level, organizational/tactical level and operational level. Management of portfolios, programmes and projects at these levels is different which call for a need for project staff to adhere to professionalism. At each level and each life cycle phase, there are varying professional project management competencies that need to be exhibited if we are to deliver results that adhere to acceptable quality. By acceptable quality, a client as a primary stakeholder has quality dimensions in terms of relevance, efficiency, effectiveness and sustainability which are globally accepted quality standards. This synthesis desk review and practical case study based paper elucidates and exemplifies the globally acceptable project quality standards, how they are applicable to the project results chain, highlights and discusses professional hi-cups in some case study projects and offers five priority dimensions for enhancing professionalism during project planning and management in order to deliver acceptable positive results.

Key words: Professionalism, results chain, results, quality, quality standards.

Introduction

Project managers are in demand all over the world. The demand for project managers is not limited to a specific sector or workplace as most modern organisations pursue their strategies through the implementation of projects. The need for project managers can be found in fields such as Business, IT, Construction, Engineering, and Banking sector. In the new economy, organisations of all types practice project management. Most members appointed as project team members start their careers in project management as novices struggling to find their way in a total new dispensation of how

work is done. The need for an orientation of project members to the project management education and methodologies, processes, culture and professional conduct will enhance productivity and quality of projects.

Within the organizational set up there are three various levels (i.e.) the strategic level, organizational/tactical level and operational level. Management of portfolios, programmes and projects at these levels is different which call for a need for project staff to adhere to professionalism. At each level and each life cycle phase, there is varying professional project management competencies that need to be exhibited if we are to deliver results that adhere to acceptable quality. By acceptable quality, a client as a primary stakeholder has quality dimensions in terms of relevance, efficiency, effectiveness and sustainability; these are globally accepted quality standards.

Objectives of the paper
The objectives of this paper are as follows:
1. To examine stakeholder quality dimensions in product and service projects
2. To undertake a critical reflection of how components of the result chain affect project quality.
3. To review cases and generate professional precursors to delivery of quality results.
4. To identify priority dimensions for adhering to professionalism for improving project results.

Stakeholder quality dimensions in product and service projects (UN Conceptualization); DAC criteria, UEA Criteria.
Relevance: *The extent to which the objectives of a project have been adapted to national, organizational and stakeholder needs and are aligned with stakeholder priorities as well as policies and strategies of their agenda.*
Effectiveness: *The degree of achievement of the outputs and the extent to which outputs have contributed to the achievement of the programme outcomes (results).*
Efficiency: *A measure of how resources/inputs (funds, expertise, time, etc.) are converted into results.* Or the *extent to which outputs and/or outcomes are achieved with the appropriate amount of resources/inputs (funds, expertise, time, administrative costs, etc.).*
Sustainability: *The continuation of benefits from a development intervention after its termination.*

Results chain
This is an internationally recognized "results chain" which assumes that improved input –level results (for example, service delivery and resources) are necessary to achieve output –level results. Output –level results, if well implemented, lead to outcome –level results, increased behavioral change. Outcome –level results ultimately lead to impact –level results hence improved quality for those affected. It is at this point that we have a counterfactual.
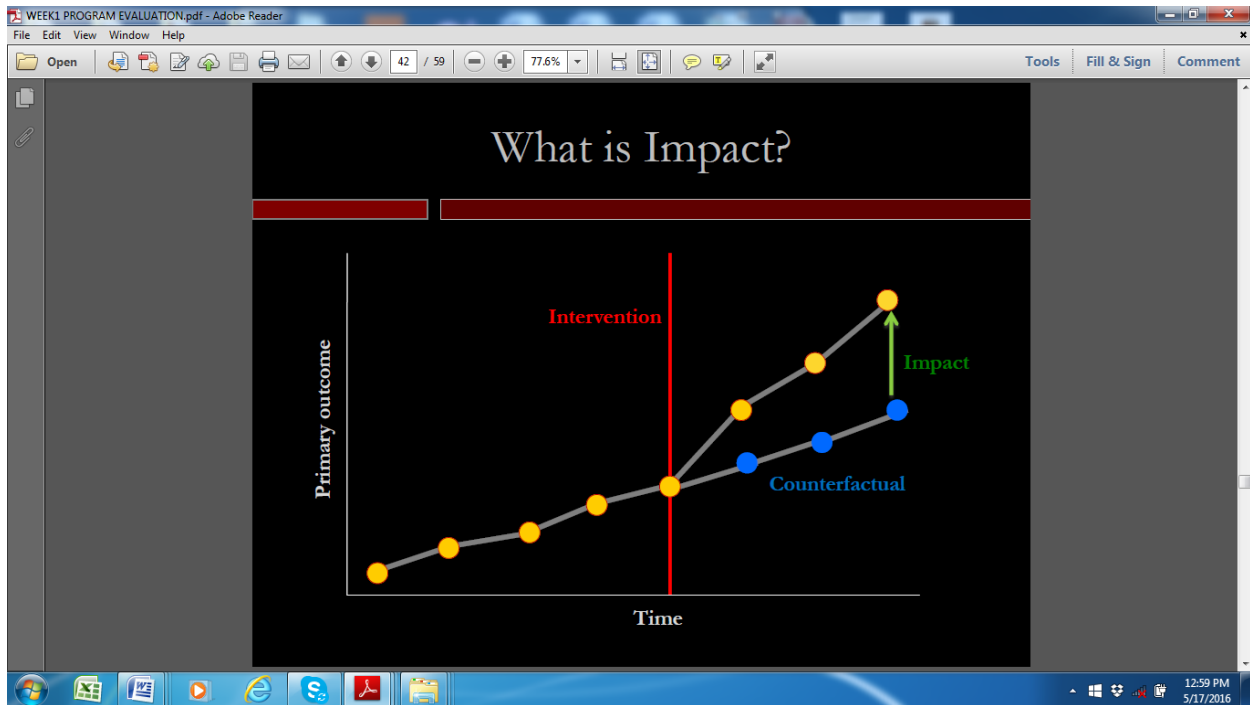
Adopted from MIT Impact evaluation lecture slide

Impact= the difference with what happened with the program-what would have happened without the program
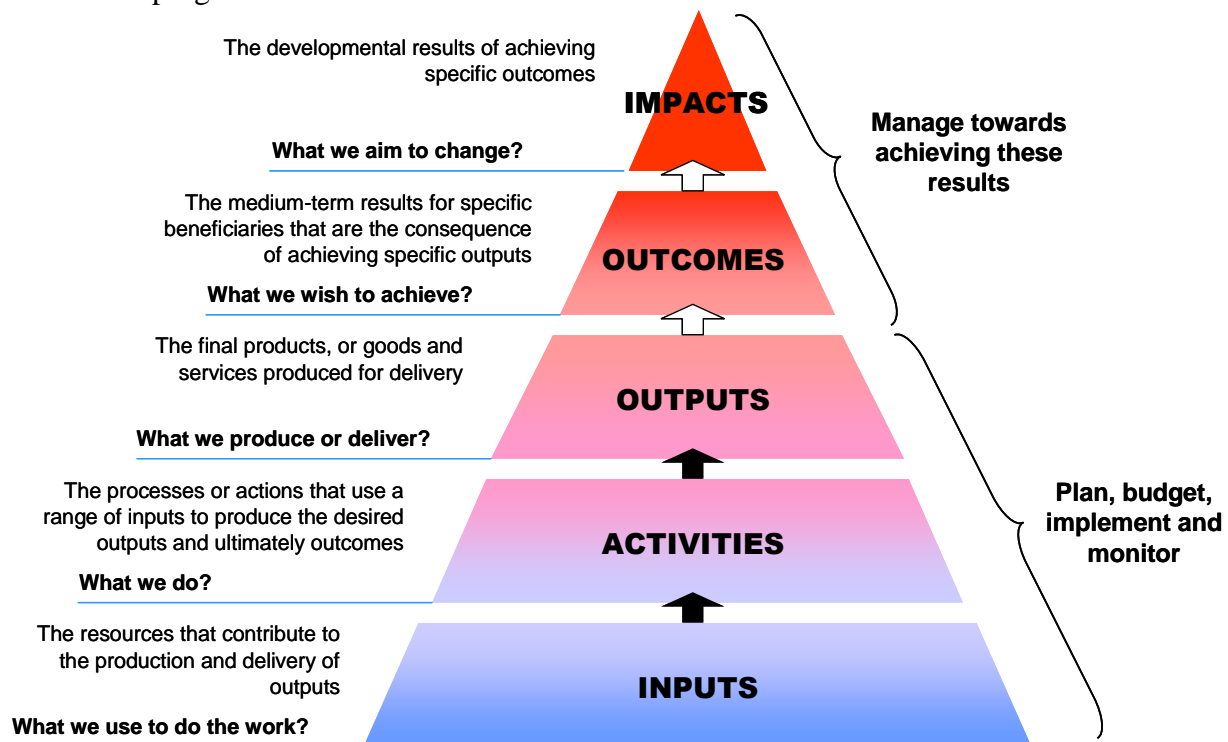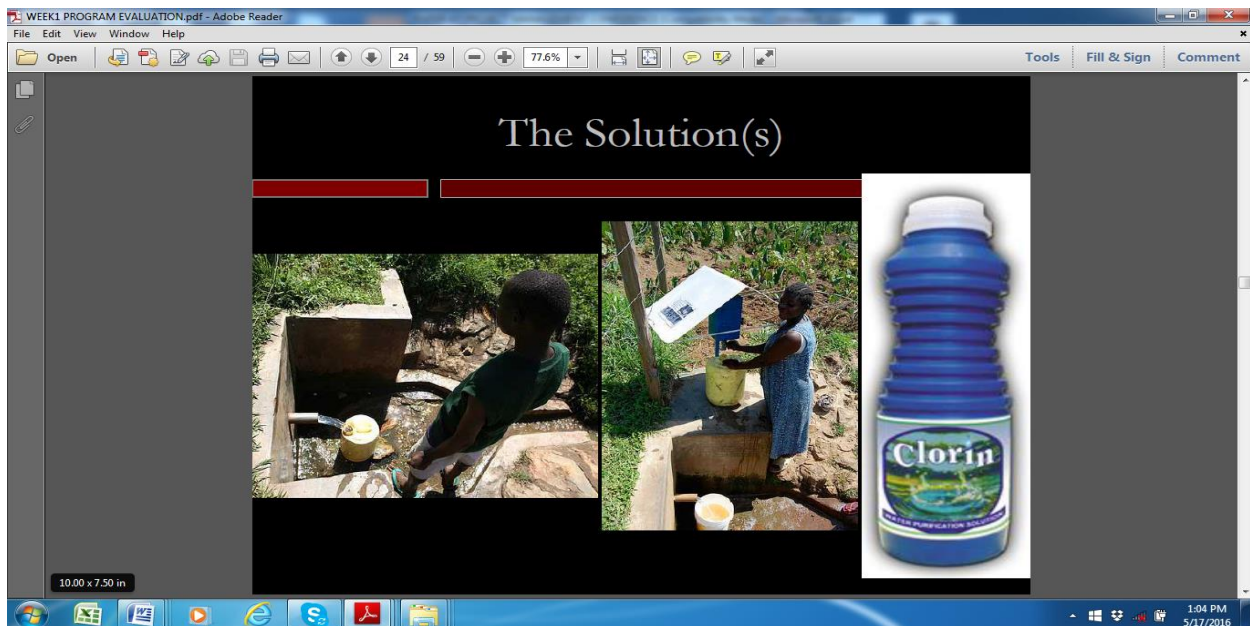
Focus

School construction, road construction, software development, water and sanitation project, energy saving technology provided to a community, technology related projects, service based projects, social projects etc. All these are at improvement of livelihood and quality of life.

For example from:
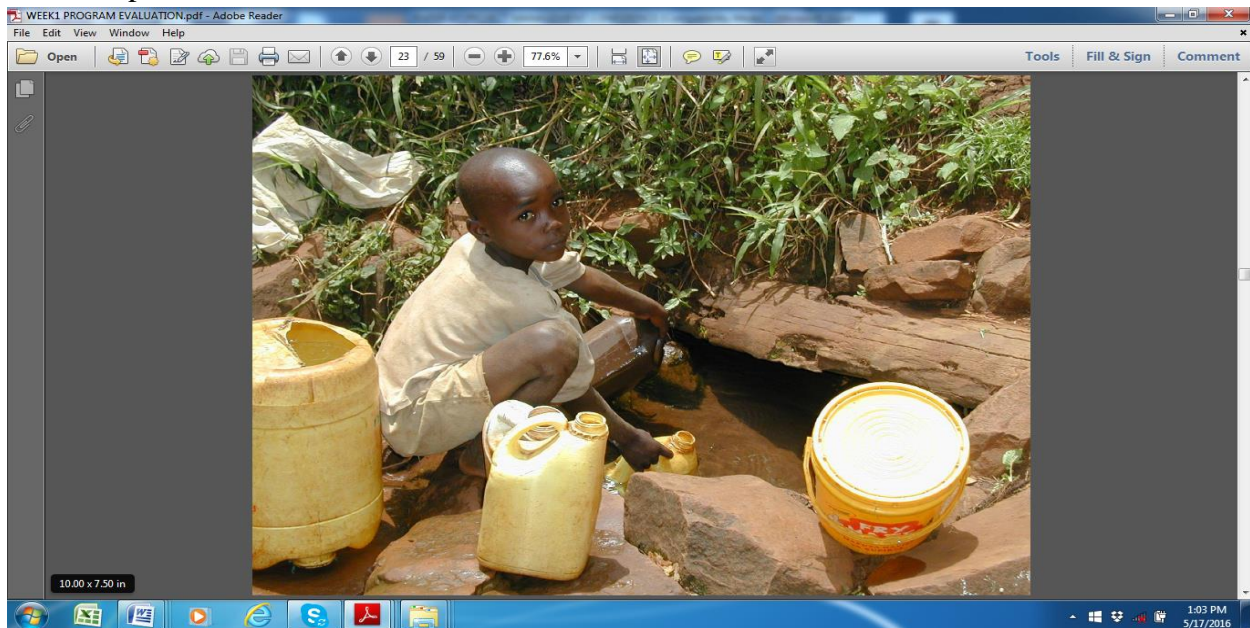
To:

Case Scenarios

Case One

Failure of structures in East Africa with focus on the causes of failures in the construction phase using the following case scenarios:

1. BBJ building construction accident of 1ˢᵗ September, 2004 where 11 deaths and over 26 injuries were reported.
2. St. Peter's Naalya Senior Secondary School building construction accident where 11 deaths and over 10 serious injuries were recorded.
3. 27 deaths and 86 serious injuries which occurred in 2006, when a church collapsed upon the congregation during a service. This occurred in Kalerwe, a Kampala city suburb.
4. Collapse of a building that housed a shoe shop (Mini Price Bata) on Ben Kiwanuka Street in the city centre of Kampala, in 2007, killing three people.
5. Collapse of a building on Lumumba Avenue in Kampala, in 2008, killing two people.
6. Bwebajja complex etc

Predictor Issues/ what goes or went wrong?
1. Poor materials and workmanship, (2) design and construction errors, (3) absence of professional supervision of site-works, (4) wrong implementation of construction methods, (5) neglect of design approval procedures.
2. Secondary issues that are complicit to construction failures are:- attempts to severely minimize construction cost, neglect of inspection and monitoring by local authorities, influence peddling by proprietors.
3. Rigidity to harness ICT tools to enhance project management *(presenter generated)*

Case Two
Reasons behind the failure of (NUSAF) project phase one in Uganda: January 15,
2012 Available at https://okwirtonny2011.wordpress.com/2012/01/15/reasons-behind-the-failure-of-nusaf-p
Northern Uganda Social Action Fund project phase I was criticized for not reaching the intended beneficiaries as it went into the hands of less poor and more influential people such as progressive farmers, teachers, village leaders, traders, headsmen and paraprofessionals (Jorgensen, et al., 2006).

Analysis:
These were the most fluent informants as they knew how to initiate and write project proposals, they were the people who decided and received the projects on behalf of the poor, it was their concerns which emerged as the village's priorities for development and their dominance and authority in the groups forced other "poor members" to desert the subproject groups!
Although the community demands for subprojects were considered to be high, for instance by October 2004, 18 districts had submitted proposal summaries of 3,131 desired projects though not all were funded (Manor, 2007), this confirms NUSAF project demand driven approach. However, some of these projects were even ghost projects (Uganda Impact Evaluation, 2008) without members initiated by the political leaders at the local levels, district officials and some

NUSAF facilitators who wanted to benefit more from the project (Jorgensen et al.,2006), and other people were members of more than one subproject groups.

Professionalism during project programming and stakeholder management (kick-backs etc)

Outcome: Projects ended up benefiting wrong type of vulnerable people at the expense of the intended beneficiaries as some of the people who are not vulnerable also registered under this category. Project manager's professionalism!

There is perhaps some evidence that NUSAF project has help in some districts, for instance, Soroti district in north eastern Uganda was named the best performing district in the NUSAF project phase one (Kavuma, 2010). The district received 8.6 billion shillings (around $ 5million) from NUSAF project and 114 boreholes were delivered, 165 teachers accommodations were built, 87 classroom blocks were constructed, 6453 heifers were given to farmers, a 50 kilometer stretch of road, 93 breeding bulls , 123 ox-ploughs, 121 sewing machines and 412 modern beehives among others were given to the community (Kavuma, 2010). Professionalism during project management can yield positive results!

However:

Jorgensen et al., 2006 report reveals: most of the classrooms and teachers houses did not survive rain for more than two years and were destroyed, most of the laboratories built in secondary schools were incomplete and most of them have been turned into students dormitories for accommodation,   the animals which were distributed needed the farmers to keep them for more four years before serving the purpose they were distributed for and some were even sick and ended up dying. More than half of the boreholes supplied were constructed near the homes of district leaders and ruling political party representatives at the local levels (Uganda Impact Evaluation, 2008), and one evaluator eye witness notes, "*the chairperson local council five representative for Bala sub county in Kole district had fenced the borehole on his land and yet it was provided by NUSAF in 2007*", meaning that the local people could not access the borehole anymore. Furthermore, most of the project beneficiaries were the less poor people since most of the "poor and local people" were either kicked off technically that is, they did not know how to write project proposal or forcefully by other members in the group and to make it worse some poor people's names were used in the ghost projects. Professionalism during stakeholder management can yield negative unintended results!

Case Three

Why some projects in Karamoja fail to work

http://www.monitor.co.ug/artsculture/Reviews/Why-some-projects-in-Karamoja-fail-to-work/-/691232/2131354/-/145oyqh/-/index.html

Karamoja Museum has failed to take off a year after it was opened in Moroto District. Analysts attribute such hiccups to *minimal community involvement in decision making*. File photo

Professionalism during project design and programming: project stakeholder involvement and management delivers irrelevant results!

Case Four
Failed Rural ICT Projects Eat up $10 million in Uganda

A cyber café
Districts are grappling with maintenance challenges and a number of portals are turning into white elephants. Photo file

Professionalism during project planning and execution: lack project sustainability mechanisms incorporated!

Case Five
World Bank Cancels Funding for Road Construction Projects in Uganda

The World Bank has announced that it was suspending its support for all road construction projects in Uganda amid sexual assault claims. The Bank has also cited environmental issues as part of the reason for cancelling financial support for roads in the country. A report by NGO Joy

for Children dubbed the impact of the World Bank funded Kamwenge, published last year revealed increased rates of secondary school dropouts because of pregnancy as a result of alleged sexual abuse by employees of the construction company.

Outcome: Unintended negative results from the would be wonderful interventions. Homes, health and livelihoods are put at a state of steady deterioration. "*The tragedy that has come to this village,*" One of the village people reacted. Professionalism during project execution; project team management; a sustainable tomorrow etc!

Case Six

ERP projects, however, have a well-deserved reputation for high rates of failure. The U.S. Air Force finally canceled the remnants of the Expeditionary Combat Support System (ECSS) program after about eight years and $1 billion dollars invested. The challenges and risks associated with deploying large integrated projects are not in any way limited to government programs—the high failure rates have spanned most industries.

For instance:

Local Government Information Communication System (LoGICS) was developed under the Local Government Development Program (LGDP I) and is comprised of three integrated parts, namely:

1. Monitoring and Evaluation Sub-system;
2. Compliance Inspection Sub-system;
3. Computerized Software Sub-system, which enables the data generated from the M&E sub-system and CI subsystem to be entered, verified, analysed, stored and disseminated to the various stakeholders. LoGICS is a multi sectoral information system covering all sectors in a Local Government including: Education, Health, Water, Roads, Prisons, Police, Production, Planning, Finance and Administration, Council, Social Services. Professionalism in project scope management and project integration management and project cycle management!

Case Seven (Presenter scenario)

A million dollar demised premise that has failed due to absence of structural plans. This has resulted into the project being unutilized and therefore sunk cost. Non evident project conceptualization and design results into failure for project modification

The Way Forward/Recommendations

   a) **Priority one:** Trainings and professional forums from an education perspective

Constant professional *forums and tailored trainings* for project managers and project staff

  Capacity deficits in the Africa's construction industry

Country	Evidence of Capacity Deficit
Kenya	Shortage of, and high prices of building materials
Tanzania	Reliance on foreign owned large firms for large projects
Ghana	Skills shortage due to absence of training Reliance on importation of building materials especially cement
Nigeria	Inadequate training Inadequate local capacity to produce building materials (cement and concrete)
Ethiopia	Shortage of engineering expertise Lack of equipment and machinery

Source: Arinaitwe and Ekolu (MUK n.d)

b) Priority two: Adherence to standards/ethical conduct (PMI)

To be ethical, we need to be committed to doing what is right and honorable. We need to set high standards for ourselves and aspire to meet these standards in all aspects of our lives—at work, at home, and in service to our profession. Preaching morality is easy but justifying it is difficult (Mwakali and Irumba, 2207).

Responsibility

Responsibility: Inspirational Standards

It is our duty to take ownership for the decisions we make or fail to make, the actions we take or fail to take, and the consequences that result.

As practitioners:

We make decisions and take actions based on the best interests of society, public safety, and the environment.

We accept only those assignments that are consistent with our background, experience, skills, and qualifications.

Comment: Where developmental or stretch assignments are being considered, we ensure that key stakeholders receive timely and complete information regarding the gaps in our qualifications so that they may make informed decisions regarding our suitability for a particular assignment. In the case of a contracting arrangement, we only bid on work that our organization is qualified to perform and we assign only qualified individuals to perform the work.

We fulfill the commitments that we undertake – we do what we say we will do. We set limits and exclusions (scope, time, cost and quality).

When we make errors or omissions, we take ownership and make corrections promptly. When we discover errors or omissions caused by others, we communicate them to the appropriate body as soon they are discovered. We accept accountability for any issues resulting from our errors or omissions and any resulting consequences.

We protect proprietary or confidential information that has been entrusted to us.

As practitioners and representatives of our profession, we do not condone or assist others in engaging in illegal behavior. We report any illegal or unethical conduct. Reporting is not easy and we recognize that it may have negative consequences. Since recent corporate scandals, many organizations have adopted policies to protect employees who reveal the truth about illegal or unethical activities (whistle blowing policies). Some governments have also adopted legislation to protect employees who come forward with the truth.

Respect
Respect is our duty to show a high regard for ourselves, others, and the resources entrusted to us. Resources entrusted to us may include people, money, reputation, the safety of others, and natural or environmental resources.
An environment of respect engenders trust, confidence, and performance excellence by fostering mutual cooperation—an environment where diverse perspectives and views are encouraged and valued.

Fairness
Fairness is our duty to make decisions and act impartially and objectively. Our conduct must be free from competing self interest, prejudice, and favoritism.

Honesty
Honesty is our duty to understand the truth and act in a truthful manner both in our communications and in our conduct.

c) Priority three: Adoption of culture of ICTs in engineering works from an IS perspective for planning, design, execution management (information sharing, dissemination, real time reporting etc.

Use automated tools/computer based tools (like Ms Project or Open Project) to enhance our project performance competencies in the contemporary project management/ place ICT somewhere. In this regard, the ability of ICTs in improving the completion time of tasks and operations, enhancing collaboration level, facilitating accessibility and exchange of information has been proved in other industries (Stewart and Mohamed, 2003). The use of ICTs improves coordination processes and collaboration between firms participating in a construction project (Nitithamyong and Skibniewski, 2004). One can find many studies confirming the positive impact of utilising ICTs in construction industry with an improving effect on costs, scheduling and quality of construction projects in developed countries (Griffis et al., 1995, Thomas et al., 2001, & Yang, 2004). On the other hand, improving the information exchange and communications in projects by adopting ICTs in construction projects has been confirmed by other studies (Adriaanse et al., 2010).

Priority four: Professional project stakeholder management strategies

Focus is placed at this project knowledge area because projects and programmes are delivered for and on behalf of people. They own a stake in whatever we do as project professionals. Therefore effective project stakeholder management is critical to the evaluation of what we deliver as being of quality. Initially, we need to identify their needs, support, impact, power and influence in our development interventions.

Two major strategies

Two basic approaches

1. Buffering: how to protect the project from stakeholder influence/power
2. Bridging: How to cooperate and build interdependencies with key stakeholders

Actions used in buffering (power and influence)

- Physical barriers and security systems, protecting the project assets
- Signing agreements on matters decided upon
- Generating baseline information to guard against challenging the project success
- Setting up one group against the other to avoid joint action
- Dealing with the press cautiously/with care

Actions that can be used in bridging

- Regular meetings
- Consultations on major decisions
- Use of liaison officers/public relation officers
- Networking/collaboration and partnering
- Daily briefs to key stakeholders
- Stakeholder participation in decision making throughout the whole project cycle. This is likely to results in improved effectiveness, enhanced responsibility and improved sustainability

Priority five: Conclusion (Biblical or Faith based)

As believers, what do we emulate from our various beliefs: Protestant, Catholic, Pentecostal, Islam, Buddhist etc contextualized to Uganda?

Ugandan population 35,873,253.5 (July 2012 estimate) categorized by religion
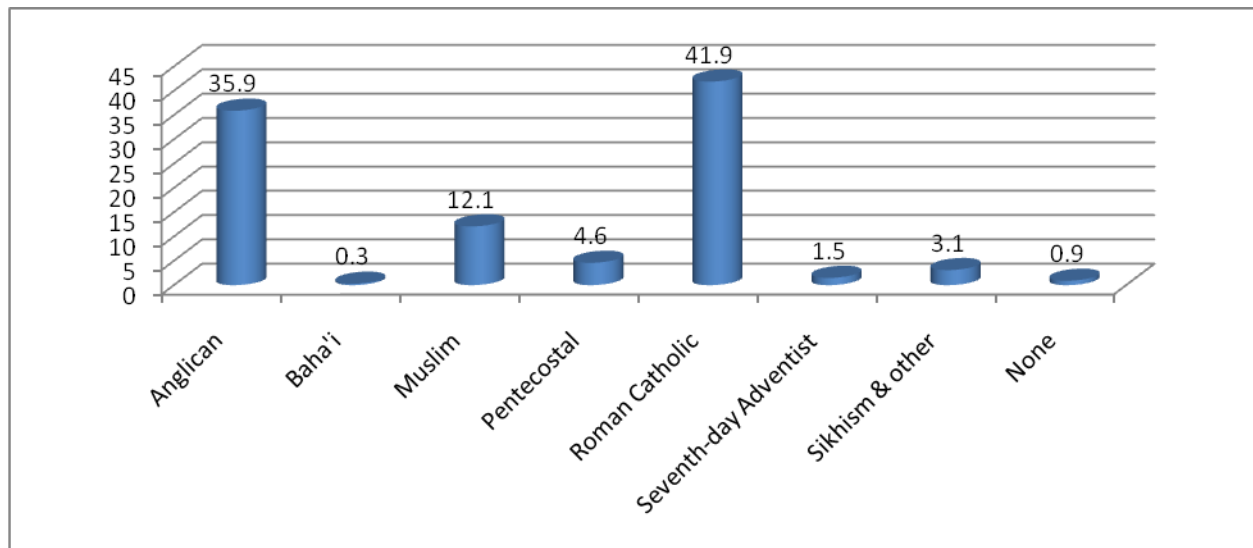
Source: CIA World Factbook demographic statistics, 2012 as accessed in 2016 at
https://en.wikipedia.org/wiki/Demographics_of_Uganda

There is one way of looking at the difficult task of remaining within the well-known iron triangle (time, budget, properties/scope/statement of work/requirement definition/specification of requirement etc) is to perceive this as Biblical Concept of Sin. One definition of sin is a failure to reach your goal or miss your mark (New Testament Greek Lexicon - King James Version, 2012). When a hunter, using a bow and arrow fails to hit the heart of the lion, he is in danger of losing his prey, leaving it hurt (A wounded Lion). So from that as PMs, we have to realize that as human beings we have the tendency to fail in our endeavors, fail to meet the constraints set before us, hurting team members with our attitude or even the project owner by not finishing the project within given constraints. In terms of project management, this is called risk. It is like trying to shoot with a bent arrow or a damaged rifle. Things can seriously backfire if managed incorrectly.][Let's put professionalism, honesty, integrity and *faith* in our task execution by setting our own SOPs compatible with client requirements! We shall deliver quality positive results in line with the iron-triangle.

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SUMMARY OF THE BOOK

Project managers are on demand all over the world. The demand for project managers is not limited to a specific sector or workplace as most modern organisations pursue their strategies through the implementation of projects. The need for project managers can be found in fields such as Business, IT, Construction, Academic institutions, Government, Banking sector among others with paramount importance in the Engineering sector. In a contemporary economy, organisations of all types practice project management. Most members appointed as project team members start their careers in project management as novices struggling to find their way in a total new dispensation of how work is done in a project environment. The need for an orientation of project members to the project management education and methodologies, processes, culture and professional conduct may have the ability to enhance productivity and quality of project results. Within the generic organizational set up there are three various levels (i.e.) the strategic level, organizational/tactical level and operational level. Management of portfolios, programmes and projects at these levels is different which call for a need for project staff to adhere to professionalism. At each level and each life cycle phase, there are varying professional project management competencies that need to be exhibited if we are to deliver results that adhere to acceptable quality. By acceptable quality, a client as a primary stakeholder has quality dimensions in terms of relevance, efficiency, effectiveness and sustainability which are globally accepted quality standards.

ABOUT THE CHIEF EDITOR AND LEAD AUTHOR OF THIS BOOK

Stephen is Certified Senior Project Manager IAPM, Professional Member of the Project Management Association of South Africa and a Founder Member of the Association of Project Managers, Uganda. He is a National Research Foundation lecturer at Uganda Christian University (UCU) and project management visiting consultant at Uganda Management Institute (UMI). He has held various capacities at Uganda Christian University among which he was the research coordinator at the Faculty of Business and Administration at Uganda Christian University and also in charge of project community outreach programmes. As a project management expert, Stephen has carried out research and made presentations in various local and international conferences. The most recent was where he was awarded a certificate of distinction for presenting a paper and successfully chairing a project based academic conference during the 21st Century Academic Conference held at Havard University, in Massachusetts in the United States of America.

Stephen is on the international editorial board of the *International Journal of Innovation and Entrepreneurship of the 21st Century Academic Forum* based in Boston 21 Apex Drive, Bozeman, and MT 59718 in the USA. Stephen is also on the international review team of the *Journal of Economics and International Business Management JEIBM* based in London in the United Kingdom, India and the United States of America.

Stephen has of recent also presented a duo paper with Professor Mary Ssonko to the project evaluators of Uganda at Uganda Technology and Management University (UTAMU) entitled, "*Methodological Processes and Considerations for Gender Based Violence Project Evaluation: Enhancement of Capacity for Evaluation in Uganda."* This workshop was under "The Evaluation Capacity Development Project-Strengthening Government and Civil Society in Uganda" funded by German Corporation and GIZ. In addition, he was a keynote speaker at Rotary International Mukono District on the topic *Project Management-Management of Change*.

As a way of improving the business and project performance, Stephen has conducted training for organizations in Uganda and beyond. He was the project management team expert for a gender mainstreaming consultancy in *Trade Projects for Trade Mark East Africa* (Uganda, Kenya, Tanzania and Rwanda); an M/E expert for ACTION AID Uganda, Ministry of Health, World Health Organization and Uganda Protestant Medical Bureau among others. He has conducted project based training for other organizations like World Wide Fund, Crown Beverages Ltd, Pride Micro Finance, NARO Uganda, Rwenzori Bottling Company Limited and Development Initiative International among others. He holds a Master of Management Studies (Project Planning and Management) equated to a Master of Commerce Project Management by South African Qualifications Framework, a PGD Project Planning and Management, BSc. Computer Science with Education and is a PhD Scholar in Project Informatics at University of Pretoria South Africa. Stephen has acquired hands on experience of over ten year's professional experience working in the project sector and development. These are in the areas of planning, implementing, coordination and evaluation of projects to contribute to project quality.

APPENDIX

Project Management Process Group and Knowledge Area Mapping according to PMI BOK

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
1. Project Integration Management	1.1 Develop Project Charter	1.2 Develop Project Management Plan	1.3 Direct and Manage Project Work	1.4 Monitor and Control Project Work 1.5 Perform Integrated Change Control	1.6 Close Project or Phase
2. Project Scope Management		2.1 Plan Scope Management 2.2 Collect Requirements 2.3 Define Scope 2.4 Create WBS		2.5 Validate Scope 2.6 Control Scope	
3. Project Time Management		3.1 Plan Schedule Management 3.2 Define Activities 3.3 Sequence Activities 3.4 Estimate Activity Resources 3.5 Estimate Activity Durations 3.6 Develop Schedule		3.7 Control Schedule	
4. Project Cost Management		4.1 Plan Cost Management 4.2 Estimate Costs 4.3 Determine Budget		4.4 Control Costs	
5. Project Quality Management		5.1 Plan Quality Management	5.2 Perform Quality Assurance	5.3 Control Quality	
6. Project Human Resource Management		6.1 Plan Human Resource Management	6.2 Acquire Project Team 6.3 Develop Project		

			Team 6.4 Manage Project Team		
7. Project Communications Management		7.1 Plan Communications Management	7.2 Manage Communications	7.3 Control Communications	
8. Project Risk Management		8.1 Plan Risk Management 8.2 Identify Risks 8.3 Perform Qualitative Risk Analysis 8.4 Perform Quantitative Risk Analysis 8.5 Plan Risk Responses		8.6 Control Risks	
9. Project Procurement Management		9.1 Plan Procurement Management	9.2 Conduct Procurements	9.3 Control Procurements	9.4 Close Procurements
10. Project Stakeholder Management	10.1 Identify Stakeholders	10.2 Plan Stakeholder Management	10.3 Manage Stakeholder Engagement	10.4 Control Stakeholder Engagement	

Source: PMBOK, 5TH EDITION

Each of the project management knowledge area within a project management process group has inputs, tools and techniques and outputs. The links among the processes in the Project Management Process Groups are often iterative in nature. For example, the Planning Process Group provides the Executing Process Group with a documented project management plan early in the project and then updates the project management plan if changes occur as the project progresses.