PROJECT REPORT

ON

"ANALYTICAL STUDY OF ROLE OF PROJECT MANAGEMENT IN CONSTRUCTION INDUSTRY"

Submitted in partial fulfillment of the requirements for qualifying

Master of Business Administration

In

…….

SUBMITTED BY

NAME :

ENROLLMENT NO :

UNDER SUPERVISION OF:

SESSION

BONAFIDE CERTIFICATE

This is to certify that the project titled **"ANALYTICAL STUDY OF ROLE OF PROJECT MANAGEMENT IN CONSTRUCTION INDUSTRY"** is an original work of the Student and is being submitted in partial fulfillment for the award of the **"MASTER'S DEGREE IN BUSINESS ADMINISTRATION".** This report has not been submitted earlier either to this University or to any other University/Institution for the fulfillment of the requirement of a course of study.

SIGNATURE OF SUPERVISOR

Place: New Delhi

Date : **:** / /

SIGNATURE OF STUDENT

Place: New Delhi

Date : **:** / /

ACKNOWLEDGEMENT

I, With Candor and Pleasure I take opportunity to express my sincere thanks and obligation to my esteemed guide **……...** It is because of his able and mature guidance and co-operation without which it would not have been possible for me to complete my project.

It is my pleasant duty to thank all the staff member of the computer center who never hesitated me from time during the project.

Finally, I gratefully acknowledge the support, encouragement & patience of my family, and as always, nothing in my life would be possible without God, Thank You!

(**Student name)**

(ENROLLMENT NO

DECLARATION

I hereby declare that this project work titled **"ANALYTICAL STUDY OF ROLE OF PROJECT MANAGEMENT IN CONSTRUCTION INDUSTRY"** is my original work and no part of it has been submitted for any other degree purpose or published in any other from till date.

The empirical findings in this project are based on the data collected by myself while preparing this report.

This project is completed as a part of curriculum & all that information collected is correct to the best of my knowledge.

(**Student name)**

(ENROLLMENT NO)

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TITLE OF THE PROJECT

“ANALYTICAL STUDY OF ROLE OF PROJECT MANAGEMENT IN CONSTRUCTION INDUSTRY”

CHAPTER – 1

INTRODUCTION TO THE STUDY

Construction Management is not a new idea. The function of the Construction Manager is to work on behalf of the owner to complete a project within the plans and specifications provided. In the last few years construction practices have changed dramatically. Technology, materials, government bureaucracy, financing, design, and engineering have all advanced. With the complexity of the construction process increasing, owners demand accountability and accurate guidance during the entire planning and construction process.

The management of construction projects requires knowledge of modern management as well as an understanding of the design and construction process. Construction projects have a specific set of objectives and constraints such as a required time frame for completion. While the relevant technology, institutional arrangements or processes will differ, the management of such projects has much in common with the management of similar types of projects in other specialty or technology domains such as aerospace, pharmaceutical and energy developments. Project management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction.

The construction industry has benefited from the adoption of many new management structures and techniques and the pace of change is quickening.

The advantages of professional management at all stages of the procurement, construction and use of projects are being increasingly recognized both within the industry and by its clients. The Latham and Egan Reports and many new policies and initiatives have served to highlight these issues.

The importance of project management to construction derives from the nature of how the industry's business activities are conducted. Its growing take up in other industries as a result of the productivity gains that can be associated with implementing this managerial technique cannot be overlooked. Developing the requisite competency to ensure efficient performance on the part of the managers who run projects is therefore essential to its success.

Project managers in construction are responsible for the overall success of delivering the owner's physical development within the constraints of cost, schedule, quality and safety requirements. As such they play a crucial role not only in the operational activities of architectural and engineering construction companies but also the development of infrastructure in every country.

PROJECT MANAGEMENT:

Project management is the discipline of planning, organizing, securing, managing, leading, and controlling resources to achieve specific goals. A project is a temporary endeavor with a defined beginning and end (usually time-constrained, and often constrained by funding or deliverables),[1] undertaken to meet unique goals and objectives,[2] typically to bring about beneficial change or added value. The temporary nature of projects stands in contrast with business as usual (or operations),[3] which are

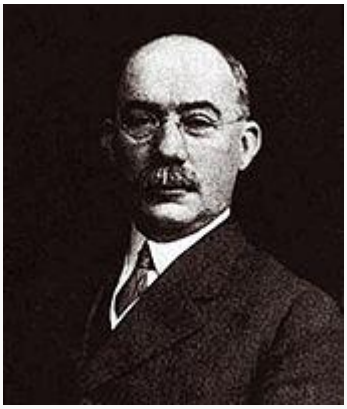
repetitive, permanent, or semi-permanent functional activities to produce products or services. In practice, the management of these two systems is often quite different, and as such requires the development of distinct technical skills and management strategies.

Interest in project management is growing significantly and of late, the construction industry is evolving around project management training and education (1). The most common constraints in the construction industry within developing countries are the oversupply of unskilled labor and a restricted supply of management manpower. According to Abu Bakar (2) what is vital in management is the ability of managers who are able to manage risks that occur in the construction sector. It is important to take note that upgrading and enhancing the management capability is vital for growth and expansion in the construction industry. There are some companies that have built reputations for being able to consistently manage projects effectively (3).Effective project management techniques are important to ensure successful project performance. A poor strategy as well as incorrect budget or schedule forecasting can easily turn an expected profit into loss. This is especially true for the construction industry where projects have a relatively short life cycle and the project activities are non-repetitive with rather complex interrelationships, so that there is little opportunity to improve on a wrongly chosen or adopted strategy. The appointment of the best project team will better ensure the success of the project, but the best project team must be led by a good leader, which is undoubtedly the project manager. Edum-Fotwe and McCaffer (4) affirmed that project managers in construction play a crucial role. This is as project managers are responsible for the overall success of delivering the owner's physical development within the constraints of cost, schedule, quality and meeting the requisite safety requirements. The primary challenge of project management is to achieve all

of the project goals[4] and objectives while honoring the preconceived constraints.[5] Typical constraints are scope, time, and budget.[1] The secondary—and more ambitious—challenge is to optimize the allocation of necessary inputs and integrate them to meet pre-defined objectives.

HISTORY:

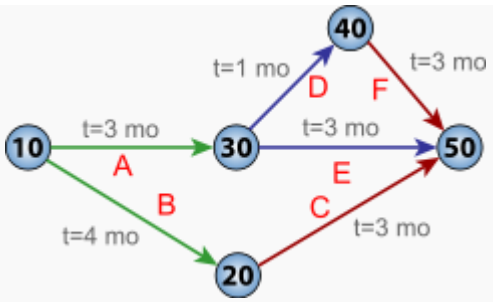
Until 1900 civil engineering projects were generally managed by creative architects, engineers, and master builders themselves, for example Vitruvius (first century BC), Christopher Wren (1632–1723), Thomas Telford (1757–1834) andIsambard Kingdom Brunel (1806–1859).[6] It was in the 1950s that organizations started to systematically apply project management tools and techniques to complex engineering projects.[7]



Henry Gantt (1861–1919), the father of planning and control techniques. As a discipline, project management developed from several fields of application including civil construction, engineering, and heavy defense activity.[8] Two forefathers of project management are Henry Gantt, called the father of planning and control techniques,[9] who is famous for his use of the Gantt chart as a project management tool (alternatively *Harmonogram* first proposed by Karol Adamiecki[10]); and Henri Fayol for his creation of the five management functions that form

the foundation of the body of knowledge associated with project and program management.[11] Both Gantt and Fayol were students of Frederick Winslow Taylor's theories of scientific management. His work is the forerunner to modern project management tools including work breakdown structure (WBS) and resource allocation.

The 1950s marked the beginning of the modern project management era where core engineering fields come together to work as one. Project management became recognized as a distinct discipline arising from the management discipline with engineering model.[12] 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) was developed as a joint venture between DuPont Corporation andRemington Rand Corporation for managing plant maintenance projects. And the "Program Evaluation and Review Technique" or PERT, was developed by Booz Allen Hamilton as part of the United States Navy's (in conjunction with the Lockheed Corporation) Polaris missile submarine program;[13] These mathematical techniques quickly spread into many private enterprises.



PERT network chart for a seven-month project with five milestones

At the same time, as project-scheduling models were being developed, 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 continued its pioneering work and in 2006 released the first integrated process for portfolio, program and project management (Total Cost Management Framework).

The International Project Management Association (IPMA) was founded in Europe in 1967,[14] as a federation of several national project management associations. IPMA maintains its federal structure today and now includes member associations on every continent except Antarctica. IPMA offers a Four Level Certification program based on the IPMA Competence Baseline (ICB).[15] The ICB covers technical, contextual, and behavioral competencies.

In 1969, the Project Management Institute (PMI) was formed in the USA.[16] PMI publishes *A Guide to the Project Management Body of Knowledge* (PMBOK Guide), which describes project management practices that are common to "most projects, most of the time." PMI also offers multiple certifications

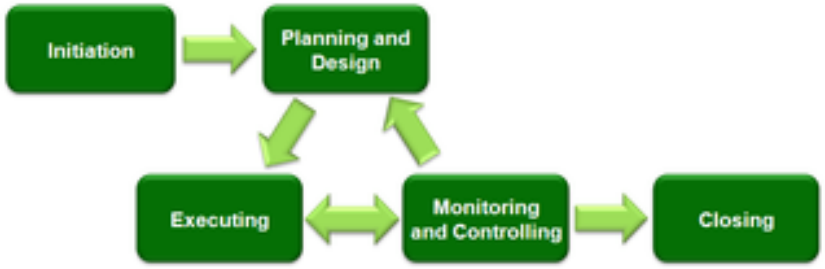
APPROACHES:

There are a number of approaches to managing project activities including lean, iterative, incremental, and phased approaches.

Regardless of the methodology employed, careful consideration must be given to the overall project objectives, timeline, and cost, as well as the roles and responsibilities of all participants and stakeholders.

The traditional approach

A traditional phased approach identifies a sequence of steps to be completed. In the "traditional approach", five developmental components of a project can be distinguished (four stages plus control):



Typical development phases of an engineering project

1. initiation
2. planning and design
3. execution and construction
4. monitoring and controlling systems
5. completion

Not all projects will have every stage, as projects can be terminated before they reach completion. Some projects do not follow a structured planning and/or monitoring process. And some projects will go through steps 2, 3 and 4 multiple times.

Many industries use variations of these project stages. For example, when working on a brick-and-mortar design and construction, projects will typically progress through stages like pre-planning, conceptual design, schematic design, design development, construction drawings (or contract documents), and construction administration. In software development, this approach is often known as the waterfall model,[17] i.e., one series of tasks after another in linear sequence. In software development many organizations have adapted the Rational Unified Process (RUP) to fit this methodology, although RUP does not require or explicitly recommend this practice. Waterfall development works well for small, well defined projects, but often fails in larger projects of undefined and ambiguous nature. The Cone of Uncertainty explains some of this as the planning made on the initial phase of the project suffers from a high degree of uncertainty. This becomes especially true as software development is often the realization of a new or novel product. In projects where requirements have not been finalized and can change, requirements management is used to develop an accurate and complete definition of the behavior of software that can serve as the basis for software development.[18] While the terms may differ from industry to industry, the actual stages typically follow common steps to problem solving—"defining the problem, weighing options, choosing a path, implementation and evaluation."

Effective project management also guarantees efficient work by contractors for a task, matching the highest quality work to the best price. The responsibilities of project management are not limited to collecting bids from qualified individuals in order to complete the project, but also to determine if the company does in fact have the experience and knowledge to

complete the work well. The project manager truly has to consider which company is best-suited for the task at hand.

The Role of the Project Manager:

As aforementioned, it has been recognized that an assignment of a project m anager is very crucial toensure the success of any design or construction project. In most cases, a single project manager is accountable for the success of a project and is responsible for its planning, allocating, directing and controlling functions. Ideally, each project manager would be assigned one and only one project and each project manager would have ample opportunity to use his skills to resolve all project issues. Gransberg (10) in his journal article highlighted the issue of roles and responsibilities of the project manager as follows: Construction management is literally, “where the rubber meets the road”. All the planning, preparation, design and cost estimating is put to the test in this fast paced phase of the project’s life cycle. This phase begins after the award of the construction contract and continues through construction close out. Most researchers believe that the most important responsibilities of a project manager are project evaluation, setting up the team, setting up systems, planning, monitoring, control, negotiating contract conditions, training and communication. In their study, Turner and Muller (11) found that a project manager’s success at managing his or her project is dependent on his or her competence, particularly the leadership style comprising emotional intelligence, management focus as wells intellectual capabilities.

Essential skills of a Project Manager:

In order to meet the objectives of modern projects, which are increasingly complex in nature, it is essential for project managers to be able to use a

variety of managerial skills (12). To conclude as to what are the most important knowledge and skills that a project manager should have the following will be discussed. Management knowledge and skills: finance and accounting; sales and marketing; research and development; manufacturing and distributions; strategic planning; tactical planning; operational planning; organization structures; organizational behavior; personnel administration; managing work relationships (13).b. Technical knowledge and skills: defined as an understanding of and proficiency in, a specific kind of activity, particularly one involving methods, processes, procedures, or techniques (14).c. Business knowledge and skill: on small projects, this can be a tough challenge because project managers are also managing the project control function (15).d. Human knowledge and kills: the ability to work with and through other people

A **project manager** must make sure that the project is meeting deadlines and keeping goals in sight. Effective project management will utilize software and other technology available to keep the project on target and meet scheduled goals. A company can lose a lot of money very quickly when one or more of its projects get off schedule.

Effective project managers ensure that all projects will be completed on time, within budget and with quality. They are responsible to control every aspect of the project, and regularly reporting its status back to company officials. An effective project management professional or firm can bring any project under control, no matter how unfocused or inefficient it was to begin with; their services can end up saving corporations millions in better-managed time and resources. It is commonplace now for companies to outsource their project management to consulting professionals or firms that

will maximize efficiency and bring projects to completion within or even under budgets and deadlines, thus saving company resources.

However, contemporary approaches to project management scheduling [7] are based on the detailed work scope definitions assuming that a resource pool is given and/or defined by a manager and is capable of performing any project task. Scheduling mechanisms are based on resource reallocation and adding extra resources for any type of project tasks: resource-driven, fixed-duration tasks or cognitively driven tasks.2 Existing resource scheduling methods, both heuristic and optimization, address the issues of resource availability and utilization, and are not concerned with the capability and compatibility of project resources. Furthermore, in traditional scheduling approaches, the objectives for the allocation of limited resources are to determine the allocation of resources that maximizes total benefits subject to the limited resource availability [7]. Contemporary approaches to resource allocation are founded on the assumption that different jobs require equal capability resources, and only one skill is involved. Hence, they cannot be successfully used for software projects, where different software tasks require different sets of multiple knowledge/skill capabilities for a task performance. In the mathematical theory of scheduling [3] resource-based problems are isolated from scheduling process and, hence, resource capability factors are not considered as the factors that influence the schedule. In practice, the most effective and efficient manner of resource application in software projects is founded on heuristic approaches - heuristic analogical reasoning. This kind of approaches are highly dependent on a manager's intuition, which is, in turn, based on his/her experience with not only project management area in general, but also with people who oversee a project. There is an increased usage of skill-related information in practice. Nevertheless, organizations still do not have formal

methods/techniques for processing this information. Thus, objectives, methods, and mechanisms provided by contemporary project management scheduling approaches cannot be sufficiently used in software practice.

As we know that people are an important part of a project's success. The projects are resource constrained. The management of the human resources on a project has a major impact on the project's success or failure. Of course, this article has taken a general view, human resource processes are strongly influenced by the human resource policies and procedures of the delivery organization. Much has been written about dealing with people in the operations of an ongoing enterprise; leading, communicating, delegating, motivating, team building, recruiting, appraising, etc. Much of that knowledge is directly applicable to leading and managing people in a project environment and the project manager should be familiar with it. However, the project manager must also be sensitive to the unique needs of the project environment and as to how this general knowledge is applied in a different way than in the operational environment of the ongoing enterprise.

The temporary nature of projects means that personal and organizational relationships generally will also be temporary and, quite often, new. Staff-related project management processes must address these transient relationships.

Both the nature and number of people involved in a project change as the project moves through its life cycle. For example initially there will be limited number of staff in the project and as we move along we induct more staff into the project. Staff management processes must recognize and address these changing needs management activities are often split between project management and other managers within the performing organization.

The scope of responsibility of the project manager may lie somewhere between, an extended responsibility, including the selection of sourcing organizations, obtaining staff and performance assessment.

A limited responsibility focused on coordination with the permanent roles outside the project such as the functional manager, the resource deployment manager and/or the people development manager .All the parties must understand and carefully adhere to the division of responsibilities that is in force. All the processes here must be carefully interpreted based on the actual distribution of responsibilities between the project manager and the other roles. In some companies there may be a two managers for a team member – one the project manager who takes care of the day-to-day work of the team member and provides feedback to others, second a people manager who takes care of the people development aspects of the team member like promotion, salary hike, career needs/interest. Ideally to my view a team member should have only one Manager who should take care of everything (Project management and people management) and should have no more than 14 people directly reporting to him. Again it depends on many factors – company policies, location, style of functioning and project needs.

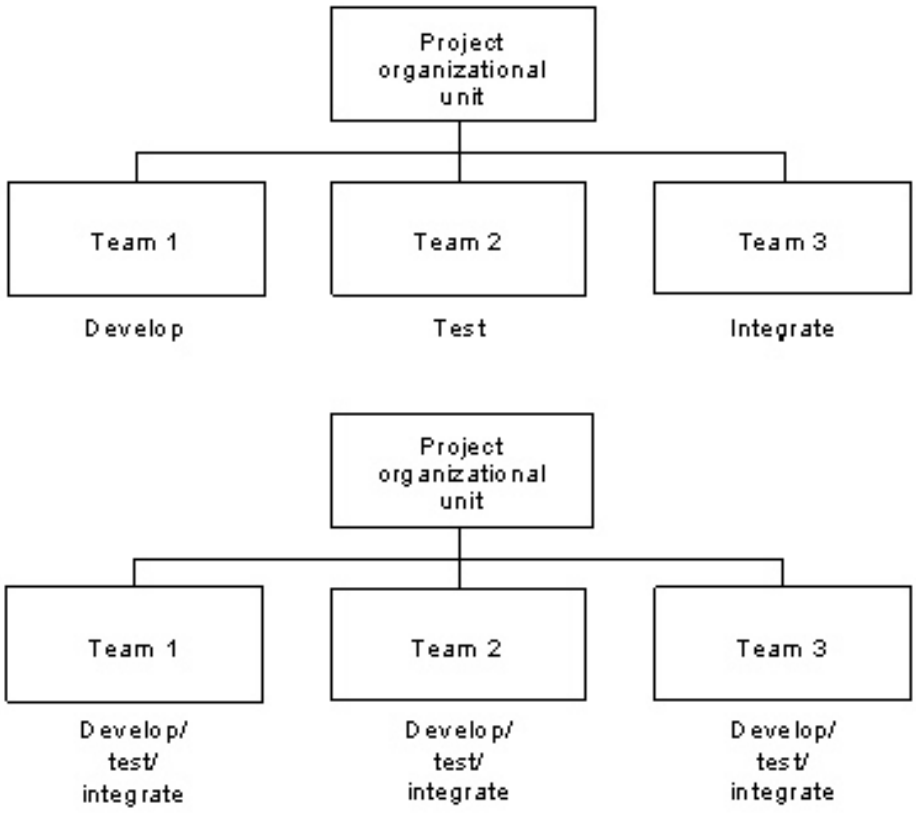
Define Project team structure

The purpose of this process is to define an effective team structure for a project organizational unit. The team structure defines the roles, responsibilities and relationships of the people managing and working within a project organizational unit. An appropriate team structure will help to optimize the efforts of the team and the success of the project. An inappropriate one can undercut the efforts of a hard working group of people and impede their success. This process is performed during Plan phase.

Often, it is carried out by the functional managers/Senior management responsible for the people who will staff the project. The project manager should influence the functional managers to ensure that the team structure meets the requirements of the project.

The first consideration in organizing a team is the objective of the team. Has the team been asked to explore possibilities and alternatives? Is the team charged with solving a complex, poorly defined problem? This is often the case with study projects or when implementing a new technology.

Broadly, there are two different organizational approaches: In the normal approach, each team is responsible for a specific set of activities and the work products move between the teams according to a predefined work flow. The team members all have similar skills. In the multidisciplinary approach; each team is responsible for completing some of the work products. The team members have different skills and, possibly, are multi-skilled.



Certain project approaches favor certain team structures. For example, rapid application development (RAD) works best with multidisciplinary teams. It is necessary to have a team structure so that all the members of the project understand their roles and their working and reporting relationships. However, all team structures introduce some measure of inflexibility. It is important to understand that there is no "right" team structure for a project and that usually it depends on the organizational requirements and needs of the project.

Review the Project definition to understand the overall project objectives and context. Review the Organizational breakdown structure (OBS) and the Work breakdown structure (WBS) to understand what the project organizational unit that is being structured must accomplish. Determine the appropriate team model for the unit by considering the broad objective(s) of

the unit and, if applicable, the work patterns that have been selected. Note that several models may apply if the project organizational unit has several objectives. Plan the number of team(s) within the project organizational unit and how the responsibilities of the organizational unit will be split between the teams. Consider how the teams will be managed within the organizational unit. Estimate the size of each team and determine the skills that each team will require. The "right" number of people in a team depends on factors such as the nature of the work. Consider carefully how skills that are known to be expensive and/or in short supply should best be deployed. Document the roles and responsibilities of each of the teams within the project organizational unit in the OBS.

Acquiring staff

This function includes processes to:

- Identify potential sources (external/department in the organization) of project staff.
- Define skill and activity descriptions that can be used by recruiters and resource managers to obtain staff from appropriate sourcing organizations.
- Select staff for the project finding the:
  - right people,
  - with appropriate skills,
  - available when needed,
  - for the right duration,
  - Within planned costs can be a daunting and time-consuming challenge.

Here are six key areas in which HR professionals can help lay the foundation for excellence in project management.

Strategy

The ability to respond quickly to changing business needs and customer demands is a good thing. Or is it? We would argue that an organization that strives to speed up its response time to specific needs risks ending up with nothing more than the ability to do the wrong thing faster.

Most business and customer needs can be met in a variety of ways, but not all solutions will be consistent with how the organization wants to be positioned in the market. Nor will every profitable project take the organization where it needs to go. To be of real value, the projects into which an organization puts its efforts need to be tied to its strategy.

There are a number of ways in which human resource executives can help leaders move strategy from a statement to an operating reality. The senior HR executive can take a lead role in helping the top team set up a system for evaluating proposed projects in terms of their strategic relevance and impact. HR can also take responsibility for ensuring that all those assigned to projects understand how their goals relate to the overarching strategic goals of the business. Engineering and Construction is the flagship business of the many companies.

IMPORTANCE OF PROJECT MANAGEMENT FOR ORGANIZATION:

Project management is the art of managing the project and its deliverables with a view to produce finished products or service. There are many ways in

which a project can be carried out and the way in which it is executed is project management.

Project management includes: identifying requirements, establishing clear and achievable objectives, balancing the competing demands from the different stakeholders and ensuring that a commonality of purpose is achieved. It is clear that unless there is a structured and scientific approach to the practice of management, organizations would find themselves adrift in the Ocean called organizational development and hence would be unable to meet the myriad challenges that the modern era throws at them. Hence, the importance of project management to organizations cannot be emphasized more and the succeeding paragraphs provide some reasons why organizations must take the practice of project management seriously.

Without a scientific approach to the task of managing the projects and achieving objectives, it would be very difficult for the organizations to successfully execute the projects within the constraints of time, scope and quality and deliver the required result. In other words, there has to be a framework and a defined way of doing things to ensure that there is a structure to the art of project management.

Thus, project management is about creating structure and managing the project commitments and the delivery of agreed upon results. By using the methods of project management as described in the PMBOK and allied technical journals, organizations can seek to achieve control over the project environment and ensure that the project deliverables are being managed. Managers face what is known as the “triple constraint”. This is the competing demands of time, scope and quality upon the project manager’s list of things to do and how well the project manager manages these

constraints goes a long way in determining the success of the project. Without the use of Project Management, managers and organizations would find themselves facing an unpredictable and chaotic environment over which they have little control. Thus, Project Management is both necessary and essential to the success of the project.

Project Management is too big an area to be covered in a few pages and the attempt is to provide concise and lucid definitions of the various terms and terminologies associated with a project. It is important to note that project management provides a framework within which subsequent actions by the organization can be taken and in this way, it is essential for organizations to adopt the framework provided by the practice of project management.

SCOPE:

The Scope Statement is an essential element of any project. Project managers use a Scope Statement to outline the results their project will produce and the terms and conditions under which they will perform their work. The people who requested the project and the project team should agree to all terms in the Scope Statement before actual project work begins.

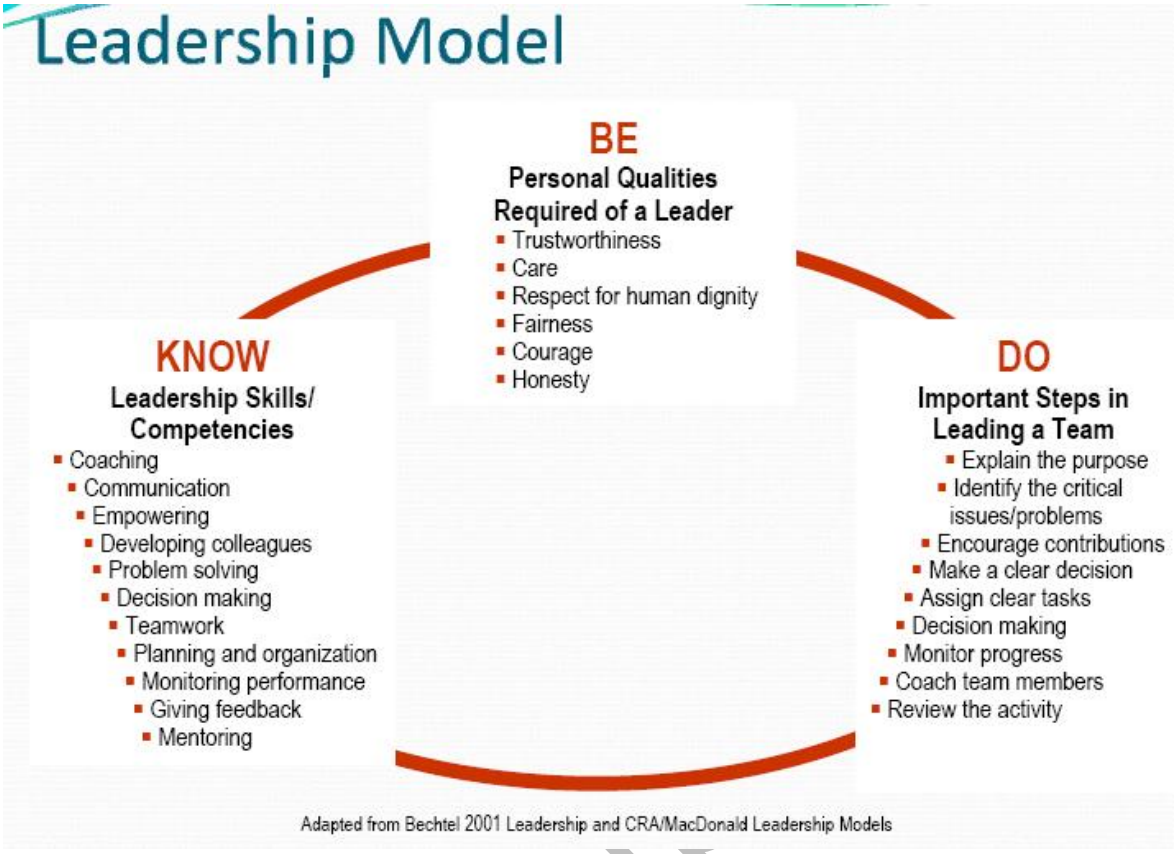
Your Scope Statement should include the following information:

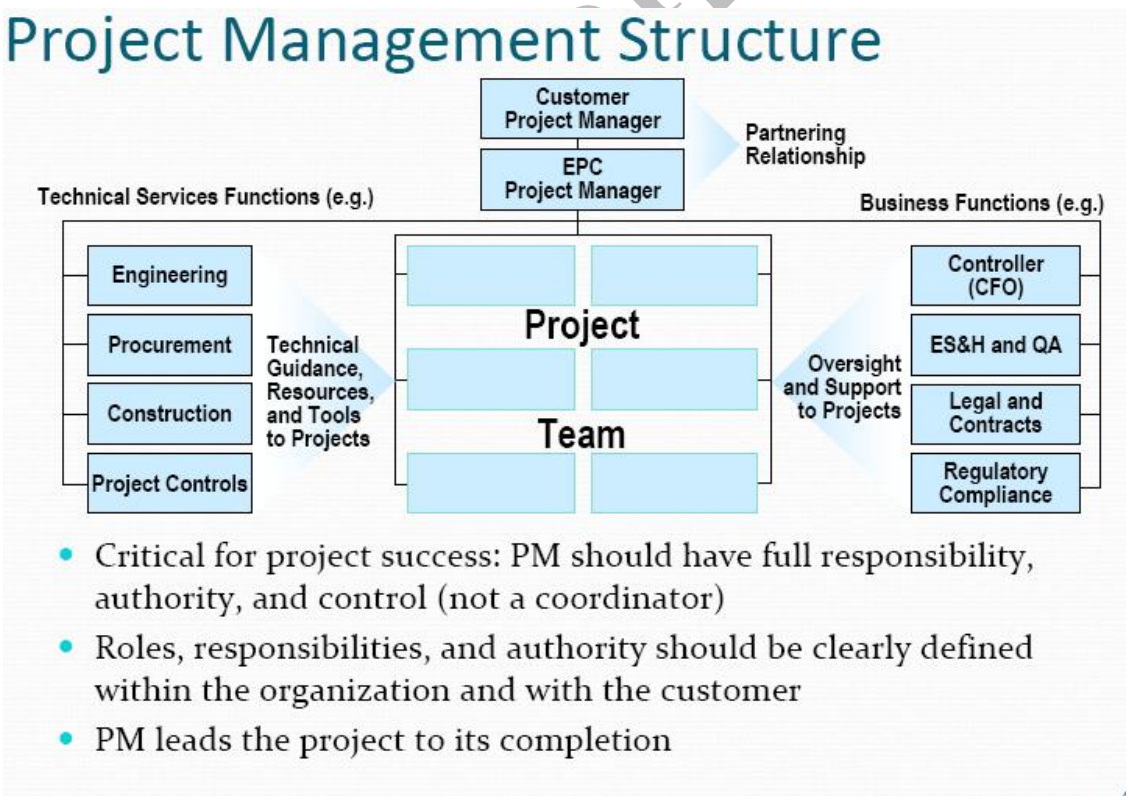
- **Justification:** How and why your project came to be, the business need(s) it addresses, the scope of work to be performed, and how it will affect and be affected by other related activities
- **Objectives:** The products, services, and/or results your project will produce (also referred to as*deliverables*)
- **Product scope description:** The features and functions of the products, services, and/or results your project will produce

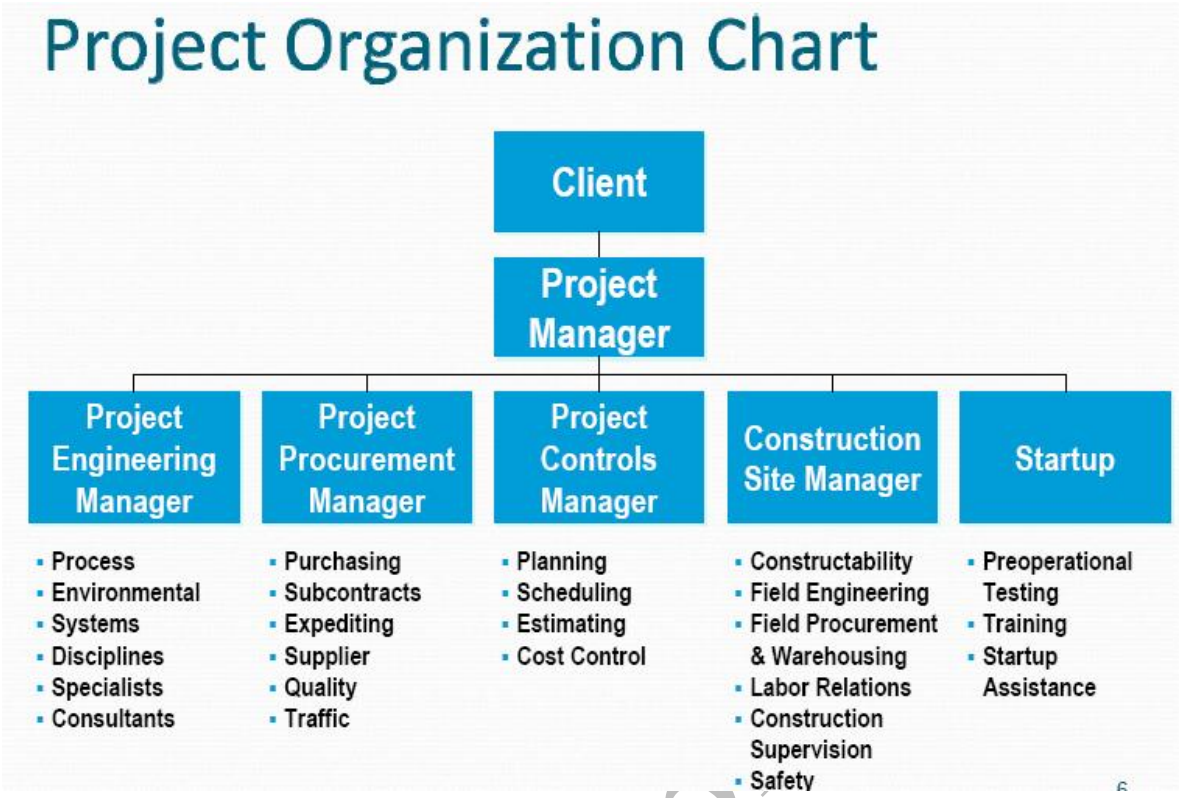
- **Product acceptance criteria**: The process and criteria for accepting completed products, services, or results
- **Constraints:** Restrictions that limit what you can achieve, how and when you can achieve it, and how much achieving it can cost
- **Assumptions:** Statements about how you will address uncertain information as you conceive, plan, and perform your project

Think of your Scope Statement, when viewed together with the other components of your project plan, as a binding agreement in which

- You and your team commit to producing certain results.
- Your project's requesters commit that they'll consider your project 100 percent successful if you produce these results.
- You and your team identify all restrictions regarding your approach to the work and what you need to support your work.
- Your project's requesters agree that there are no restrictions other than the ones you've identified and that they'll provide you the support you declare you need.
- You and your team identify all assumptions you made when agreeing to the terms of your Scope Statement.
- Your project's requesters agree that, if any of these assumptions prove to be invalid, you may have to modify some or all of your project plans.


Leadership Model
BE
Personal Qualities Required of a Leader
Trustworthiness
Care
Respect for human dignity
Fairness
Courage
Honesty
KNOW
Leadership Skills/ Competencies
Coaching
Communication
Empowering
Developing colleagues
Problem solving
Decision making
Teamwork
Planning and organization
Monitoring performance
Giving feedback
Mentoring
DO
Important Steps in Leading a Team
Explain the purpose
Identify the critical issues/problems
Encourage contributions
Make a clear decision
Assign clear tasks
Decision making
Monitor progress
Coach team members
Review the activity
Adapted from Bechtel 2001 Leadership and CRA/MacDonald Leadership Models


Project Management Structure
Customer Project Manager
EPC Project Manager
Partnering Relationship
Technical Services Functions (e.g.)
Business Functions (e.g.)
Engineering
Procurement
Construction
Project Controls
Technical Guidance, Resources, and Tools to Projects
Project
Team
Oversight and Support to Projects
Controller (CFO)
ES&H and QA
Legal and Contracts
Regulatory Compliance
Critical for project success: PM should have full responsibility, authority, and control (not a coordinator)
Roles, responsibilities, and authority should be clearly defined within the organization and with the customer
PM leads the project to its completion



Construction (Site) Manager's Responsibilities (typical)

- Construction execution planning,
- Development of the construction portion of the project schedules
- Development of field staffing plans, temporary facilities plans, and indirect cost budgets
- Directing technical execution (e.g., construction methods, subcontract administration) in accordance with the established construction quality standards,
- Reporting to the Project Manager regarding overall performance of the site activities, costs, and schedule.

The Role of Project Management in Construction

A lot of people don’t know that the role of project management in a construction is very important. This section usually focuses on reaching the goal of the company through guiding the team that is working to make the project successful.

Do you know that a lot of construction firms in the world today are spending thousands of dollars just to hire a project manager that is highly qualified in fulfilling their needs? Learning how to become a project manager can be your way to success. Preparing to become a construction manager is very important.

Here are some important things you should know to be able to help you with your needs:

1. Preparing for a project management job is very important simply because you are among the backbone of the company. You need to have a clear mind before pushing through with the task. You also need to be very responsible because in project management, you need to know how to meet deadlines as it is very important in this field of business.

2. You need to know how to understand the reasons for the project and until when the job should be completed. It is very important so that you will be able to meet goals and deadlines.

3. You need to know how to read and develop your own timeline so that you will not have a hard time meeting deadlines. You should give yourself enough time to work on the tasks assigned to know even if they are rush so that you will not have troubles meeting deadlines later on in life.

4. A lot of people who are in this industry don't know that they should also sharpen their negotiating skills because it is needed at times to be able to get the job done.

Implications for Project Managers:

Every stakeholder has a role to play in the development of the construction industry. Clients, contractors and governments have a responsibility to lead the necessary change and project managers representing clients or contractors at project level are actually in a unique position to change the industry from the grass-roots level. Project managers in construction are responsible for the overall success of delivering the owner's physical development within the constraints of cost, time, quality, environmental and safety requirements. They need to be technically competent and to be able to adapt to the changing industry environment by relying on knowledge and skills acquired through training and experience. They also need to supplement with non-engineering knowledge and skills to meet their changing responsibilities. Project managers have the role to create knowledge, distribute knowledge and identify hindrances to knowledge acquisition [8].

Despite this knowledge role, the application of knowledge management to improve project management performance and competence is not widely discussed, nor is there recognition of how effective project management practices could improve knowledge management. Knowledge management in project based industries such as construction confronts difficulties that are not commonly encountered by project industries. Project-based organisations work on lifecycles that are often long, non-repetitive, and typically organized

around teams assembled specifically for the project and are often disbanded upon the completion of a project. Normally, people from different companies come together for the first time as a project team which is essentially a form of temporary organization. This means there is a need to create the right knowledge-sharing culture, allow access to explicit knowledge from different repositories, and access and internalize learning from previous projects. However, most of these learning opportunities are tacit in nature and stored in peoples' memories. In addition, the prevailing supply chain and procurement practices in construction discourage effective learning practices. Instead, the industry allows the continuation of 're-inventing the wheel' and experience of good practice is wasted by not being repeated in future projects.

The major responsibilities of project managers are generally accepted to be controlling financial and physical resources in order to bring a project to a successful conclusion in terms of cost, time, and stakeholder satisfaction. However, Fox's 2003 international study [12] that identified cultural factors as being important contributors to the development of the construction industry, suggests that project managers are required to go beyond their traditional role to become agents of change. Project managers have an obligation to the industry to recognize that they have a role to play in the change process by promoting behaviour that leads to desirable change.

CHAPTER – 2

COMPANY INTRODUCTION

COMPANY PROFILE:

The world's need for energy is growing, but so too is our ability to meet that demand. Our teams have been discovering new and better ways of delivering petroleum energy since 1933. Find out more about our leadership, our history and the people who make us the world's leading integrated petroleum enterprise. Saudi Aramco, a fully integrated, global petroleum and chemicals enterprise, is the state-owned oil company of the Kingdom of Saudi Arabia.

Through our 80-year history we have become a world leader in hydrocarbons exploration, production, refining, distribution, shipping and marketing, and the world's top exporter of crude oil and natural gas liquids (NGLs). We manage proven conventional crude oil and condensate reserves of 260.2 billion barrels. Our average daily crude production in 2012 was 9.5 million barrels per day (bpd). Total oil production for the year was 3.5 billion barrels, about one in every eight barrels of the world's crude oil production and the most we have produced in a single year in our history. We also have stewardship of natural gas reserves of 284.8 trillion standard cubic feet (scf).

Our average daily gas production, in terms of raw gas to gas plants, was 3.9 trillion scf an 8.3 percent increase from 2011 and the most in a single year in our history. Saudi Aramco and its subsidiaries own or have equity interest in domestic and international refineries with a total worldwide refining capacity

of almost 4.5 million bpd, of which our equity share is 2.4 million bpd, making us the world's sixth-largest refiner.

In 2012, we increased our refined products production from 495 million barrels in 2011 to 507 million barrels. Exports of our refined products also increased by 2.4 percent to 126 million barrels. Crude oil exports increased by 100 million barrels to 2.521 billion barrels in 2012, with 53.2 percent exported to the Far East. Headquartered in Dhahran, Saudi Arabia, Saudi Aramco has offices and operations throughout the Kingdom.

VISION:

Saudi Aramco, **a fully integrated, global petroleum and chemicals enterprise**, is the state-owned oil company of the Kingdom of Saudi Arabia.

Through our **80-year history** we have become a world leader in hydrocarbons exploration, production, refining, distribution, shipping and marketing, and the**world's top exporter of crude oil and natural gas liquids** (NGLs).

We manage proven conventional crude oil and condensate reserves of **260.2 billion barrels**. Our average daily crude production in 2012 was **9.5 million barrels per day** (bpd).

Total oil production for the year was **3.5 billion barrels**, about one in every eight barrels of the world's crude oil production and **the most we have produced in a single year** in our history.

We also have stewardship of natural gas reserves of **284.8 trillion standard cubic feet** (scf).

Our average daily gas production, in terms of raw gas to gas plants, was **3.9 trillion scf** an 8.3 percent increase from 2011 and **the most in a single year** in our history.

Saudi Aramco and its subsidiaries own or have equity interest in domestic and international refineries with a total worldwide refining capacity of almost **4.5 million bpd**, of which our equity share is **2.4 million bpd**, making us **the world's sixth-largest refiner**.

In 2012, we increased our refined products production from 495 million barrels in 2011 to **507 million barrels**. Exports of our refined products also increased by 2.4 percent to **126 million barrels**. Crude oil exports increased by 100 million barrels to **2.521 billion barrels** in 2012, with 53.2 percent exported to the Far East.

Headquartered in Dhahran, Saudi Arabia, Saudi Aramco has offices and operations throughout the Kingdom.

Our subsidiaries also have offices in North America, Europe and Asia. Our subsidiaries and affiliates are located in Saudi Arabia, China, Japan, India, the Netherlands, the Republic of Korea, Singapore, the United Arab Emirates, Egypt, the United Kingdom and the United States.

In compiling these achievements, we continued to meet our commitments to our customers.

Demand for oil and gas products is forecast to grow at a healthy pace supported by abundant resources, and Saudi Aramco continues to significantly contribute to maintaining the global availability of these resources.

Company operation:

We are a fully integrated global petroleum enterprise with operations across the globe.

Continually evolving

From our founding in 1933 until the late 1980s, we focused on crude oil exploration and production. Since then we've undergone a **transformation** which continues to this day.

We've formed international joint and equity refining and petrochemicals ventures at home and abroad, created, through our subsidiary, Vela International Marine Limited, one of the world's largest fleet of supertankers, conceived and executed some of the industry's largest mega-projects and applied or invented some of its most important, groundbreaking subsurface technology. And we continue to look for opportunities to do even more.

What we do

Our operations include:

- Exploration
- Production of oil and gas
- Refining
- Petrochemicals
- International shipping
- Marketing
- Distribution

We’re also the only energy company that serves the three major world markets – Asia, North America and Europe.

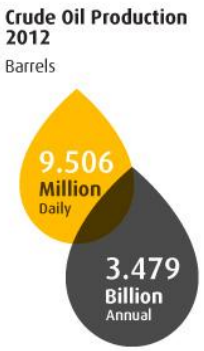
Bringing energy to the world

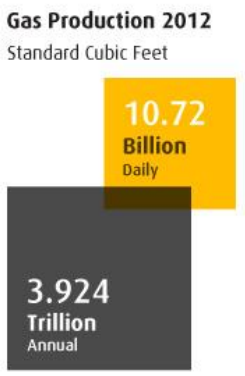
We currently provide roughly one in every eight barrels of crude oil the world consumes on any given day.

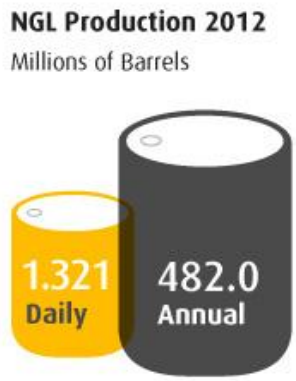
Since 1998 we have added more than 3.8 million barrels per day (bpd) to worldwide crude oil production capacity to help ensure we remain the world's most reliable supplier of petroleum energy.

At a glance

The Saudi Arabian Oil Company (Saudi Aramco), **a fully integrated, global petroleum and chemicals enterprise**, is the state-owned oil company of the Kingdom of Saudi Arabia. We rank **first** among oil companies worldwide in terms of crude oil production and exports, and natural gas liquids (NGL) exports, and are among the leading producers of natural gas. We are also **among the world's leading refiners and are moving further downstream into chemicals production**.







Saudi Aramco manages conventional crude oil and condensate reserves of**260.2 billion barrels** and gas reserves of**284.8 trillion standard cubic feet**.

We are a fully integrated petroleum company and a world leader in hydrocarbons exploration, production, refining, distribution, shipping and marketing.

Saudi Aramco employs more than **54,000 workers** worldwide from **77 countries** and has its headquarters in Dhahran in the Kingdom's Eastern Province.

Our operations **span the Kingdom**, with production and product distribution facilities linking all market areas.

Major export shipping terminals are located at ports on the Arabian Gulf and Red Sea, while domestic demand for automotive and aviation products is met through strategic refineries.

Internationally, Saudi Aramco subsidiaries or affiliates hold significant interests in**refining and marketing companies in the United States, the Republic of Korea, Japan and China**.

We have key market support service offices in major cities in North America, Europe and Asia.

We are currently working on **expanding our capability** to discover, produce, process and transport natural gas for domestic energy, powering desalination plants and other industries, and as a vital feedstock for our growing petrochemical industry.

Today, we are positioned to **build upon our prominence** as a stable supplier of hydrocarbon resources. And by producing petrochemical products, building export refineries and advancing the development of technologies that will result in cleaner fuels designed for the new generation of internal combustion engines, we will continue the work of enhancing lives while safeguarding the planet we all share.

Saudi Aramco Key Facts: 2012

- **116** total oil and gas field discoveries in our history
- **260.2** billion barrels of crude oil reserves
- **3.5** billion barrels of crude oil production
- **9.5** million barrels per day of crude oil production
- **2.5** billion barrels of crude oil exports
- **284.8** trillion standard cubic feet of gas reserves

- **3.9** trillion standard cubic feet of gas production
- **482** million barrels of NGL production
- **333.3** million barrels of NGL exports

In December 2012, we again achieved the **number one ranking** in Petroleum Intelligence Weekly's (PIW) annual rankings of the world's 50 largest oil companies. PIW is a leading source of intelligence in our industry.

We've held the top spot for 23 consecutive years – a track record that shows we're consistently delivering on **our commitment to fueling the world's energy needs**.

Proud as we are of this position, we never lose sight of our responsibilities to the people of Saudi Arabia and to energy consumers around the glob

LEADERSHIP:

- Khalid A. Al-Falih
- Mohammad A. Al-Ali
- Salim S. Al-Aydh
- Khalid G. Al-Buainain
- Abdulaziz F. Al-Khayyal
- David B. Kultgen
- Amin H. Nasser
- Abdulrahman F. Al-Wuhaib

CHAPTER – 3

REVIEW OF LITERATURE

The literature for review to be collected from secondary sources such as magazines, articles, reports, budgets, newspaper etc to highlight the problems and findings of the study done by various research and business professionals to understand the job stress of the companies. The objectives of the proposed topic have to be formulated based on the previous study by the research professionals.

Martyn J., Fox, Paul W., Skitmore, Martin,2008: This is an international study into construction industry development that was used as a framework for a study into Hong Kong's construction industry and, based on the findings, argues that the role of a project manager is important to the development of the industry. Having used the same approach for both studies allowed for comparison with and validation of the international generic model. Statistical factor analysis was used to generate the following eight factors that are currently active in the development of Hong Kong's construction industry: financial resources; physical resources; competition; coordination and cooperation; government intervention; long-term vision and policy; communication between government and the industry; and a learning culture. Whilst these factors are sometimes different to the generic model, there is more that they have in common. Many of these have important implications for the role of project managers in the industry.

A **Gunasekaran** 2005: The construction procurement process has been heavily criticised for its fragmented approach toward the delivery of construction projects. This has affected project effectiveness inasmuch as current procurement practices do not effectively encourage the integration, coordination and communication between participants. In addition, there is an ephemeral shifting coalition of participants from which divergent goals and objectives often emanate. This inhibits the scope for creativity and innovation throughout the procurement process. To overcome the difficulties often associated with procuring projects, industry practitioners and researchers have turned to the manufacturing industry as a point of reference and a potential source of innovation. Accordingly, a concept known as Concurrent Engineering (CE) has become a focal point for research. Concurrent engineering is a holistic approach to the design, development and production of a product. A multi-disciplinary team approach is required, whereby participants are brought together during the design to determine how downstream issues may be affected by design decisions. This paper suggests that a CE approach in construction may significantly improve the way in which projects are procured. A simple model demonstrating how CE can contribute to project effectiveness is proposed.

When the **PMBOK Guide (1999)** is studied it reveals that activities and task are the unit analysis in the core project management processes, scope management, time management and cost management. A project manager is the person who has the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of a project. The job title is used in construction, petrochemical, architecture, information technology and many different industries that produce products and services.

The project manager must have a combination of skills including an ability to ask penetrating questions, detect unstated assumptions and resolve conflicts, as well as more general management skills.

Key among his or her duties is the recognition that risk directly impacts the likelihood of success and that this risk must be both formally and informally measured throughout the lifetime of the project.

Risks arise from uncertainty, and the successful project manager is the one who focuses on this as the main concern. Most of the issues that impact a project arise in one-way or another from risk. A good project manager can lessen risk significantly, often by adhering to a policy of open communication, ensuring every significant participant has an opportunity to express opinions and concerns.

Starr (2004 formulates; "Construction managers plan and coordinate construction projects. They may have job titles such as Construction superintendent, project engineer, project manager, or Manager (Projects). Construction managers may plan and direct a whole project or just a part of a project. The term Construction manager describes salaried or self-employed managers who oversee construction supervisors and workers.

Construction project managers are often those who worked in the construction industry from the beginning of their Career. However, more and more, Project Managers hold a college degree in the profession and must achieve any number of certifications to practice their profession. Construction managers often work with engineers, architects, and others who are involved in the construction process. Without architects there would be

no construction and architectural project managers hold many of the same certifications and possess the same skills as their construction counterparts.

- Terry Lyons,
- Martin Skitmore 2003

This paper provides the results of a survey of senior management involved in the Queensland engineeringconstruction industry, concerning the usage of risk management techniques. These are described in comparison with four earlier surveys conducted around the world and indicate that: the use of riskmanagement is moderate to high, with very little differences between the types, sizes and risk tolerance of the organisations, and experience and risk tolerance of the individual respondents; risk management usage in the execution and planning stages of the project life cycle is higher than in the conceptual or termination phases; risk identification and risk assessment are the most often used risk management elements ahead of risk response and risk documentation; brainstorming is the most common risk identification technique used; qualitative methods of risk assessment are used most frequently; risk reduction is the most frequently used risk response method, with the use of contingencies and contractual transfer preferred over insurance; and project teams are the most frequent group used for risk analysis, ahead of in-house specialists and consultants.

F.T Edum-Fotwe & R McCaffer 2000

Project managers in today's construction industry are faced with a situation whereby the fundamental roles and functions they perform are witnessing a

gradual shift in focus. To maintain their professional competency, practicing project managers in construction adapt to this changing industry environment by relying on knowledge and skills acquired through training and experience. The extent to which such training enables project managers to effectively adapt to changing demands have considerable relevance not only for the training of future project managers, but more importantly, the kind of management and general manpower development policies that construction organisations can adopt. The paper presents a study that focuses on the development of construction project managers and how they maintain their professional skills in a changing construction business environment. The paper first sets out the areas of knowledge and skill required for project management certification, and argues that the traditional engineering orientation of these requirements are insufficient for today's construction project manager. It identifies the general knowledge and skill elements that are perceived as essential for developing project management competency through a survey of project managers in the construction industry. Project management in the EC industry emphasizes development, engineering, procurement, and construction processes for projects involving buildings and facilities in the residential, commercial, and industrial sectors worldwide. The IMM industry is comprised of companies and individuals focused on technologies, primarily voice-data-video transmission and switching (e.g., analog, digital, terrestrial, satellite, microwave, fiber optic), services to the users of these deliverables, and network infrastructure providers.

The IS industry or application area manages software development projects to deliver a quality product to the customer on time, within budget, and meeting performance specifications. The HTM industry is involved in the project planning, development, control, and execution of hi-tech products,

processes, and services. A hitech product may include computer hardware, semiconductors, and related equipment and accessories.

According to J.M. Kamara, G. Augenbroe, C.J. Anumba, P.M. Carrillo, (2002)

Project management (PM) is now recognized as a core business concern and intellectual assets play a vital role in gaining competitive advantage. Within the architecture, engineering and construction (AEC) industry, where the need for innovation and improved business performance requires the effective deployment and utilization of project knowledge, the need for strategic knowledge management is also being acknowledged. This paper reviews various initiatives for PM in order to assess the extent to which it is being implemented in the AEC sector. Contextual issues are identi. ed, and the findings from two research projects are used to assess current strategies for PM in AEC firms. These studies show that effective knowledge management requires a combination of both mechanistic and organic approaches in an integrated approach that incorporates both technological and organizational/cultural issues. The paper concludes with recommendations on how this could be achieved in practice.

According to Peter E.D. Lovea, & Zahir Irani in 2002:

A prototype Project Management Quality Cost System (PROMQACS) was developed to determine quality costs in construction projects. The structure and information requirements that are needed to provide a classification system of quality costs were identified and discussed. The developed system was tested and implemented in two case study construction projects to determine the information and management issues needed to develop

PROMQACS into a software program. In addition, the system was used to determine the cost and causes of rework that occurred in the projects. It is suggested that project participants can use the information in PROMQACS to identify shortcomings in their project-related activities and therefore take the appropriate action to improve their management practices in future projects. The benefits and limitations of PROMQACS are identified.

According to Akintola S Akintoye in 2000:

The paper describes, on the basis of a questionnaire survey of general contractors and project management practices, the construction industry's perception of risk associated with its activities and the extent to which the industry uses risk analysis and management techniques. It concludes that risk management is essential to construction activities in minimizing losses and enhancing profitability. Construction risk is generally perceived as events that influence project objectives of cost, time and quality. Risk analysis andManagement in construction depend mainly on intuition, judgment and experience. Formal risk analysis and management techniques are rarely used due to a lack of knowledge and to doubts on the suitability of these techniques for construction industry activities. Construction time performance (CTP) and flexibility in approaches to project time planning have been shown to be significantly associated. This raises interesting questions about how effective planning and control to facilitate flexibility in overcoming unexpected problems may be achieved. Case study data were used to explore links between planning and flexibility. This paper reports upon a recent study of two highly complex projects, a mental and forensic health hospital and a very large freeway/bridge/tunnel urban infrastructure project. The authors investigated planning flexibility using a framework of project team understanding and knowledge transfer to provide

a model that contributes to our understanding of mechanisms and drivers that delivers flexible behaviour that may affect CTP. We conclude that both ability, supported by organizational and team competence, and commitment to explore construction method options in a flexible manner, i.e. responding to unanticipated problems, are necessary to facilitate good construction time performance.

Kini, D U 2003: In the current business environment, money is tight and clients are looking for engineering companies that can provide the best product at the lowest cost. Engineering solutions to this problem include using complex analytical tools to quickly create efficient designs, utilizing composite materials, and custom designing equipment for optimum output. However, the area most often overlooked in this effort is materials management, which is generally considered to be a support function in engineering companies. Materials management is a management system that integrates the traditional areas of purchasing, expediting, and controlling the progress of the vendor. It is an essential part of project management and can be integrated with engineering to provide an end product that meets the client's needs and is cost-effective. A typical engineer/procure/construct project can be divided into seven distinct stages, during which the project manager must ensure a materials management focus among the project management team. The seven stages are planning, preliminary design, final design, procurement, vendor control, construction, and closeout.

According to **Adnane Belout University of Montreal, School of Industrial Relations, Montreal, Canada[15]** Project management strategy research has focused on the effects of structure and planning operations (such as budgets, date completion and quality) on project success. In the past, projects have been managed as technical systems instead of behavioral systems.

Relatively little attention has been paid to human resource factor. However, the Project Management Institute in its official definition of Project Management Body of Knowledge (P.M.B.K.) included human resource management as one of the six fundamental basic functions of project management.1 In this arena which lacks theoretical foundation, a relatively recent study made the situation even worse. Pinto and Prescott (1988) concluded that the 'Personnel factor' (independent variable) was the only factor in their research that was marginal for project success (dependent variable). This paper takes a critical look at this research and attempts to respond to their controversial findings. The main objective is to improve the thinking aspects and to highlight the validity of the measures used.

People are the backbone and most valuable resource for successfully executing any project. To survive and grow in the 21st century, project management practitioners must learn and use appropriate interpersonal skills that inspire all those involved in a project. This book offers practical guidelines that can be used to develop and implement the practices of communication, motivation, negotiation, conflict resolution, conflict and stress management and leadership. Human resource Skills for the Project manager is Volume Two of the Human Aspects of Project Management Series [16].

"Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements." [1] This simple definition represents a compromise that resulted from intense discussions within the Project Management Institute (PMI) during the 1980s. One of the priorities of PMI during this time was the development of project management as a profession. Although debate continues on whether project management is a profession with an enforceable code of conduct and other

traditional criteria for recognition as a profession, the development of *A Guide to the Project Management Body of Knowledge (PMBOK Guide)* and the project management certifications that derived from these efforts helped promote the understanding and development of the project management field.

The discussion about what should be in the definition of project management included debates about the purpose of project management. Is the main purpose to meet client expectations or is the main purpose to meet the written specifications and requirements? This discussion around meeting project requirements was not easily settled. If it is assumed that the project client is the one who defines project requirements, then maybe project management is the application of knowledge, skills, tools, and techniques to meet client requirements or client expectations. PMI's definition of project management does provide a good understanding of project management, but it does not help us understand project success. For that, we must include the client.

Jack Meredith and **Samuel Mantel discussed** project management in terms of producing project outcomes within the three objectives of cost, schedule, and specifications. Project managers are then expected to develop and execute a project plan that meets cost, schedule, and specification parameters. According to this view, project management is the application of everything a project manager does to meet these parameters. This approach to defining project management shares PMI's focus on the project outcomes in terms of requirements.

Meredith and Mantel added a fourth aspect of project management—the expectations of the client. One client-centered definition of project

management is the application of knowledge, skills, tools, and techniques to meet or exceed the expectations of the client. This definition focuses on delivering a product or service to the client that meets expectations rather than project specifications. It is possible to meet all project specifications and not meet client expectations or fail to meet one or more specifications and still meet or exceed a client's expectation.

Meredith and Mantel discussed a tendency noted by Darnall that expectations often increase during the life of a project. Meredith and Mantel suggest that this is a form of scope increase. A project scope is a carefully crafted document that reflects the performance specifications of the project deliverables. Defining the project scope and managing scope change is a very different process from developing an understanding of a client's expectations and managing those expectations. Darnall focused on defining and managing client expectations as a critical project management skill that is distinct from scope development and management.

Client expectations encompass an emotional component that includes many client desires that are not easily captured within a specification document. Although closely correlated with project specifications, client expectations are driven by different needs. It is possible for a project team to exceed every project specification and end up with an unsatisfied client.

A construction company has a contract to build a large building in downtown New York. Most, if not all, the construction materials, such as steel and concrete, will be purchased from companies that specialize in steel and concrete. Existing companies that produce and sell steel can provide the steel the project needs at a much lower cost and faster than if the project manager's organization attempted to build the capacity itself. On the New

York building construction project, the basic engineering and construction activities are core expertise of the parent company, and the project team had access to the qualified resources to perform the work. The decision to self-perform this portion of the work was easy because the company had a cost and schedule advantage by using the existing resources. The purchase of the steel, concrete, and other commodities was also easy because the costs of developing those resources far outweighed the benefit of purchasing them.

Accoridng to **Abu Hassan Abu Bakar, Arman Abdul Razak, Nurkhuraishah Abd in 2004:**

The project manager's responsibilities are to plan and control company resources efficiently and to complete the project on schedule, within the budgeted costs and specified quality towards making the project a success. However, many reports have shown the opposite results. Studies on this issue are pointing towards the poor understanding of good practice as a basic problem for the failures in project management. The objective of this paper is to identify the competency skills that a project manager should have to influence a successful project performance. Using the case study approach carried out in Medan, Indonesia, two large projects were chosen, namely RSU Pinged and Plaza Medan Fair. The data was collected as well as obtained from and through project reports, questionnaires and interviews with the project managers and project teams of the relevant projects. The variables were then separated into two classifications that could be defined as either success or failure. The findings of the research show that good project management practices result in a higher project performance.

The main theme of this paper is to review and examine the project management process in the construction industry in terms of its scope, role

and quantitative techniques applied in practice. Emphasis is placed on the project programme planning and project control aspects the construction management. The concept of integrated project planning and management cycle (IPPMC) is developed as a conceptual framework for observing and analyzing the construction project as a single and one-time process that spans throughout the whole project life-time. The post-project evaluation process is construed as a means for use in assisting decision makers in future project planning.

Martyn J. Hills, Paul W. Fox, Carol K. H. Hon, Patrick S. W. Fong, and Martin Skitmore:

This paper reports on an international study into construction industry development that was used as a framework for a study into Hong Kong's construction industry and, based on the findings, argues that the role of a project manager is important to the development of the industry. Having used the same approach for both studies allowed for comparison with and validation of the international generic model.

Statistical factor analysis was used to generate the following eight factors that are currently active in the development of Hong Kong's construction industry: financial resources; physical resources; competition; coordination and cooperation; government intervention; long-term vision and policy; communication between government and the industry; and a learning culture. Whilst these factors are sometimes different to the generic model, there is more that they have in common. Many of these have important implications for the role of project managers in the industry. The findings explained in this paper are helpful to all stakeholders in the construction industry from project managers to policy makers worldwide, who face

similar challenges to those found in Hong Kong when considering how to best contribute towards the development of their particular construction industry. The paper provides clear examples to show that project managers are in the unique position of being able to significantly influence and effectively promote construction industry development through their management skills and values at various levels, including those at the grass-roots.

CHAPTER – 4

OBJECTIVES AND SCOPE OF THE STUDY

Fixing the objective is like identifying the star. The objective decides where we want to go, what we want to achieve and what is our goal or destination.

Every study is carried out for the achievement of certain objectives.

1. To find the effectiveness of the Project Management to complete project time.
2. To find the role of project management in the success of construction companies.
3. To find the scope of project management to reduce the cost of the raw material in the ongoing building project.

Scope

The study on role of project management in construction industry is to execute a project so that deliverables can meet scope requirements on budget and schedule, and at acceptable risk, quality, safety, and security levels. And give help to deliver good quality of material to customers.

CHAPTER – 5

RESERCH METHODOLOGY

Research will be more of Explorative research and is the moral fiber of the project. In order to bring about the objectives of the Project, it will be important to eloquent the approach in which it is to be conducted, i.e. the research practice was to be carried out in a certain framework. Purposes of the research are to rummage around for acquaintance. Also research defines a systematic and organized search for applicable information on a particular topic. The research is supported by survey strategy which will conduct to find role of project management in construction industry.

Primary Data: Most of the information was gathered through primary sources. The methods that were used to collect primary data are:

- Questionnaire
- Interview

Secondary Data:

Secondary Data are those data which have already been collected by someone else and which have already been used as per required. There are basically two sources to collect Secondary Data are:

- Text Books
- Magazines
- Journals
- Websites

Sample Technique: The technique was used for conducting the study is Convenience Sampling Technique as sample of respondents was chosen according to their convenience.

Sampling size: 100

Stastical Tools:

The tools used in this study are MS-EXCEL, MS-WORD. MS-EXCEL is used to prepare pie- charts and graphs. MS-WORD is used to prepare or write the whole project report.

Data Analysis & Interpretation – Classification & tabulation transforms the raw data collected through questionnaire into useful information by organizing and compiling the bits of data contained in each questionnaire i.e., observation and responses are converted into understandable and orderly statistics. After primary data collection, the data would be classified, tabulated & processed with the help of suitable statistical tools. The results would be presented with the help of charts & diagrams as per requirement.

Data Re-Presentation

The data would be shown with the help of Pie Diagrams.

RESEARCH METHODS:

- **Educational Research**: Educational Research: Quantitative, Qualitative and Mixed Approach. Have lectures, concept maps and more. Linked to a textbook by Burke Johnson and Larry Christiensen

- **Research Design Explained:** Lectures, PowerPoint presentations and additional material. The goal of the text was to provide a user-friendly book that could engage students while offering practical advice about how to read, conduct, and write up research. The book explains fundamental concepts clearly and illustrates with many real-life analogies.
- **Research Methods Resources on the WWW:** One of the most comprehensive sites that we have ever run across. Links to a wide coverage of research topics. Includes links to free online books, electronic journals, research methods, ethics and software.
- **The Qualitative Report**: A journal devoted to Qualitative Research from Nova Southeastern University, Florida. It also has links to other Qualitative Research sites.
- **Qualitative Research**: Originally designed as a private repository of information for graduate students learning about qualitative data analysis software this site has developed through the contribution of other people from many qualitative persuasions.

CHAPTER – 6

DATA ANALYSIS AND INTERPRETATION

Evaluation of the Study:-

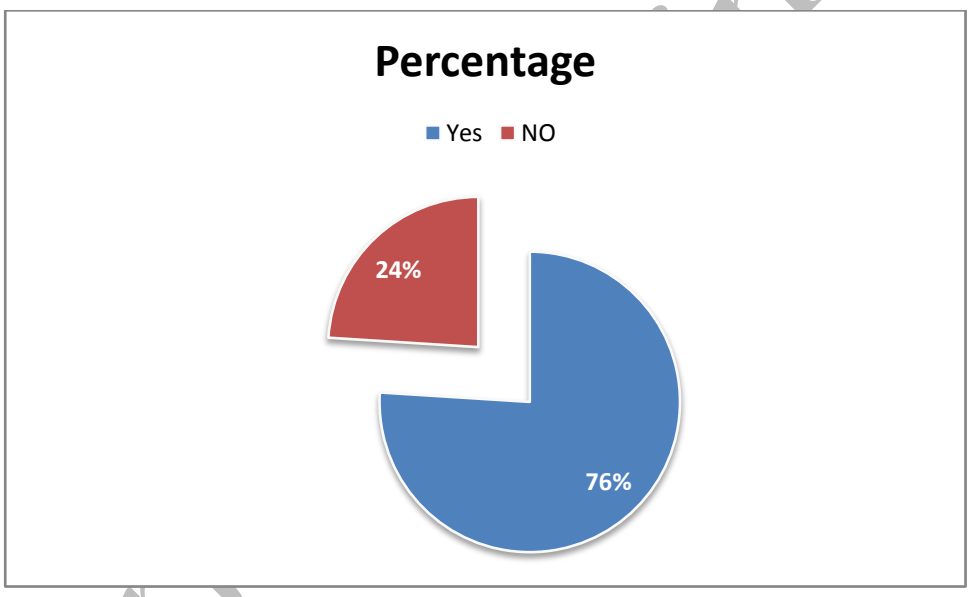
A detailed analysis of the study is necessary and is to be considered in order to compare the actual theory with that practical the variants of which may form the basis for improvements. Keeping this point in view and to fulfill the evaluation variants of which may form the basis for objectives of the studies an attempt has been made to segment the various respondents on the basis of some aspects collected from them through questionnaire. There are depicted through tables and graphs.

The copy of questionnaire administered is enclosed and the sample size was 100 respondents are enclosed at the end of this project. All the calculations and numerical interpretations are for 100%

Q1. Do you think that project management play very important role in Construction Industry?

TABLE - 1

Criteria	Frequency	Percentage
Yes	76	76%
No	24	24%



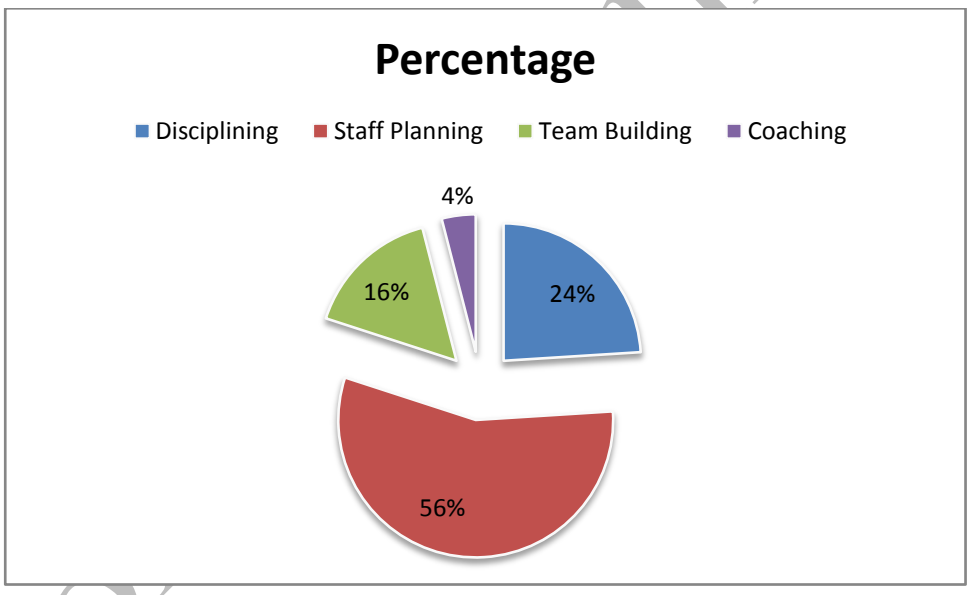
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph, 76% of think that project management play very important role in Construction Industry and 24% of respondent no category.

Q2. The project manager's leadership style should be matched to the corresponding developmental level of the project team and should move through successive steps in the following order:

TABLE - 2

Criteria	Frequency	Percentage
Disciplining	24	24%
Staff Planning	56	56%
Team Building	16	16%
Coaching	4	4%



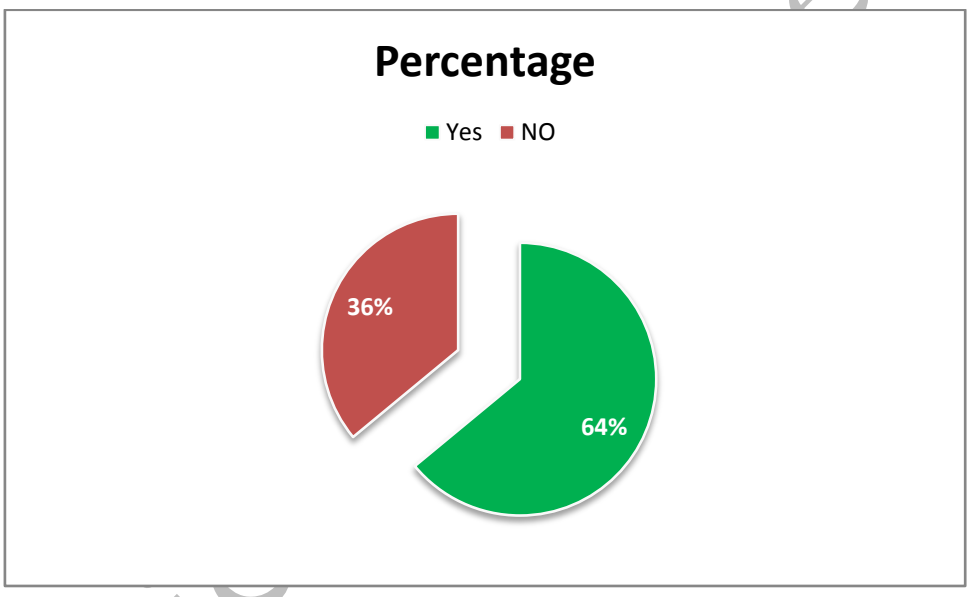
ANALYSIS & INTERPRETATION:

56% Percentage respondents feels that project leadership comes from staff planning Where 24% feels its term the Discipline, where only 16% believe its Team building & 4% say Coaching. Most of the people believe the staff planning is the main thing for the project success & then is the discipline which Contributes to it. Only same people believe that Team building is also is also an important role of the HR.

Q3. Are you a member of the Construction Client Group?

TABLE - 3

Criteria	Frequency	Percentage
Yes	64	64%
NO	36	36%



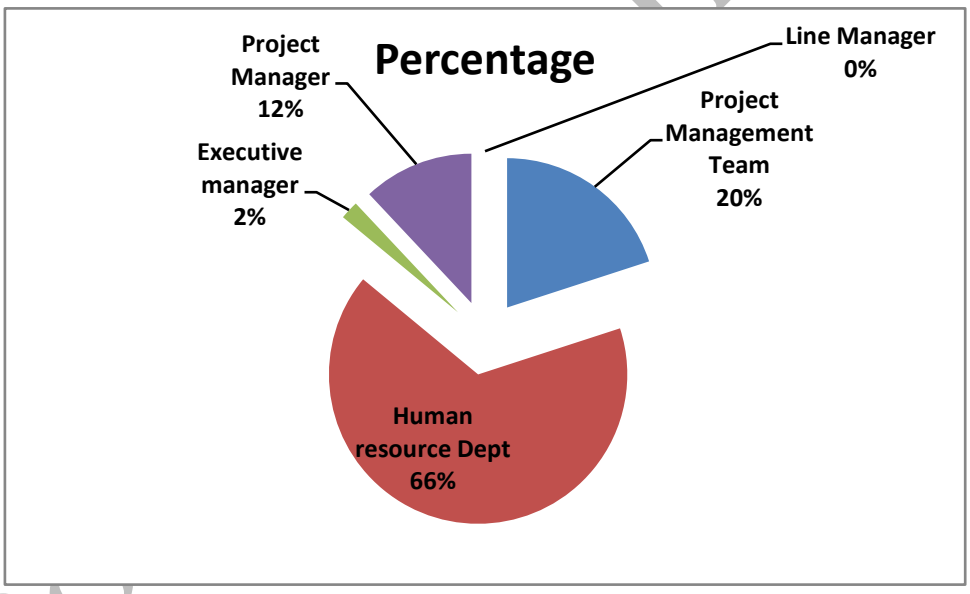
ANALYSIS & INTERPRETATION:

Out of the total respondent surveyed, there is mixed responses of respondent 64% of the respondent are member of the Construction Client Group, and 36% said no.

Q4. Human resource administration is the primary responsibility of the:

TABLE – 4

Criteria	Frequency	Percentage
Project Management Team	20	20%
Human resource Dept	66	66%
Executive manager	2	2%
Project Manager	12	12%
Line Manager	0	0%



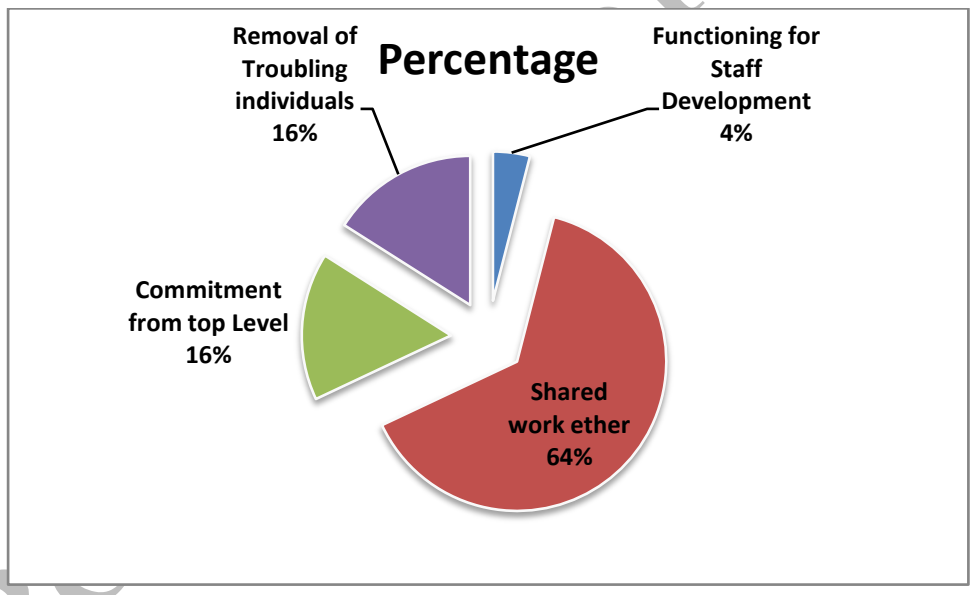
ANALYSIS & INTERPRETATION:

68% respondents believe that Human resource Dept is concerned with the administration as primary responsibility where's the 20% person believe in project Management Team. Human resource is the main department which is mainly responsible for the administrative work and other day to day admin Management issues.

Q5. A mandatory prerequisite for team building is:

TABLE – 5

Criteria	Frequency	Percentage
Functioning for Staff Development	4	4%
Shared work ether	64	64%
Commitment from top Level	16	16%
Removal of Troubling individuals	16	16%



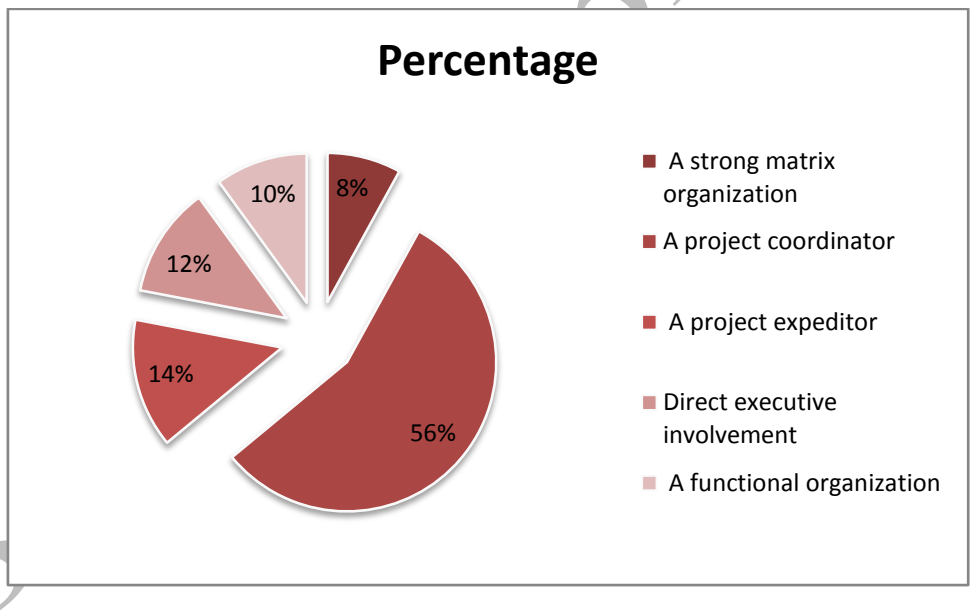
ANALYSIS & INTERPRETATION:

64% respondents believes most shared work ethics is the mandatory perquisite for team building whereas also 16% says the commitment from Top level management in important. It is found for the team to work smoothly it is the shared work ethics which matter which is supported by management of the company.

Q6. Which of the following is best for handling cross-functional project needs for a large, complex project?

TABLE – 6

Criteria	Frequency	Percentage
A strong matrix organization	8	8%
A project coordinator	56	56%
A project expeditor	14	14%
Direct executive involvement	12	12%
A functional organization	10	10%



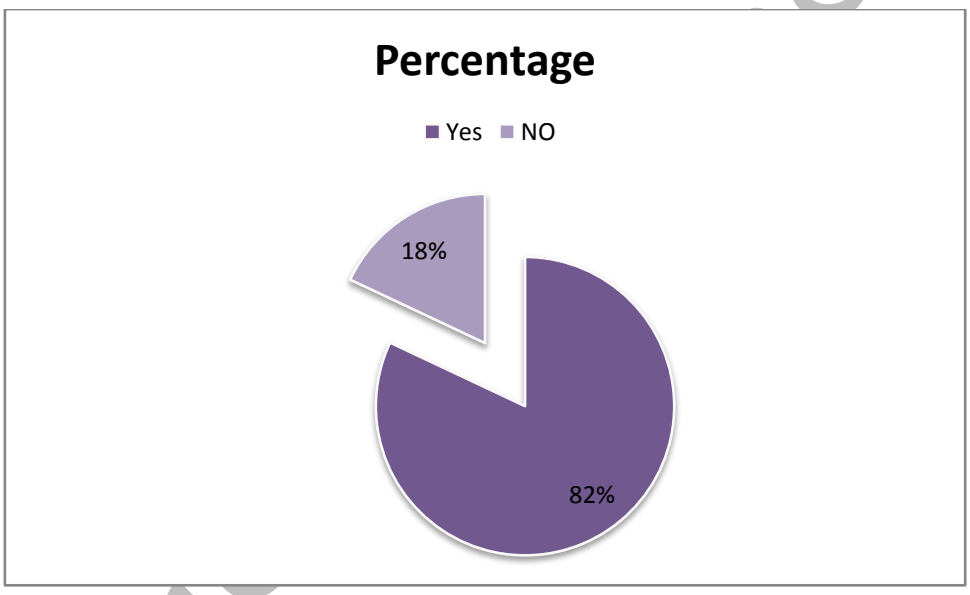
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph, 76% of respondent said a project coordinator, 14% of respondent said a project expeditor, 12% of respondent said Direct executive involvement, 10% of respondent said a functional organization and 12% of respondent said strong matrix organization.

Q7. Project management is an effective and powerful strategy and should be implemented in construction Industry?

TABLE – 7

Criteria	Frequency	Percentage
Yes	82	82%
NO	18	18%



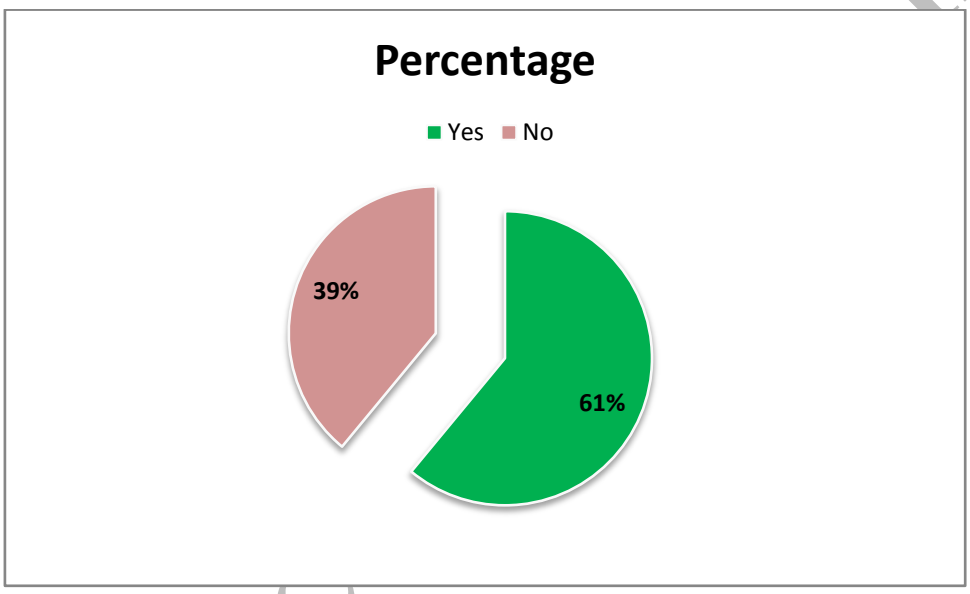
ANALYSIS & INTERPRETATION:

82% respondents feel that the project management is the important issue with the success of the project where 18% is not.

Q8. Do you feel Project Management is necessary for every industry?

TABLE – 8

Criteria	Frequency	Percentage
Yes	61	61%
No	39	39%



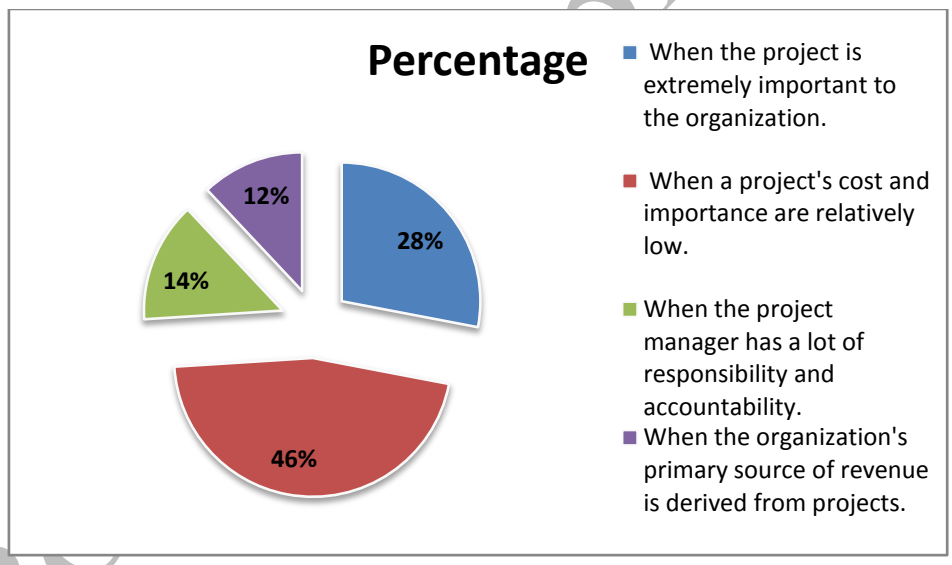
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph, 61% respondents feel Project Management is necessary for every industry and 39% of respondent said no category.

Q9. When should the project expeditor form of organization be used?

TABLE – 9

Criteria	Frequency	Percentage
When the project is extremely important to the organization.	28	28%
When a project's cost and importance are relatively low.	46	46%
When the project manager has a lot of responsibility and accountability.	14	14%
When the organization's primary source of revenue is derived from projects.	12	12%



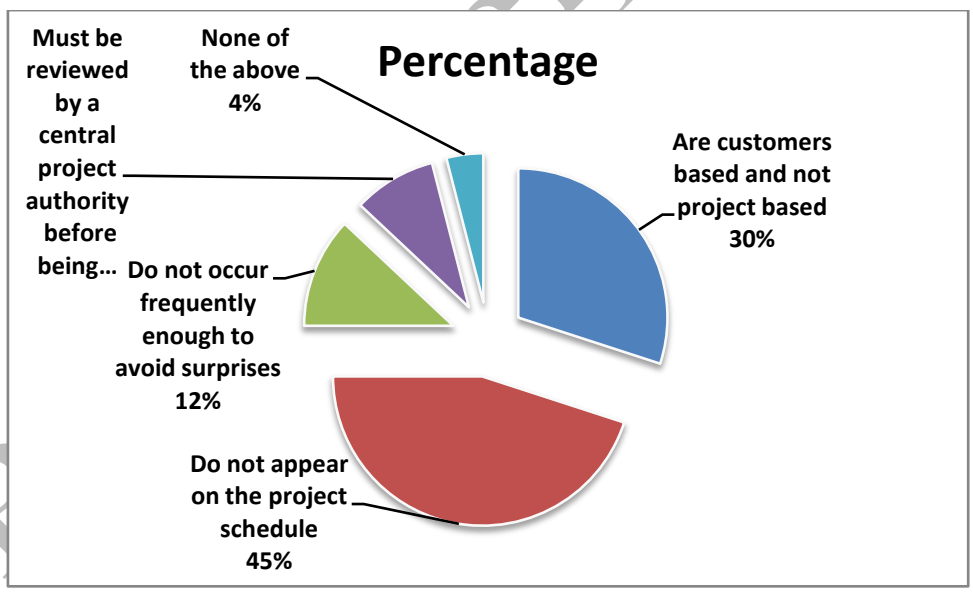
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph, 28% of the project expeditor form of organization be used When the project is extremely important to the organization, 46% of respondent said when a project's cost and importance are relatively low, 14% of respondent said when the project manager has a lot of responsibility and accountability, and 12% when the organization's primary source of revenue is derived from projects..

Q10. Formal reporting and reviews violate the basic principles of project management because they.

TABLE – 10

Criteria	Frequency	Percentage
Are customers based and not project based	30	30%
Do not appear on the project schedule	45	45%
Do not occur frequently enough to avoid surprises	12	12%
Must be reviewed by a central project authority before being forwarded to the customer and top management	9	9%
None of the above	4	4%



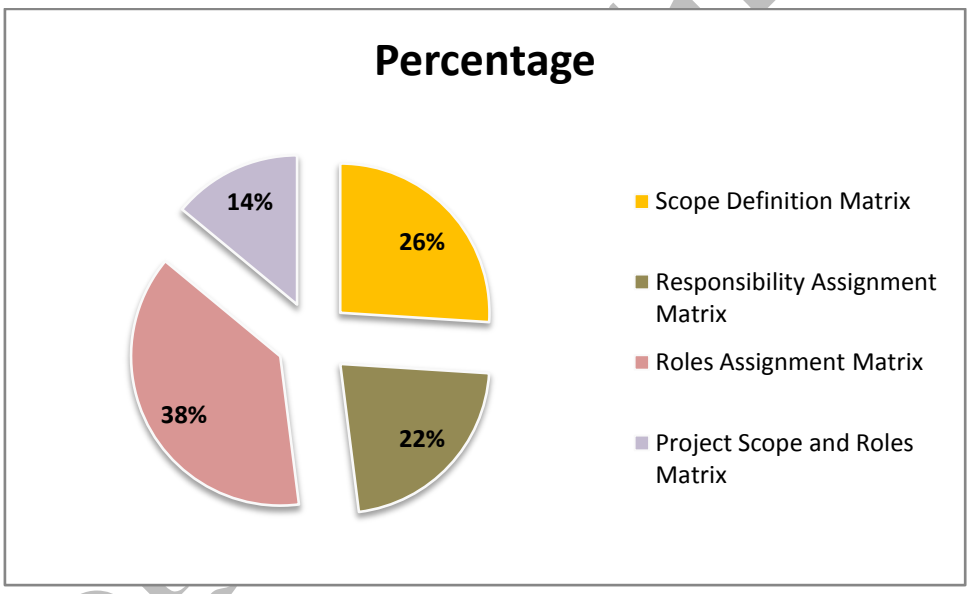
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph a large number of respondent formal reporting and reviews violate the basic principles of project management because they do not appear on the project schedule.

Q11. A tool which links the project roles and responsibilities to the project scope definition is called:

TABLE – 11

Criteria	Frequency	Percentage
Scope Definition Matrix	26	26%
Responsibility Assignment Matrix	22	22%
Roles Assignment Matrix	38	38%
Project Scope and Roles Matrix	14	14%



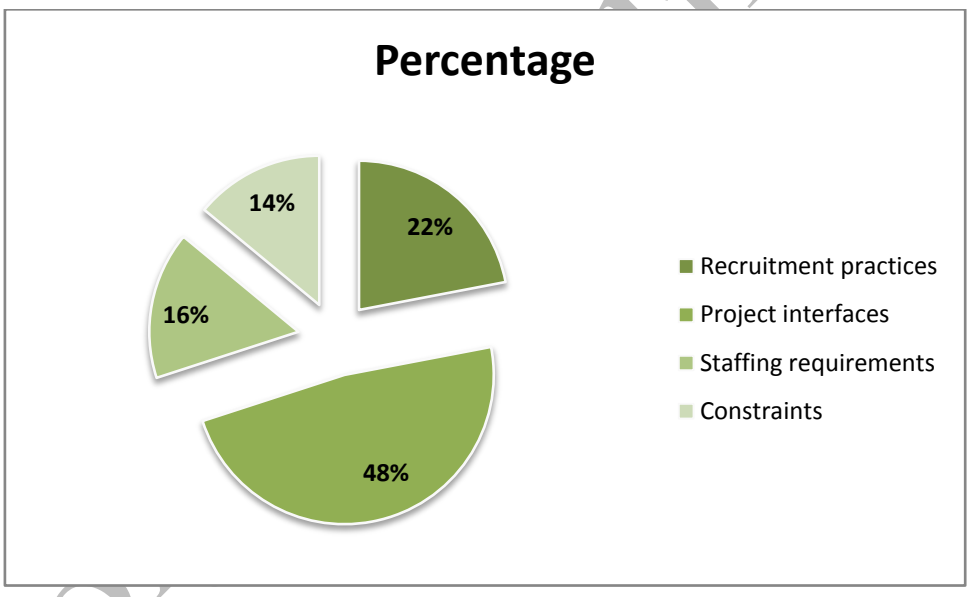
ANALYSIS & INTERPRETATION:

Out of the total respondent surveyed, there is mixed responses of respondents 26% of the said Scope Definition Matrix, 22% are in favor of Responsibility Assignment Matrix, 38% of the respondent feel Roles Assignment Matrix and 14% of the respondent said Project Scope and Roles Matrix

Q12. Which of the following is not an input into organizational planning?

TABLE – 12

Criteria	Frequency	Percentage
Recruitment practices	22	22%
Project interfaces	48	48%
Staffing requirements	16	16%
Constraints	14	14%



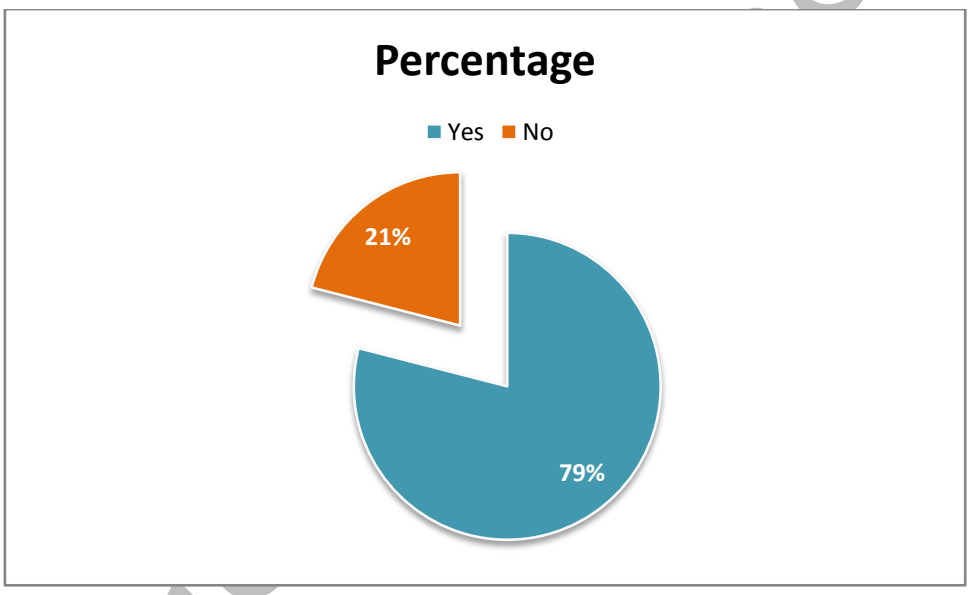
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph, 48% of respondent said Project interfaces, 22% of respondent said Recruitment practices, 48% of respondent said Staffing requirements and 14% of respondent said Constraints.

Q13. Planning and managing engineering, procurement construction services through project management.

TABLE - 13

Criteria	Frequency	Percentage
Yes	79	79%
No	21	21%



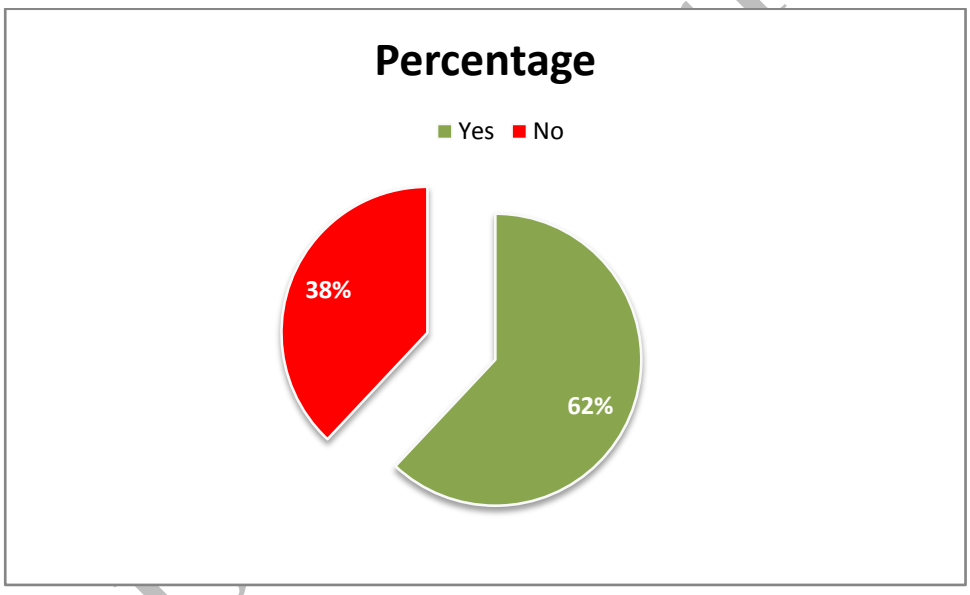
ANALYSIS & INTERPRETATION:

As per the pie chart given above, most of the respondent said Planning and managing engineering, procurement construction services through project management.

Q14. Do you think that construction materials, elements, and modules are good maintained by project management?

TABLE – 14

Criteria	Frequency	Percentage
Yes	62	62%
No	38	38%



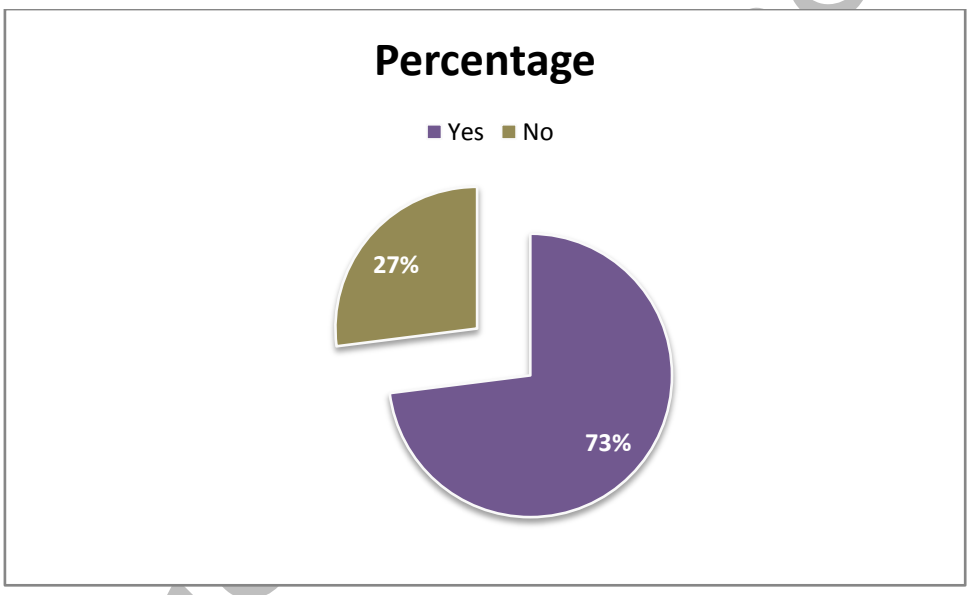
ANALYSIS & INTERPRETATION:

As per shown in the above pie graph, 62% of think that construction materials, elements, and modules are good maintained by project management and 38% of respondent said no.

Q15. Do you think that project management in construction industry deliver good qualities materials to their customers?

TABLE - 15

Criteria	Frequency	Percentage
Yes	73	73%
No	27	27%



ANALYSIS & INTERPRETATION:

As per the chart given above, it can be concluded that maximum number of respondent of the were think that project management for engineering, procurement and construction industry deliver good qualities materials to their customers and 27% are in no category.

CHAPTER – 7

FINDINGS

The findings of the study of "Analytical Study of role of Project Management in Construction Industry"

1. As per the outcome of the study 76% of think that project management plays very important role in Construction Industry and 24% of respondent no category.
2. From the outcome of the study it is evident that 56% Percentage respondents feels that project leadership comes from staff planning Where 24% feels its term the Discipline.
3. As per the outcome 64% of the respondent is member of the Construction Client Group.
4. 68% respondents believe that Human resource Dept is concerned with the administration as primary responsibility.
5. As per the outcome of the study 64% respondents believes most shared work ethics is the mandatory perquisite for team building whereas also 16% says the commitment from Top level management in important.
6. 76% of respondent said a project coordinator, 14% of respondent said a project expeditor, 12% of respondent said direct executive involvement, 10% of respondent said a functional organization and 12% of respondent said strong matrix organization.

7. 82% respondents feel that the project management is the important issue with the success of the project.

8. As per the outcome of the study 61% respondents feel Project Management is necessary for every industry.

9. As per the outcome of the study 28% of the project expeditor form of organization be used When the project is extremely important to the organization, 46% of respondent said when a project's cost and importance are relatively low, 14% of respondent said when the project manager has a lot of responsibility and accountability, and 12% when the organization's primary source of revenue is derived from projects

10. Large number of respondent formal reporting and reviews violate the basic principles of project management because they do not appear on the project schedule

11. Most of the respondent said Planning and managing engineering, procurement construction services through project management.

12. 62% of think that construction materials, elements, and modules are good maintained by project management.

13. Maximum number of respondent of the were think that project management in construction industry deliver good qualities materials to their customers and 27% are in no category.

CHAPTER – 8

CONCLUSION

Elaborate on evaluation techniques in order to provide support for effective solutions to resource-based problems, in particular, resource allocation, people (knowledge/skill, learning) capability metrics, resource compatibility metrics; analysis, comparison and management of resource capabilities.

Integrate project management scheduling, which incorporates human, managerial, and organizational aspects, into the process modeling frameworks. The application of such an approach is very much concerned with the improvement of project management quality via strategic management of employee skill capabilities. In particular, this approach provides the means for improving an organization's ability to plan, forecast, manage, implement, and control its activities in projects where capability and compatibility of resources are critical aspects.

The purpose of project management process is to define an effective team structure for a project organizational unit. The team structure defines the roles, responsibilities and relationships of the people managing and working within a project organizational unit. An appropriate team structure will help to optimize the efforts of the team and the success of the project. An inappropriate one can undercut the efforts of a hard working group of people and impede their success.

Project managers can play an important role in driving construction industry development. Successful project managers often become senior managers in

their organizations, responsible for strategic and policy decisions. They bring forth the positive attitudes and mindset to different projects that, in the end, Improve the whole industry. The traditional role of project managers in controlling time, cost, quality, safety and environmental issues, can now be supplemented by their role as drivers of change in order to ensure the continued development of the industry in which they work. The enlargement of their existing role can only be realized if they are aware of the needs in the industry as a whole. Thus, the long-term vision and policy for the industry needs to be clearly announced publicly, so that various stakeholders can reflect over it and determine what it means for themselves as individuals. Apart from publicity, such a vision needs a champion to encourage stakeholders to commit to it. Project managers have a key role in supporting such a vision, and will be an important part of the construction industry community to bring about its realization.

The management of construction projects requires knowledge of modern management as well as an understanding of the design and construction process. The role of project managers is to direct & co-ordinate the processes & resources during the life of a project to achieve the project objectives.

CHAPTER – 9

LIMITATIONS OF THE STUDY

No study is complete in itself, however good it may be and every study has some limitations. Some of the limitations which I had confronted are as follows:

- The study will be restricted to the role of project management in construction industry only.
- There may be lack of time on the part of respondents.
- There may be some bias information provided by bank professionals.
- As only single area will be surveyed or covered, it does not represent the overall view of each field.
- It is very much possible that some of the respondents may give the incorrect information.

APPENDIX

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QUESTIONNAIRE

DEAR RESPONDENTS,

I am a student doing MBA**. I am underlying a project named** ‘‘ANALYTICAL STUDY OF ROLE OF PROJECT MANAGEMENT IN CONSTRUCTION INDUSTRY”. **So by filling this questionnaire please help me in completing my research project.**

NAME (optional): ----------

GENDER: ----------

AGE: ----------

YEARS AT CURRENT POSITION: ----------

TOTAL NO. OF YEARS IN THIS ORGANIZATION: ----------

Q1. Do you think that project management play very important role in Construction Industry?

1. Yes
2. No

Q2. The project manager's leadership style should be matched to the corresponding developmental level of the project team and should move through successive steps in the following order:

1. Disciplinary, autocratic, participative
2. Staff planning, team training, performance monitoring

3. Team building, team development, responsibility assignment
4. Directing, coaching, supporting, delegating

Q3. Are you a member of the Construction Client Group?

1. Yes
2. No

Q4. Human resource administration is the primary responsibility of the:

1. Project Management Team
2. Human Resources Department
3. Executive Manager
4. Project Manager
5. Line Managers

Q5. A mandatory prerequisite for team building is:

1. Funding for staff development activities
2. Shared work ethics among team members
3. Commitment from top level management
4. Removal of troublesome individuals

Q6. Which of the following is best for handling cross-functional project needs for a large, complex project?

1. A strong matrix organization
2. A project coordinator
3. A project expeditor
4. Direct executive involvement
5. A functional organization

Q7. Project management is an effective and powerful strategy and should be implemented in construction Industry?

A. Yes
B. No

Q8. Forcing, as a means to manage conflict:

1. Exerts one's view at the potential expense of another party.
2. Emphasizes areas of agreement while avoiding points of disagreement.
3. Establishes a lose-lose situation.
4. at and c

Q9. When should the project expeditor form of organization be used?

1. When the project is extremely important to the organization.
2. When a project's cost and importance are relatively low.
3. When the project manager has a lot of responsibility and accountability.
4. When the organization's primary source of revenue is derived from projects.

Q10. Formal reporting and reviews violate the basic principles of project management because they

A. are customer based and not project based
B. do not appear on the project schedule
C. do not occur frequently enough to avoid surprises

D. must be reviewed by a central project authority before being forwarded to the customer and top management
E. none of the above

Q11. A tool which links the project roles and responsibilities to the project scope definition is called:

1. Scope Definition Matrix
2. Responsibility Assignment Matrix
3. Roles Assignment Matrix
4. Project Scope and Roles Matrix

Q12. Which of the following is not an input into organizational planning?

1. Recruitment practices
2. Project interfaces
3. Staffing requirements
4. Constraints

Q13. Planning and managing engineering, procurement construction services through project management.

A. Yes
B. No

Q14. Do you think that construction materials, elements, and modules are good maintained by project management?

A. Yes
B. No

Q15. Do you think that project management for in construction industry deliver good qualities materials to their customers?

A. Yes
B. No

**********Thanks you**********