PROJECT REPORT

ON

"STUDY OF PROJECT MANAGEMENT LIFE CYCLE AND ROLE OF PROJECT MANAGER (A CASE STUDY OF PETROLEUM REFINERY COMPLEX PROJECT, HANDLED BY RATNAGIRI REFINERY AND PETROCHEMICALS)"

SUBMITTED BY

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UNDER SUPERVISION OF:

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Submitted in partial fulfillment of the requirements for qualifying

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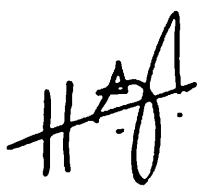

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Further, I certify that the work is based on the investigation made, data collected and analysed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfilment for the award of degree of MBA.

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Broad Vision

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CHAPTER – 1

INTRODUCTION TO THE STUDY

A Project resembles a "system" is a dynamic and complex entire, communicating as an organized unit with data streaming between the distinctive components that make the system. Utilizing a system approach for task the executives is comprehensive and scientific ways to deal with take care of the intricate issues a project will confront. Project management uses system examination as a critical thinking approach, it requires characterizing the extent of the task, separating it into its segment parts, and recognizing and assessing its issues, openings, limitations and necessities. The investigation at that point inspects the conceivable answers for improving the present circumstance, distinguishes an ideal arrangement and an activity plan; lastly, it constantly analyzes the arrangement against any adjustments in nature.

Traditional methods include a straight circumstances and logical results connections. By adopting a systems strategy, activities can see the entire complex of bidirectional interrelationships. Rather than investigating an issue regarding an info and a yield, we take a gander at the entire arrangement of sources of info, forms, yields, criticism, and controls. This bigger picture gives more valuable outcomes than customary strategies and enables the Project to consider change to be a nonstop procedure.

Project management is the procedure and action of arranging, sorting out, persuading, and controlling assets to accomplish explicit objectives. A project is an impermanent project intended to create a special item, administration or result with a characterized start and end (for the most part time-obliged, and frequently compelled by financing or expectations), embraced to meet one of a kind objectives and objectives, typically to achieve gainful change or included esteem. The brief idea of projects remains conversely with the same old thing (or projects), which are redundant, lasting, or semi-perpetual utilitarian exercises to deliver items or administrations. Practically speaking, the administration of these two systems is regularly unique, and accordingly requires the improvement of distinct technical skills and management strategies.

The essential challenge of project management is to accomplish the majority of the project objectives and targets while respecting the biased requirements. The essential imperatives are extension, time, quality and spending plan. The optional — and progressively aggressive— challenge is to advance the allotment of fundamental information sources and coordinate them to meet pre-characterized targets.

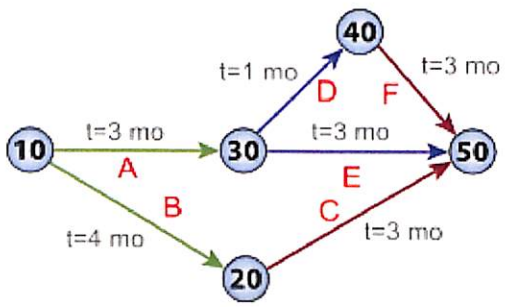
History:

The essential challenge of project management is to accomplish the majority of the project objectives and targets while respecting the biased requirements. The essential imperatives are extension, time, quality and spending plan. The optional — and progressively aggressive—challenge is to advance the allotment of project management tools and coordinate them to meet pre-characterized target

Henry Gantt (1861–1919), the father of planning and control techniques

As an order, project management developed from a few fields of use including common IT, building, and overwhelming guard movement. Two ancestors of project the executives are Henry Gantt, called the dad of arranging and control strategies, who is celebrated for his utilization of the Gantt graph as a project the board device (then again Harmonogram first proposed by Karol Adamiecki); and Henri Fayol for his formation of the five management functions that structure the establishment of the assemblage of learning related with project and program the executives. Both Gantt and Fayol were understudies of Frederick Winslow Taylor's hypotheses of logical administration. His work is the herald to present day project the board devices including work breakdown structure (WBS) and resource allocation.

The 1950s denoted the start of the advanced project the executive's period where center building fields meet up to fill in as one. Project the board ended up perceived as a particular control emerging from the administration discipline with building model. In the United States, preceding the 1950s, projects were overseen on an impromptu premise, utilizing for the most part Gantt outlines and casual systems and apparatuses. Around then, two numerical project booking models were created. The "Basic Path Method" (CPM) was created as a joint endeavor between DuPont Corporation and Remington Rand Corporation for overseeing plant support projects. What's more, the "Program Evaluation and Review Technique" or PERT, was developed by Booz Allen Hamilton as a feature of the United States Navy's (related to the Lockheed Corporation) rocket submarine program; PERT and CPM are fundamentally the same as in their methodology yet at the same time present a few contrasts. CPM is utilized for projects that expect deterministic movement times; the occasions at which every action will be completed are known. Saucy, then again, takes into consideration stochastic action times; the occasions at which every movement will be completed are unsure or fluctuated. As a result of this center contrast, CPM and PERT are utilized in various settings. These numerical methods rapidly spread into numerous private endeavors.



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

In the meantime, as project-scheduling models were being created, innovation for project cost evaluating, cost the executives, and designing financial matters was developing, with spearheading work by Hans Lang and others. In 1956, the American Association of Cost Engineers (presently AACE International; the Association for the Advancement of Cost Engineering) was framed by early professionals of project the board and the related claims to fame of arranging and booking, cost assessing, and cost/plan control (project control). AACE proceeded with its spearheading work and in 2006 discharged the primary coordinated procedure for portfolio, program and project the board (Total Cost Management system).

The International Project Management Association (IPMA) was established in Europe in 1967, as an alliance of a few national project the executive's affiliations. IPMA keeps up its government structure today and now incorporates part relationship on each mainland aside from Antarctica. IPMA offers a Four Level Certification program dependent on the IPMA Competence Baseline (ICB). The ICB covers specialized, relevant, and conduct abilities.

In 1969, the Project Management Institute (PMI) was shaped in the USA. PMI distributes A Guide to the Project Management Body of Knowledge (PMBOK Guide), which depicts project the executives rehearses that are basic to "most activities, more often than not." PMI likewise offers different accreditations.

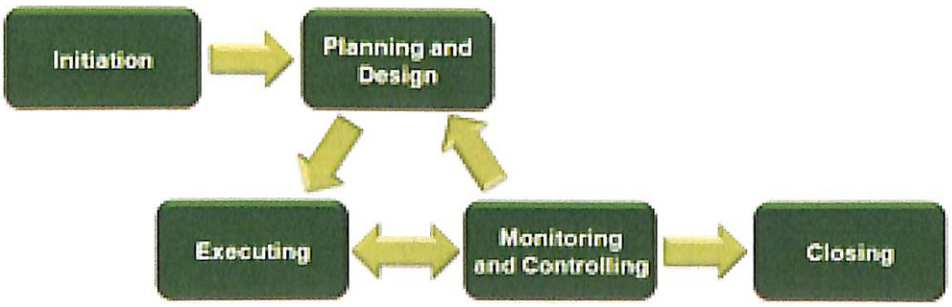
Approaches:

There are various ways to deal with overseeing project exercises including lean, iterative, gradual, and staged methodologies.

Notwithstanding the system utilized, cautious thought must be given to the general project destinations, timetable, and cost, just as the jobs and duties everything being equal and partners.

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):



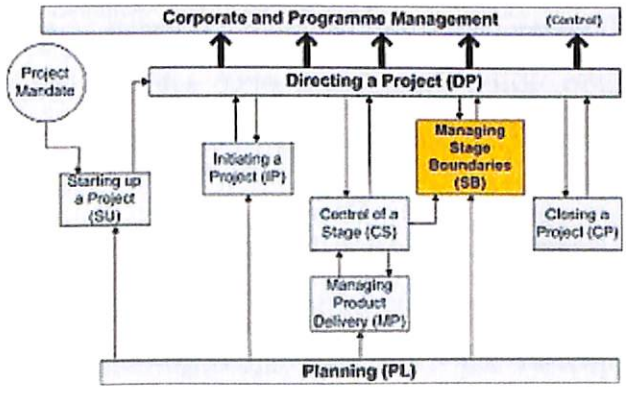
Typical development phases of an engineering project

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

Not all projects will have each stage, as projects can be ended before they achieve finishing. A few projects don't pursue an organized arranging or potentially observing procedure. What's more, a few projects will experience stages 2, 3 and 4 on multiple times.

Many industries use varieties of these project stages. For instance, when chipping away at a physical structure and IT, anticipates will normally advance through stages like pre-arranging, calculated plan, schematic structure, plan improvement, IT illustrations (or contract archives), and IT organization. In programming improvement, this methodology is frequently known as the cascade show, i.e., one arrangement of projects after another in direct grouping. In programming advancement numerous associations have adjusted the Rational Unified Process (RUP) to fit this procedure, in spite of the fact that RUP does not require or unequivocally suggest this training. Cascade improvement functions admirably for little, all around characterized projects, yet frequently bombs in bigger projects of vague and equivocal nature. The Cone of Uncertainty clarifies a portion of this as the arranging made on the underlying period of the project experiences a high level of vulnerability. This turns out to be particularly valid as programming improvement is regularly the acknowledgment of another or novel item. In projects where prerequisites have not been finished and can change, necessities the board is utilized to build up an exact and complete meaning of the conduct of programming that can fill in as the reason for programming advancement. While the terms may contrast from industry to industry, the real stages ordinarily pursue basic strides to critical thinking—"characterizing the issue, gauging alternatives, picking a way, usage and assessment.

"PRINCE2



The PRINCE2 process model:

PRINCE2 is an organized way to deal with project the executives discharged in 1996 as a generic project management method. It consolidates the first PROMPT procedure (which advanced into the PRINCE strategy) with IBM's MITP (dealing with the usage of the total project) system. PRINCE2 gives a technique to overseeing projects inside an obviously characterized structure.

PRINCE2 centers around the definition and conveyance of items, specifically their quality prerequisites. All things considered, it characterizes an effective project as being yield situated (not action or errand arranged) through making a concurred set of products that characterize the extent of the project and gives the premise to arranging and control, that is, the means by which at that point to facilitate individuals and exercises, how to structure and administer item conveyance, and what to do if items and along these lines the extent of the project must be balanced on the off chance that it doesn't create as arranged.

In the strategy, each procedure is determined with its key data sources and yields and with explicit objectives and exercises to be done to convey a project's results as characterized by its Business Case. This takes into account consistent appraisal and alteration when deviation from the Business Case is required. PRINCE2 gives a typical language to all members in the project. The administration system of PRINCE2 – its jobs and duties – are completely portrayed and expect fitting to suit the intricacy of the project and aptitudes of the association.

Critical chain project management:

Critical chain project management (CCPM) is a technique for arranging and overseeing project execution intended to manage vulnerabilities inalienable in overseeing projects, while contemplating constrained accessibility of assets (physical, human abilities, just as the executives and bolster limit) expected to execute projects.

CCPM is an utilization of the theory of constraints (TOC) to projects. The objective is to build the stream of projects in an association (throughput). Applying the initial three of the five centering projects of TOC, the system requirement for all activities is distinguished similar to the assets. To misuse the imperative, assignments on the basic chain are given need over every single other action. At last, projects are arranged and figured out how to guarantee

that the assets are prepared when the basic chain assignments must begin, subjecting every other asset to the basic chain.

The project plan ought to regularly experience asset leveling, and the longest grouping of asset compelled projects ought to be recognized as the basic chain. Sometimes, for example, overseeing contracted sub-projects, it is fitting to utilize a rearranged methodology without asset leveling

In multi-project situations, asset leveling ought to be performed crosswise over activities. Be that as it may, usually enough to distinguish (or basically select) a solitary "drum". The drum can be an asset that goes about as an imperative crosswise over activities, which are amazed dependent on the accessibility of that solitary asset.

One can likewise utilize a "virtual drum" by choosing an project or gathering of errands (ordinarily combination focuses) and restricting the quantity of projects in execution at that arrange.

Event chain methodology:

Event chain methodology is another method that complements critical path method and critical chain project management methodologies. Event chain methodology is an uncertainty modeling and schedule network analysis technique that is focused on identifying and managing events and event chains that affect project schedules. Event chain methodology helps to mitigate the negative impact of psychological heuristics and biases, as well as to allow for easy modeling of uncertainties in the project schedules. Event chain methodology is based on the following principles.

- **Probabilistic moment of risk:** An activity (project) in most real-life processes is not a continuous uniform process. Projects are affected by external events, which can occur at some point in the middle of the project.
- **Event chains:** Events can cause other events, which will create event chains. These event chains can significantly affect the course of the project. Quantitative analysis is used to determine a cumulative effect of these event chains on the project schedule.
- **Critical events or event chains:** The single events or the event chains that have the most potential to affect the projects are the "critical events" or "critical chains of events." They can be determined by the analysis.
- **Project tracking with events:** Even if a project is partially completed and data about the project duration, cost, and events occurred is available, it is still possible to refine

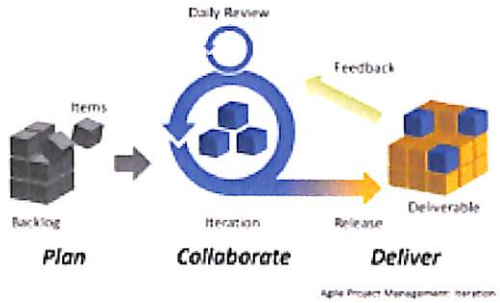
information about future potential events and helps to forecast future project performance.

- **Event chain visualization:** Events and event chains can be visualized using event chain diagrams on a Gantt chart.

Process-based management:

Also furthering the concept of project control is the incorporation of process-based management. This area has been driven by the use of Maturity models such as the CMMI (capability maturity model integration; see this example of a predecessor) and ISO/IEC15504(SPICE – software process improvement and capability estimation).

Agile project management:



The iteration cycle in agile project management

Agile project management approaches, in view of the standards of human connection the executives, are established on a procedure perspective on human joint effort. It is "most ordinarily utilized in programming, site, and innovation, inventive and showcasing businesses." This stands out forcefully from the customary methodology. In the nimble programming improvement or adaptable item advancement approach, the project is viewed as a progression of moderately little projects imagined and executed to end as the circumstance requests in a versatile way, as opposed to as a totally pre-arranged procedure. Backers of this system guarantee that:

•It is the most reliable project the board method since it includes visit testing of the project a work in progress.

•It is the main method in which the customer will be effectively associated with the project improvement.

•The just disservice with this strategy is that it ought to be utilized just if the customer has enough time to be effectively engaged with the project from time to time.

Examples of Agile Project Management tools and techniques include:

- Scrum (software development) - A holistic approach to development that focuses on iterative goals set by the Product Owner through a backlog, which is developed by the Delivery Team through the facilitation of the Scrum Master.
- Extreme Programming (XP) - Also called Pair Programming this method uses small groups and has a highly prescriptive Test Driven Development (TDD) model.
- Extreme Manufacturing (XM) - An agile methodology based on Scrum, Kanban and Kaizen that facilitates rapid engineering and prototyping.
- Crystal Clear (software development) - An agile or lightweight methodology that focuses on colocation and osmotic communication.
- **Kanban** - A lean system for process improvement that is frequently used to manage WIP within agile projects. The Kanban process improvement system has been specifically applied to software development, as Kanban (development).

Lean project management:

Lean project management uses the principles from lean manufacturing to focus on delivering value with less waste and reduced time.

Extreme project management

Planning and feedback loops in Extreme programming (XP) with the time spans of the various circles.

In basic investigations of project the executives it has been noticed that few PERT based models are not appropriate for the multi-project organization condition of today. The vast majority of them are gone for substantial scale, once, non-routine projects, and at present a wide range of the executives are communicated regarding projects.

Utilizing complex models for "projects" (or rather "assignments") crossing half a month has been demonstrated to cause pointless expenses and low mobility in a few cases. The

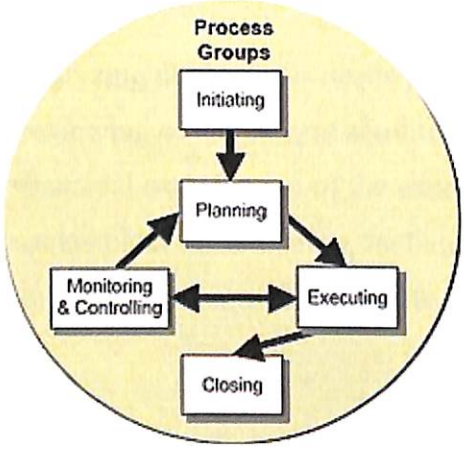
speculation of Extreme Programming to different sorts of projects is outrageous project the board, which might be utilized in blend with the procedure demonstrating and the executive's standards of human communication the board.

Benefits realization management:

Benefits realization management (BRM) upgrades typical project the executives strategies through an attention on results (the advantages) of a project as opposed to items or yields, and afterward estimating how much that is going on to keep an project on track. This can decrease the danger of a finished project being a disappointment by conveying settled upon prerequisites/yields however neglecting to convey the advantages of those necessities.

A case of conveying a project to prerequisites may concur convey a PC system that will procedure staff information and oversee finance, occasion and staff faculty records. Under BRM the assertion may be to accomplish a predetermined decrease in staff hours required to process and keep up staff information.

Processes:



The project development stages

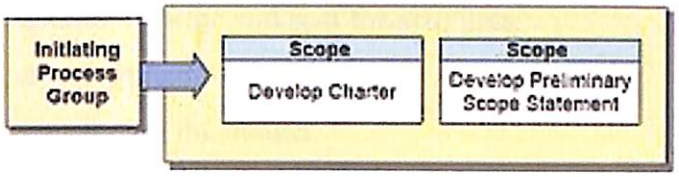
Traditionally, project management includes a number of elements: four to five process groups, and a control system. Regardless of the methodology or terminology used, the same basic project management processes will be used. Major process groups generally include:

- Initiation
- Planning or design
- Production or execution
- Monitoring and controlling

- Closing

In project environments with a significant exploratory element (e.g., research and development), these stages may be supplemented with decision points (go/no go decisions) at which the project's continuation is debated and decided. An example is the Phase–gate model.

Initiating



Initiating process group processes

The starting procedures decide the nature and extent of the **project**. On the off chance that this stage isn't performed well, it is improbable that the **project** will be fruitful in addressing the business' needs. The key **project** controls required here are a comprehension of the business condition and ensuring that every important control are joined into the **project**. Any lacks ought to be accounted for and a proposal ought to be made to fix them.

The starting stage ought to incorporate an arrangement that envelops the accompanying zones:

•analyzing the business needs/prerequisites in quantifiable objectives

•reviewing of the present activities

•financial examination of the expenses and advantages including a financial plan

•stakeholder investigation, including clients, and bolster work force for the project

•project sanction including costs, projects, expectations, and timetable

Planning and design:

After the commencement organizes, the project is wanted to a proper dimension of detail (see case of a stream outline). The primary reason for existing is to design time, cost and assets satisfactorily to appraise the work required and to viably oversee chance amid project execution. Likewise, with the Initiation procedure gathering, an inability to enough arrangement significantly decreases the project's odds of effectively achieving its objectives.

Project planning generally consists of:

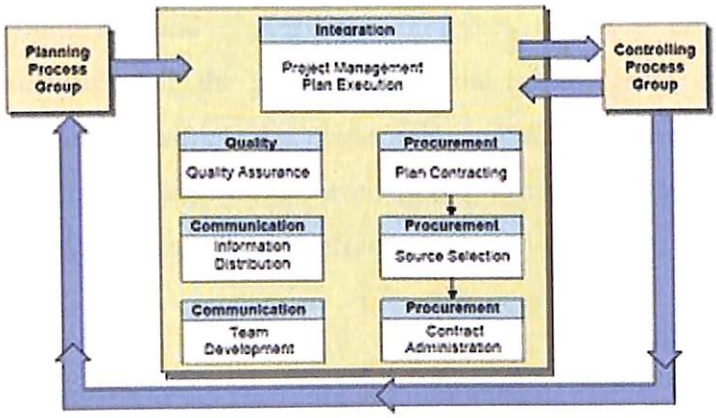
- determining how to plan (e.g. by level of detail or rolling wave);

- developing the scope statement;
- selecting the planning team;
- identifying deliverables and creating the work breakdown structure;
- identifying the activities needed to complete those deliverables and networking the activities in their logical sequence;
- estimating the resource requirements for the activities;
- estimating time and cost for activities;
- developing the schedule;
- developing the budget;
- risk planning;
- gaining formal approval to begin work.

Additional processes, for example, getting ready for correspondences and for extension the executives, distinguishing jobs and duties, figuring out what to buy for the project and holding a commencement meeting are additionally commonly fitting.

For new item improvement projects, theoretical structure of the project of the last item might be performed simultaneous with the project arranging exercises, and may advise the arranging group while recognizing expectations and arranging exercises.

Executing



Executing process group processes

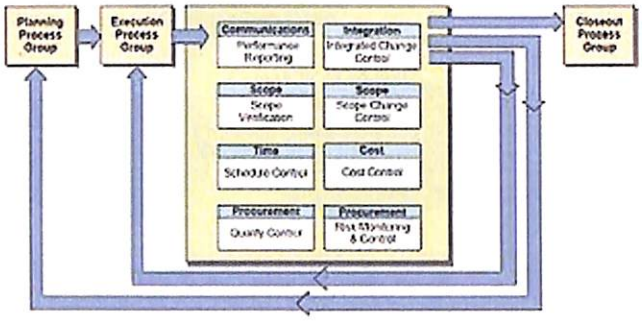
Executing consists of the processes used to complete the work defined in the project plan to accomplish the project's requirements. Execution process involves coordinating people and resources, as well as integrating and performing the activities of the project in accordance

with the project management plan. The deliverables are produced as outputs from the processes performed as defined in the project management plan and other systems that might be applicable to the type of project at hand.

Execution process group include:

- Direct and manage project execution
- Quality assurance of deliverables
- Acquire, develop and manage Project team
- Distribute information
- Manage stakeholder expectations
- Conduct procurement
- Test the deliverables against the initial design

Monitoring and Controlling



Monitoring and controlling process group processes

Monitoring and controlling comprises of those procedures performed to watch project execution with the goal that potential issues can be distinguished in a convenient way and remedial move can be made, when vital, to control the execution of the project. The key advantage is that project execution is watched and estimated normally to distinguish changes from the project the executives plan.

Monitoring and controlling incorporates:

•Measuring the continuous project exercises ('where we are');

•Monitoring the project factors (cost, exertion, scope, and so forth.) against the project the executives plan and the project execution standard (where we ought to be);

•Identify restorative activities to address issues and dangers appropriately (How would we be able to jump on track once more);

•Influencing the elements that could go around incorporated change control so just endorsed changes are executed.

In multi-stage extends, the observing and control process additionally gives criticism between project stages, so as to execute restorative or preventive activities to carry the project into consistence with the project the board plan.

Project upkeep is a continuous procedure, and it incorporates:

•Continuing support of end-users

•Correction of mistakes

•Updates of the product after some time

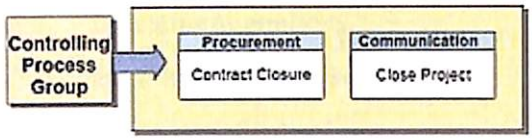
Monitoring and controlling cycle

In this stage, inspectors should focus on how successfully and rapidly client issues are settled.

Through the span of any IT anticipates, the work degree may change. Change is a typical and expected piece of the IT procedure. Changes can be the consequence of fundamental structure alterations, varying site conditions, material accessibility, temporary worker asked for changes, esteem designing and effects from outsiders, to give some examples. Past executing the adjustment in the field, the change regularly should be recorded to indicate what was really developed. This is alluded to as change the board. Henceforth, the proprietor more often than not requires a last record to demonstrate all progressions or, all the more explicitly, any change that alters the unmistakable segments of the completed work. The record is made on the agreement reports – as a rule, however not really constrained to, the structure illustrations. The finished result of this exertion is the thing that the business terms as-assembled illustrations, or all the more basically, "as manufactured." The prerequisite for giving them is a standard in IT contracts.

At the point when changes are acquainted with the project, the practicality of the project must be re-surveyed. It is essential not to dismiss the underlying objectives and focuses of the activities. At the point when the progressions gather, the estimated outcome may not legitimize the first proposed interest in the project.

Closing



Closing process group processes.

Closing includes the formal acknowledgment of the project and the consummation thereof. Managerial exercises incorporate the filing of the records and archiving exercises learned.

This stage comprises of:

•Contract conclusion: Complete and settle each agreement (counting the goals of any open things) and close each agreement relevant to the project or project stage.

•Project close: Finalize all exercises over the majority of the procedure gatherings to formally close the project or a project stage

Project controlling and project control systems

Project controlling ought to be set up as an autonomous capacity in project the board. It executes confirmation and controlling capacity amid the handling of a project so as to strengthen the characterized execution and formal objectives. The projects of project controlling are moreover:

•the formation of foundation for the supply of the correct data and its refresh

•the foundation of an approach to convey differences of project parameters

•the improvement of project data innovation dependent on an intranet or the assurance of a project key act list system (KPI)

•divergence investigations and age of proposition for potential project guidelines

•the foundation of strategies to achieve a fitting project structure, project work process association, project control and administration

•creation of straightforwardness among the project parameters

Fulfillment and implementation of these projects can be achieved by applying specific methods and instruments of project controlling. The following methods of project controlling can be applied:

- investment analysis
- cost–benefit analyses
- value benefit Analysis
- expert surveys
- simulation calculations
- risk-profile analyses
- surcharge calculations
- milestone trend analysis
- cost trend analysis
- target/actual-comparison

Project control is that component of a project that keeps it on-track, on-time and inside spending plan. Project control starts right off the bat in the project with arranging and finishes late in the project with post-execution audit, having a careful association of each progression simultaneously. Each project ought to be surveyed for the suitable dimension of control required: a lot of control is too tedious, too little control is hazardous. On the off chance that project control isn't actualized effectively, the expense to the business ought to be elucidated as far as blunders, fixes, and extra review charges.

Control systems are required for cost, chance, quality, correspondence, time, change, obtainment, and HR. What's more, examiners ought to think about how vital the projects are to the budget reports, how dependent the partners are on controls, and what number of controls exist. Inspectors should survey the improvement procedure and strategies for how they are actualized. The procedure of improvement and the nature of the last item may likewise be surveyed if necessary or asked. A business may need the inspecting firm to be required all through the procedure to get issues prior on with the goal that they can be fixed all the more effectively. An evaluator can fill in as a controls specialist as a feature of the improvement group or as a free inspector as a major aspect of a review.

Businesses sometimes use formal systems development processes. These help assure that systems are developed successfully. A formal process is more effective in creating strong controls, and auditors should review this process to confirm that it is well designed and is followed in practice. A good formal systems development plan outlines:

- A strategy to align development with the organization's broader objectives
- Standards for new systems
- Project management policies for timing and budgeting
- Procedures describing the process
- Evaluation of quality of change

Project managers:

A project manager is an expert in the field of project the board. Project supervisors can have the obligation of the arranging, execution, and shutting of any project, normally identifying with IT industry, designing, engineering, processing, and media communications. Numerous different fields' underway building and configuration designing and substantial modern have project supervisors.

A project director is the individual responsible for achieving the expressed project destinations. Key project the board obligations incorporate making clear and achievable project targets, fabricating the project prerequisites, and dealing with the triple imperative for activities, which is cost, time, and extension.

A project management is frequently a customer delegate and needs to decide and actualize the accurate needs of the customer, in view of learning of the firm they are speaking to. The capacity to adjust to the different interior techniques of the contracting party, and to shape close connections with the named agents, is fundamental in guaranteeing that the key issues of cost, time, quality or more all, customer fulfillment, can be figured it out.

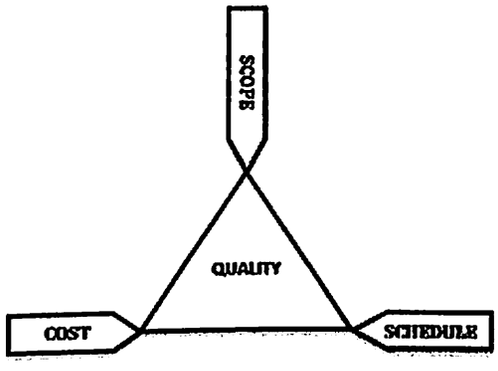
Project management types

While Project the executives, without anyone else's input, is a control that can apply to any extend planned to convey answers for any reason, usually custom-made to oblige the particular and repeatable needs of various and very specific enterprises. For instance, the IT business, which centers around the conveyance of things like structures, streets, and

scaffolds, has built up its own particular type of project the board that it alludes to as IT anticipate the executives and for which project supervisors can wind up prepared and guaranteed in. The Information innovation industry has additionally advanced to build up its very own type of Project the executives that is alluded to as IT Project the board and which has practical experience in the conveyance of specialized resources and administrations that are required to go through different lifecycle stages, for example, arranging, structure, improvement, testing, and sending. Biotechnology project the executives centers around the complexities of biotechnology innovative work.

For each sort of project, the executives, project managements create and use repeatable layouts that are explicit to the business they're managing. This permits project intends to end up exceptionally exhaustive and very repeatable, with the particular goal to build quality, lower conveyance expenses, and lower time to convey project results.

Project management triangle



The project management triangle

Like any human endeavor, projects should be performed and conveyed under specific limitations. Customarily, these requirements have been recorded as "scope," "time," and "cost". These are additionally alluded to as the "project the executives triangle", where each side speaks to an imperative. One side of the triangle can't be changed without influencing the others. A further refinement of the imperatives isolates item "quality" or "execution" from extension and transforms quality into a fourth limitation.

The time requirement alludes to the measure of time accessible to finish a project. The cost imperative alludes to the planned sum accessible for the project. The degree requirement alludes to what must be done to deliver the project's final product. These three imperatives

are regularly contending limitations: expanded extension normally implies expanded time and expanded cost, a tight time requirement could mean expanded expenses and decreased degree, and a tight spending plan could mean expanded time and diminished degree.

The control of project the board is tied in with giving the apparatuses and systems that empower the project group (not simply the project management) to sort out their work to meet these limitations.

Work breakdown structure

The work breakdown structure (WBS) is a tree structure that demonstrates a subdivision of exertion required to accomplish a goal—for instance a program, project, and contract. The WBS might be equipment, item, administration, or process-situated (see a model in a NASA detailing structure (2001)).

A WBS can be created by beginning with the end objective and progressively subdividing it into sensible parts regarding size, length, and duty (e.g., systems, subsystems, segments, projects, sub-errands, and work bundles), which incorporate all means important to accomplish the objective. The work breakdown structure gives a typical system to the normal improvement of the general arranging and control of an agreement and is the reason for partitioning work into quantifiable additions from which the announcement of work can be created and specialized, timetable, cost, and work hour detailing can be built up.

Project management system

The program (investment) life cycle incorporates the project the executives and system improvement life cycles with the exercises straightforwardly connected with system organization and project. By structure, system project the executives and related exercises happen after the project is finished and are not recorded inside this guide (see a case of an IT anticipate the executive's system).

For instance, see figure, in the US United States Department of Veterans Affairs (VA) the program the executive's life cycle is delineated and depict in the general VA IT Project Management System to address the coordination of OMB Exhibit 300 project (project) the board exercises and the general project planning process. The VA IT Project Management System outline shows Milestone 4 which happens following the arrangement of a system and the end of the project. The project shutting stage exercises at the VA proceeds through system arrangement and into system project to illustrate and portraying the system exercises the VA

thinks about piece of the project. The figure represents the activities and related antiques of the VA IT Project and Program Management process.

International standards

There have been several attempts to develop project management standards, such as:

- Capability Maturity Model from the Software Engineering Institute.
- GAPPS, Global Alliance for Project Performance Standards – an open source standard describing COMPETENCIES for project and program managers.
- A Guide to the Project Management Body of Knowledge from the Project Management Institute (PMI)
- HERMES method, Swiss general project management method, selected for use in Luxembourg and international organizations.
- The ISO standards ISO 9000, a family of standards for quality management systems, and the ISO 10006:2003, for Quality management systems and guidelines for quality management in projects.
- PRINCE2, Projects IN Controlled Environments.
- Association for Project Management Body of Knowledge
- Team Software Process (TSP) from the Software Engineering Institute.
- Total Cost Management System, AACE International's Methodology for Integrated Portfolio, Program and Project Management.
- V-Model, an original systems development method.
- The Logical system approach, which is popular in international development organizations.
- IAPPM, The International Association of Project & Program Management, guide to project auditing and rescuing troubled projects.

Project portfolio management

An expanding number of associations are utilizing, what is alluded to as, project portfolio the executives (PPM) as a method for choosing the correct projects and after that utilizing project the board strategies as the methods for conveying the results as advantages to the performing private or not-revenue driven association.

Project management software

Project management software has an ability to help plan, compose, and oversee asset pools and create asset gauges. Depending the advancement of the product, asset including estimation and arranging, booking, cost control and spending the board, asset distribution, joint effort programming, correspondence, basic leadership, quality administration and documentation or organization systems. Today, various PC-based project the executives programming bundles exist, and they are finding their way into pretty much every sort of business. Programming may run from the top of the line Microsoft Project to a basic spreadsheet in Microsoft Excel.

Virtual project management

Virtual project management (VPM) is the board of a project done by a virtual group, however it once in a while may allude to a project actualizing a virtual domain. It is noticed that dealing with a virtual project is in a general sense not the same as overseeing customary projects, joining worries of working from home and worldwide joint effort (culture, time zones, and language).

PLM - ROLES & RESPONSIBILITIES:

ROLE	PROFILE	PRIMARY PROJECT DUTIES	OTHER PROJECT RESPONSIBILITIES
Project Sponsor	Member of the Executive Committee	• Recommends and advocates project to organization • Resolves funding, policy and/or resource issues	• Reviews and approves Project Proposal and Project Charter • Monitors and addresses project status and issues with Service Owner and/or Project Manager, as needed • Assures completion of project scope on time and within budget
Service Owner	An individual, multiple individuals, a	• Delivers and/or utilizes the expected business benefit(s)	• Develop Project Proposal • Responsible for overall delivery of Business

	service provider and/or a department		Requirements • Responsible for overall delivery of User Acceptance Test (UAT) Plan • Responsible for Project Sign-off • Responsible for overall delivery of the Training Plan • Approves Project Proposal and Project Charter • Validates business objectives and project requirements • Manages service unit to deliver service benefits • Provides Subject Matter Experts to project
Project Manager	A single individual with knowledge and skills in Project Management; can be from IT or the Functional side	• Reports project progress, plans and issues to Project Sponsor & Service Owner • Manages all day-to- day project activities. • Responsible for overall project delivery and closure	• May develop Project Proposal • Develops Project Charter • Develops and manages/updates Project Plan and all related project documentation and reports • Determines and manages resource requirements • Manages project budget • Develops Project Close Checklist • Responsible for Project Sign-off • Addresses and resolves issues with project team; escalates issues to Project Sponsor and Service Owner as needed

			• Identifies and secures the necessary technical skills and resources for the project • Plan, schedule, and manage Project Lifecycle Management activities • Tracks, manages, and reports risks, issues, and project status information
Subject Matter expert (SME)	An individual from Functional side and/or IT	• Provides knowledge and/or skills of a particular domain critical to the management, development and/or completion of the project	Collaborates with project team members • Communicates project status and issues to the Service Owner and Project Manager • Assists with clarification of project objectives • Works with Project Manager to define the project's deliverables and requirements
Project Team	Individuals from both Functional site and IT	Delivers project requirements within scope and schedule	• Communicates project status and issues to Project Manager. • Assists with clarification of project objectives • Responsible for Project deliverables.
Business Analyst	An individual from IT	Delivers project requirements within scope and schedule	• Responsible for Business Requirements document. • Assists the Technical team with clarification of questions that arise regarding Requirements. • Acts as resource to QA analyst for information to create Functional Test Plan.

QA Analyst	An individual from IT	• Ensures quality assurance testing •	• Responsible for quality assurance testing and defect reporting. • Responsible for Functional Test plan and Defect Log. • Document Test results.
Technical Lead	An individual from IT	Oversees the technical development efforts.	• Responsible for Technical Requirements, Unit Test plan, Production Readiness Checklist and Technical Design, System/Data Architecture (if applicable). • Provides programming assistance on Requirements. • Responsible for the underlying architecture, as well as for overseeing the work being done by other developers working on the project.

LARGE PROJECT MANAGEMENT IN RRPCL

To accomplish this, project leaders relied on tested engineering concepts and organizational innovations.

• The amphitheater was divided into sectors, assigned to different contractors and supervised by teams of civil engineers, who shared best practices and guaranteed results.

• Contractors followed prescribed practices for simple designs, to deliver against cost and time goals. Roman engineers set a very high bar for innovations.

• Engineers managed the organizational and logistical complexities in the design phase. For example, working space on site was maximized and many activities were outsourced to yards where partly assembled blocks were prepared.

Today, large projects in the RRPCL face similarly daunting challenges as they become increasingly complex and technologically demanding. Schedules and budgets are tight, safety is crucial and every project faces a network of stakeholders concerned about its impact on the environment and communities. Even so, today's project managers still rely on concepts that the builders of the Colosseum, as well as other large projects of antiquity, such as the Pyramids of Giza and the Great Wall of China, would recognize: work breakdown plans, design-to-cost and make-or-buy decisions.

Our experience working with projects in oil and gas suggests that while best practices and experienced talent are essential, they are not enough. Successful managers of large projects follow a coherent, consistent reference framework that guides their decisions and processes. These frameworks include:

- Formalized project phases and checkpoints
- Clear accountabilities within an integrated project team
- Checks and balances between central functions and project teams
- Continuous review to measure project value and monitor risk

Successful companies also continuously improve their general project management skills, as well as skills specific to oil and gas. A shortage of technical talent in the industry—destined to become more acute over the next seven years as a generation of experienced engineers retires—complicates the problem. Even so, as they approach projects of greater complexity and scope, companies cannot afford to bring second-rate talent to the game.

The challenge of large projects

As activity ramps up and more RRPCL production moves to frontier and unconventional resource areas, projects are becoming larger and more complex. These include an offshore facility in the Arctic, budgeted at more than $3 billion, and an $8.4 billion petrochemical complex spread across 45 kilometers in South America. Such projects involve many stakeholders, including shareholders, local authorities and regulators, and environmental and community advocates. Schedules are compressing, too: For one oil company, more than 90% of its field discoveries from 2009 to 2011 are due online in less than eight years.

Of course, no company manages only one project at a time. Firms' portfolios may include hundreds of complex projects, which they prioritize not only on financial goals and risks (including execution, commercial, health-safety- environmental [HSE] and reservoir risks),

but also increasingly based on the availability of scarce resources like engineering talent. Some are building up their internal engineering staffs by as much as 80% to effectively manage the many contractors and suppliers on each project.

Scoping projects accurately is an important skill. For small companies, delivery of a smaller, technically complex project may be as demanding as larger projects are for large companies. However, projects that look very big (for example, upstream shale production projects) may in fact be a collection of smaller projects. Companies that approach their unconventional strategy in the same way they would approach a large, complex project run the risk of over-engineering their upstream production if they treat many small projects like a large one.

A framework to meet these challenges

Following a robust project reference framework can help avoid cost and schedule overruns. Leading companies gather technical input early, incorporating it into the project's framework to make sure it aligns with the organization's larger goals. They also engage stakeholders throughout the life of the project, from architecture and design through execution.

Formal project phases and checkpoints. Decision checkpoints, or stage gates, mark the end of formal project phases. To move from one stage to the next, managers, coordinating with stakeholders, have to decide if they are ready to move on.

To keep these stage gates relevant, leading oil and gas companies and the contractors who work with them continuously revise their stage-gate frameworks to align them with evolving market conditions. They anticipate the needs of key stakeholders as they plan the steps toward completion. For example, it may make sense to define local content requirements well ahead of fron-tend engineering design.

Leaders also work to control costs in the early architectural and planning phases, when key decisions are made. Typically, 80% to 90% of costs are incurred in later phases.

Well-managed large projects balance simplicity and flexibility with respect for rigor at checkpoints. While it's important to keep project teams on task and schedule, processes that are not easily changeable can place unnecessary hurdles in a project's path.

Clear accountability in an integrated project team. Successful projects require effective decision making. Our analysis of projects that run late or over budget finds the top reason is

"not making good decisions with the right people and not making them happen." This may include failing to invite technical input at the concept phase, disregarding stakeholders or misaligning decision makers' incentives and project goals.

An integrated project team with clear roles and responsibilities, and a shared interest in the project's objectives, helps ensure accountability. In some organizations where decisions and accountability are not clearly allocated to project teams, functional experts may wind up making key decisions. That can create bottlenecks and delays, as decisions percolate up to functional managers with wide-ranging agendas. A diagnostic survey of decision quality, speed, yield and effort can identify areas that need to be changed.

Checks and balances between central functions and project teams. Corporate functions empower project teams by staffing the best people, defining processes and ensuring control of managerial and technical activities. In turn, project teams must be able to make the decisions for the projects' deliverables. Projects are more likely to succeed when the functional experts have an advisory rather than a decision-making role in assurance, control and steering activities.

Continuous review to measure project value and monitor risk. Successful organizations assess projects continually, not only at formal checkpoints and stage gates, to ensure they are on track to add value. Ideally, senior managers who are not part of the project team give a "cold eye" review of the project, costs and progress. They report to decision makers on the project's state of readiness and suggest ways to improve value or cut costs. Comparing the project with others in the portfolio helps prioritize resources in line with company goals. Sometimes the reviewer's analysis will lead the organization to modify a project or change its delivery date.

Competency development across capabilities

A good framework is essential, but it's not enough to satisfy the demands of major projects in oil and gas. Companies must also continuously improve their general project management skills, balancing trade-offs among costs, schedules, technical demands and stakeholder requirements while also coordinating between the functional center and project teams.

In oil and gas, some skills areas are particularly important:

Local content. Local content rules, which require large project owners to source some goods and services from the host country, are critical in oil and gas projects. Project managers must understand the requirements and plan accordingly, taking into account the relevant risks. In some cases, services are not available from local sources, or local providers are not able to deliver against objectives. Failing to plan for these contingencies can delay a project and send it over budget.

Successful project managers seek to understand the host country's goals. They engage policy makers to create long-term strategies that go far beyond their immediate supplier needs, promoting best practices that help local industries meet global standards. A local network of robust suppliers not only benefits the project, but also the local economy.

Engineering. Over-engineering can contribute to unnecessary complexity in major projects, while simplicity in design can ensure efficient and competitive solutions. This is an ancient principle: Even the engineers supervising the construction of the Colosseum demanded simple, proven construction techniques, setting a high bar of proof for any deviation that strayed from their templates. Today's oil and gas projects can benefit from the same principles. At one project, engineers reviewed 71 complex engineering actions, from rotating machinery to the layout of pipes, to find simplifications that saved between 1% and 2.5% of costs.

International oil companies (IOCs) and oil field service companies are building up their internal engineering capabilities to ensure quality among their contractors. This enables them to better manage projects for national oil companies (NOCs) and other resource holders (see the Bain Brief "National oil companies reshape the playing field" for more on this trend).

Procurement. Many oil companies are rationalizing their procurement relationships, moving from many shallow relationships to fewer but deeper ones. For example, some IOCs are trying to spend half their procurement budget with their top 40 vendors, whereas a few years ago that share might have gone to more than 250 companies. Taken as a whole, these improvements could return 5% on cost efficiencies.

Procurement trends follow cycles, however, and the push for local content requirements could fragment the procurement pool again. If local content efforts are to succeed over the long term, NOCs and other oil and gas companies will have to work with local suppliers to build a strong foundation of support services.

Better tools can also improve procurement. One company redefined its contract work breakdown into related contracting modules, allowing it to reassign some contractor jobs and save 13% on goods and services. Global companies should also strive to manage suppliers at the global level and ensure they're working with the supplier's A team, which adds value (and reduces frustration).

Risk and opportunity. Managing risk and opportunity is a continuous process that requires companies to consider not only the most common risks, but also to have experience mitigating unexpected events. In the oil and gas industry, it's never been more important to manage health, safety and environmental risks, given the rising complexity of operations and the close scrutiny by regulators and stakeholders. Risk identification and evaluation is a continuous process throughout a project's life cycle and across the project portfolio, taking a systemic perspective that considers projects, their phases and relevant risks.

Leading companies work with contractors to determine how risk and opportunity will be shared. This can forge a much closer relationship than simply trying to transfer risk to contractors while reducing cost and risk for the managing organization.

Engineers and builders in the oil and gas industry face daunting and unprecedented challenges as they design and construct the infrastructure to extract and process the resources that will power the global economy over the next few decades. Few large projects in the planning stages will stand the test of time like the Colosseum. But that doesn't diminish their importance or suggest they should be undertaken with any less rigor. As the oil and gas industry embarks on a new generation of major projects, project managers will need to rely on coherent, consistent reference frameworks that guide their decisions and engage the most competent talent they can find in order to keep pace.

Managing large capital projects

Successful project managers rely on a collection of essential skills:

Project management: Manage trade-offs among costs, schedule, technical solutions and stakeholder requirements to ensure the project's value

Local content and other stakeholders: Ensure proper alignment with stakeholders while meeting requirements to use local content and contractors

Costs and schedule: Provide an accurate estimate and control of project results, from concept to completion, monitoring project costs and schedule

HR and support functions: Manage resources, training and compensation to ensure that the necessary skills are available to the project when needed

Production operations: Take into account all aspects of the asset's operability and maintenance, from planning through commissioning, start-up and performance tests

Engineering: Identify technologies that deliver innovation and competitive advantage in terms of quality, costs and schedule while avoiding over-engineering

Procurement: Source goods and services based on best market opportunities

Contracting: Define and manage contracts to meet quality, costs and schedule requirements

Risk and opportunity management: Minimize the probability and consequences of threats while maximizing opportunities in a systematic and constantly updated process

STATEMENT OF THE PROBLEM

Project managers can play an important role in driving Petrochemical Industry. Successful project managers often become senior managers in their organizations, responsible for strategic and policy decisions.

The main purpose of this research is to determine the role of project management & project manager in Petrochemical Industry. 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. Project managers have a key role in supporting such a vision, and will be an important part of the Petrochemical Industry community to bring about its realization. Interest in project management is growing significantly and of late, the Petrochemical Industry is evolving around project management training and education. The most common constraints in the Petrochemical Industry within developing countries are the oversupply of unskilled labor and a restricted supply of management manpower. It is important to take note that upgrading and enhancing the management capability is vital for growth and expansion in the Petrochemical Industry.

NEED FOR THE RESEARCH

Project Manager places the key role in the planning, designing and execution of the project for successful completion. Life cycle of the project in the refinery depends upon the planning at first stage and execution of the plan at the second stage as planned by the project manager. It is important to ensure the project life cycle used on the projects at Ratnagiri Refinery and Petrochemicals Limited (RRPCL), as it is largest single location Refinery complex in the world It is appropriate to the work being carried out and split into distinct and manageable phases. This is a tried and tested method for delivering projects on time, within budget and to the expected quality targets.

COMPANY OVERVIEW

The Ratnagiri Refinery and Petrochemicals Ltd. (RRPCL) is a venture of extraordinary national significance which accommodates the future vitality security of the nation and its kin. The task advertisers are directly the three significant open Sector Oil organizations to be specific Indian Oil Corporation Ltd., Bharat Petroleum Corporation Ltd. also, Hindustan Petroleum Corporation Ltd. every one of whom are focused on serving the necessities of the residential clients and have a past filled with guaranteeing that the basic vitality needs of each Indian is overhauled in each niche and corner of the nation.

The Ratnagiri Refinery and Petrochemicals Ltd. (RRPCL)

Ratnagiri refinery

This Maha project will carry an immense positive change to Ratnagiri and Sindhudurg Districts and the territory of Maharashtra through the general monetary advancement of the locale. The undertaking when actualized will add to the development of GDP in the province of Maharashtra by over 10% and would empower the state to turning into a trillion dollar economy quickly.

The Maha undertaking of RRPCL would prompt direct work during the development period of more than 1,50,000 individuals and once charged the task itself would add to work for about 20,000 straightforwardly other than lakhs of circuitous business.

The project is at a speculation of over Rs. 3 lacs crores and has the potential for a few other downstream improvement exercises which will additionally add to the speculations by at any rate another 20% more. A uber speculation of this size has not been seen before in any piece of the nation. This would be a significant advance towards making a safe future that gives access to effective and supportable vitality and worth included items.

Spreading more than 15,000 sections of land, the RRPCL complex is scheduled to house a world-class treatment facility cum-petrochemical complex, with more than 50 between associated units. With capacity and port offices coming up in 1500 sections of land, it will feature the most current innovation and economies of scale to accomplish the best as far as both operational proficiency and worth creation.

The processing plant, to be appointed constantly 2025, will create Euro-VI and more excellent car and flying fills benchmarked to worldwide norms, other than a wide scope of petrochemical items. Deliberately situated on the west coast for simple entry to worldwide markets, it offers perfect conditions for imports and fares.

The world-scale treatment facility will have high adaptability to process a wide assortment of raw petroleum grades from different sources. It very well may be arranged to swing effectively between oil fills and petrochemicals, with the most significant level of mix and vitality effectiveness.

The super project will give a significant fillip to the financial advancements of the area and India in general. Indeed, even the abroad nations would profit with fares of petrochemical and other associated items.

Our Promoters

Indian Oil Corporation Limited

IOCL - A coordinated vitality major with nearness in practically all the floods of oil, gas, petrochemicals and elective vitality sources; a universe of high-bore individuals, best in class innovations and bleeding edge R&D; a universe of best practices, quality-cognizance and straightforwardness; and an existence where vitality in the entirety of its structures is tapped most mindfully and conveyed to ...

Bharat Petroleum Corporation Limited

Bharat Petroleum Corporation Limited (BPCL) appeared in January 1976 when Burmah-Shell was taken over by the Government of India. A Fortune Global 500 Company, BPCL is one of the head incorporated vitality organizations in India, occupied with refining of raw petroleum and showcasing of oil based goods, with a critical nearness in the upstream and downstream areas of...

Hindustan Petroleum Corporation Limited

HPCL is a Government of India Enterprise with a Navratna Status, and a Forbes 2000 and Global Fortune 500 organization. It had initially been joined as an organization under the Indian Companies Act 1913. It's CIN No. L23201MH1952GOI008858. It is recorded on the Bombay Stock trade (BSE) and National Stock Exchange (NSE), India.

BOARD OF DIRECTORS

Shri S M Vaidya

Chairman

R. Ramachandran

Director

Vinod Shenoy

Director

CEO

B. Ashok

CEO

Company Secretary

Raju Ranganathan

Company Secretary

OBJECTIVES OF THE STUDY

1. To study of project management life cycle and role of project manager at projects at Ratnagiri Refinery and Petrochemicals Limited (RRPCL).
2. To find the role of project manager in the success of project.
3. To study Benefits and process of project management life cycle at projects at Ratnagiri Refinery and Petrochemicals Limited (RRPCL).

CHAPTER – 2

REVIEW OF LITERATURE

Project the board is characterized by Eduardo and Sergio (2010) as a mix between science, which pursues a systematized procedure and workmanship which expects inventiveness to change over human thoughts into genuine substances. Then again, as characterized by PMI (2013), Project the executives is the use of learning, aptitudes, instruments and strategies to extend exercises to meet project necessity. Project the board is practiced through the application and mix of the 42 legitimately assembled task the executives forms (PMI, 2013). Having given the Project viewpoint, oil and gas (O&G) industry for the most part includes megaproject. As characterized by Patricia (2011), megaproject is a project which in abundance of USD1Billion in capital use (CAPEX). By the by, for littler O&G organizations, an project with a size of USD100 Million can likewise be considered as a basic and significant Project from the organization point of view, along these lines the necessities of task the executives approach additionally require to pursue a similar structure as characterized in megaproject Project the board (Mishar and Syahrilyan, 2012).

Thus, by concentrating on the Project the executives of O&G industry that is commonly synonymous with the megaprojects, the succeeding subsections talks about the project the board procedure of the O&G Project.

According to Oeystein and Dagfinn (1998), a complicated and complex offshore platform design needs to be fit for purpose. Apart from that, it also an important to design and construct for optimal design condition, which taking into the consideration of operability and maintainability.

PMI (2013) has also described the typical example of Predictive Life Cycle for a project which proceeds through a sequence or overlapping phases that focuses on a subset of project activities. Further through the literature review, examples of actual oil and gas

project execution are shown, and it can be concluded that there are very much similarities in between.

Various approaches can be seen in oil and gas project execution. For instance, Golfinho Project, the first offshore deep-water project located in Espirito Santo Basin, Brazil, undertaken by PETROBRAS, was implemented in a fast track schedule by being able to achieve the first oil production within eighteen months from the project sanction as described by Ibsen et. Al (2007). Despite fast tracking schedule, the project was still executed based proper project management practices and rigid control strategy for the acquisitions. Ibsen et. al (2007) highlighted that the project follows a methodology which was part of PETROBRAS in-house equivalent to Project Management Body of Knowledge (PMBOK) recommended practices. This leads to the introduction of several project execution phase, supplemented with an approval gate at the end of each stages that has to be approved by PETROBRAS board.

In the oil and gas (O&G) project execution, a systematic for project management is also developed with the aim to improve the decision making process and overall project execution. According to Asrilhant (2005), the systematic consists of sets of guideline and requirement such as (1) focus on value adding opportunity; (2) integration of multi-functional; (3) promote alignment and communication among decision makers, stakeholders and project management team; as well as (4) consistently utilize best practices, tools and procedures.

One of the systematic project management phases as derived by PETROBRAS consists of five main phases, mainly (1) appraisal; (2) selection and definition, which are both associated with (3) planning phase; as well as (4) execution and first year operation which are associated with (5) control phase (Asrilhant, 2005 and Ibsen et.al, 2007).

The systematic project management is a flexible process which varies according to projects size and complexity, with the aim to stimulate communication, mitigate inconsistencies and reduce re-work due to errors. It aims at planning and controlling the project execution to ensure it can be done in a timely manner and cost effective.

However, it was identified that one of the main project challenges during the O&G project execution phase was the short time to acquire critical supplies, material or equipment (Ibsen et.al, 2007), thus it falls under the project critical path. For the main equipment, the presence and participation of the project manager as part of the kick off meeting is conducted together with the presence of the supplier's high administration (Ibsen et.al, 2007). This is a good opportunity to highlight the importance of the equipment/material towards the successful implementation of the project. The important milestone schedule will also be established during the meeting, as this will assist the project manager to follow up throughout the whole project schedule and able to create a partnership with the suppliers.

Another important aspect during the O&G project execution is the creation of war room. According to Ibsen et.al (2007), the war room is basically a place set to conduct meetings between Golfinho Asset Manager, disciplines coordinator, technical and operation team and also the Project Management Team (PMT). With all the visualizations set in the room, daily review can be performed and project progress can be tracked as per daily basis. This is part of the project initiative to control the project execution.

As part of initiative to explore and develop a new engineering, procurement and construction (EPC) solution for floating, production, storage and offloading (FPSO) with reduced cost, higher quality standard and in less time, it was identified that the EPC Project Integration Management needs to play a major role, and this can be achieved through the utilization of formally recognized project management standards and processes (Kim et.al, 2008). For this basis, again, the Project Management Institute (PMI) was chosen as the basis. According to PMI (2013), Project Integration Management is the activities or processes that is required to identify, define, unify, combine and coordinate the various processes and project management activities within the Project Management Process Group, by considering all the ten knowledge areas of Project Management Book of Knowledge (PMBOK), namely scope management, time management, cost management, quality management, risk management, procurement management, human resources management, communication management and stakeholder management.

Gordon (2013) also recognizes that insufficient effort at the beginning of the project, especially during Front End Loading (FEL), will result in unclear project goals and lack of project definition, which might lead to a project failure. Hence, appropriate initiatives are essential in ensuring the success of a particular project. For instance, the application of Stage Gate Project Management Process (SGPMP), which was originally introduced in North America in the 1980's is a respond towards improving the project development time and introduction of new products into the market (Cooper et.al, 1998). Nowadays, the methodology has been adapted by many oil and gas (O&G) companies worldwide, with the aim to improvise the decision making process in Project and Portfolio Management by increasing the project deliverables quality and assisting to manage the level of uncertainties as described by Eduardo et.al, (2010).

As indicated by Eduardo and Sergio (2010), Walkup Jr. what's more, Ligon (2006) and Mishar and Syahrilyan (2012), comparative philosophies to SGPMP are grasped by the vast majority of the world class O&G organizations to oversee and control their activities. By and large, the thoughts and standards used by them are practically equal and covered with one another, and the watched contrast between the organizations approaches are viewed as shallow.

The SGPMP in O&G businesses is commonly isolated into four or five progressive stages, where the initial three phases are gathered into the Front End Loading (FEL) (Eduardo and Sergio, 2010). By executing SGPMP, the activities need to go through a specific achievement entryway toward the finish of each stage so as to move from one phase to the next. The achievement entryway can likewise be called as Technical Review (TR), which goes about as a Quality Control that incorporates inputs, quality prerequisites and yields the achievement door additionally gives the "Traffic Light" choice system whether to proceed to the following phase of the Project, to reuse back, or even to drop or hold the entire task.

While choosing the ideal improvement alternatives amid the structure, assessment is simply the topside or seaward stage weight. As indicated by Alvarado and Wagner (2002), normally the topside loads are affected by the accompanying elements: (1) hardware amount, type and sizes; (2) channeling systems measure, calendar, material and directing examples; (3) system working conditions, in particular high weight or potentially high temperature; (4) number,

type and amount of effluents and transitional items; (5) material amount and metallurgy choice; (6) control system extension and modernity; (7) Health, Safety and Environmental necessity; (8) working and support prerequisites; and (9) group and administrator necessity and lodging. Legitimately, the size and weight of the topsides will co-relate with the general Project cost.

As far as Project and program the board, it is perceived by Alvarado and Wagner (2002) that another test anticipates for the Engineering and Construction industry, especially on the FPSO and megaprojects in O&G industry. In any case, a similar issue applies for the remainder of the O&G business upstream Projects, where more players are brought into the business sectors, including process licensors, claim to fame fabricators and pre-bundled system merchants (counting gas turbines). It is basic to comprehend the cooperative energy between all gatherings amid the interfacing on different task stages, in particular arranging, designing, acquisition and creation.

Between connection with the heaviness of the topsides and furthermore intricacy of the plan, the effect would be on the task the board, module development and establishment capacities for the vast majority of the advanced present day seaward manufacture yards. Truth be told, a portion of the primary gear estimating may be bigger and heavier than regular one, and that incorporates the gas turbine generators and gas turbine blowers set (Alvarado and Wagner, 2002). The incorporation of merchant or outsider provided types of gear, which may originate from everywhere throughout the world with a portion of the types of gear are exceptionally made by little quantities of producers or innovation suppliers, will result in different difficulties. The Project the board fundamentally requires an interface the board to control the obtainment procedure/supply from different areas around the world, thus including a more prominent reliance the outsider specialist organizations/specialists. It is perceived that the multifaceted nature brought about increasingly complex arranging, strategic and material administration capacities to guarantee the effective execution of the task.

In investigating the assortments of O&G Project execution, the procedure may fluctuate between associations, however the real procedure are very comparable in nature. Five stages has been recognized, to be specific (1) calculated; (2) attainability; (3) point by point structure; (4) material obtainment; and (5) development/start up. While as far as Project

execution approach, Alvarado and Wagner (2002) additionally distinguish the project stages as (1) designing; (2) material administration/coordination; (3) creation, reconciliation; (4) establishment and connect; (5) transportation; (6) authorizing and start up; lastly (7) task and upkeep. Additionally, as depicted by Eweje et. al (2012), most O&G enterprises are additionally following the ordinary task acknowledgment process.

In order to execute an oil and gas (O&G) project, a Project Management Team (PMT) consists of a Project Manager, a Resident Engineer and various disciplines engineers ranging from Process, Piping, Mechanical, Turbo machinery/Rotating Equipment, Electrical, Instruments, Electrical and Structural Engineer, will be set up in managing each stage of the development. Additional PMTs are added according to the needs or criticality of each project stages, such as Project Engineer, Construction Engineer and also Commissioning Engineer. As explained by Harris and Abd. Rahman (2014), the typical development stages are indicated as: (1) conceptual design; (2) Front End Engineering Design (FEED); (3) procurement of long lead equipment; (4) detailed design; (5) construction/fabrication; (6) onshore pre-commissioning; (7) transportation/installation (applicable for offshore platforms); and (8) hook up and commissioning prior to handover to end user, which are deliberately explained in the following sub-sections.

Conceptual Design

Conceptual is the initial stage by exploring the concepts of the area development to obtain design optimization (Harris and Abd. Rahman, 2014). This stage is one of the activities in the critical path because it defines whether the project is fit to be developed for the next stage, put on hold, back to the drawing board or shelved. For example, the conceptual engineering is essential in determining how the field will be developed in terms of the size of production, basic configuration for the central processing facilities, numbers of wellhead platforms or subsea application as well as getting the best cost estimates for the total project development. The conceptual engineering will be studied either in-house or by design consultant to identify various alternatives solution, and at the same time to narrow the project scope in selecting the final development option.

According to Prates et. al (2013), the feasibility study is the initial but critical step to evaluate the project potential whether it can be a success or not. Sometimes, it can also be known as Pre Front End Engineering Design (Pre-FEED). Key important elements in the feasibility study is to determine whether the project is able to generate adequate return on investment (ROI), considering all relevant technology, engineering, economic, legal, logistic and financial aspects. A well-defined feasibility study shall include project references and historical background, assessment of the existing market and competitors, a financial model to gauge the potential revenue and expenditures related to the project, required resources, operation and management, opportunities and threat faced from the market condition and last but not least the strength and weaknesses of the proposed project. Since the feasibility study is a very important to support the decision making process, especially in front end loading (FEL), it is very critical to ensure that the objectivity and credibility are supported by sound facts and research (Prates et. al, 2013).

Turbomachinery configuration or process selection is amongst the major activities to be carried out during the conceptual design stage. During this selection, the total number of turbomachinery required for each facility is decided via process configuration. For example, Project A requires one Central Processing Platform with Export Compressor Facilities to export the gas from offshore to onshore facilities. As a part of the conceptual study, this conceptual study will determine what is the best configuration for the Export Compressor, as typically explained below:

- 2x100% i.e. 1 unit sized for 100% total production with 1 unit as a standby with 100% capacity.
- 3x50% i.e. 2 units sized for 50% each to cover 100% of total production, with 1 unit as a standby with 50% capacity.
- 2x50% i.e. 2 units sized for 50% each to cover 100% of total production, without any spare unit.
- 4x33% i.e. 3 units sized for 33.3% each to cover 100% of total production, with 1 unit as standby with 33.3% capacity.

Choice to be picked for a specific task changes dependent on the specialized prerequisite of each Project. Among the specialized prerequisite are cost, space imperative, generally speaking plant accessibility and unwavering quality, just as the absolute expense of possession (TCoO) or Life Cycle Cost (LCC). The TCoO idea is winding up increasingly

well known these days, where as opposed to taking a gander at lower capital expenditure (CAPEX), the project needs to look past by including the operational expense (OPEX) amid the normal existence of the field to turn out with the general best arrangement (Harris and Abd. Rahman, 2014). Along these lines, turbomachinery designer's job amid the theoretical is indispensable to guarantee every due steadiness have been mulled over preceding the idea conclusion

Front End Engineering Design (FEED)

After conceptual design is the Front End Engineering Design (FEED) stage, which is claimed by Harris and Abd. Rahman (2014) as aiming at developing more detailed scope of the chosen development concept, strategizing the overall project execution plan and providing a more refined cost estimation for the selected development concept. It is substantial that turbomachinery engineer must come out with a detailed technical specification and datasheet, specifying the requirement for the equipment requisition during this stage. This specification is usually derived from technical standards used worldwide, such as American Petroleum Institute (API), American Society of Mechanical Engineers (ASME) as well as Company Technical Standards. The technical specification should clearly spell out the project specific requirement (Harris and Abd. Rahman, 2014). For example, Project A is a gas field with high Carbon Dioxide (CO2) content in the process gas compared to other projects. Therefore, the technical specification should clearly write this to inform the potential turbomachinery equipment suppliers that material selected should be suitable for high carbon dioxide (CO2) application.

On the other hand, it is also important that the rotating engineer needs to start engaging with potential turbomachinery equipment suppliers in obtaining basic technical information of the equipment and auxiliaries, including the overall dimensions. The initiative by the rotating engineer is vital for the project to come out with overall platform mechanical layout, which basically tells where the equipments are to be located, numbers of platform decks, overall platform size and also weight (Harris and Abd. Rahman, 2014). If the assumption made during FEED is incorrect especially when the dimension used is smaller than the actual, that spells a big disaster for the project during

the Detailed Design stage, where major changes on the platform mechanical layout are required.

Procurement of Long Lead Equipment

Long lead equipment is amongst the critical equipment that takes long time to be delivered to the site. As claimed by Harris and Abd. Rahman (2014), the delivery may take up more than one year, hence the procurement of long lead equipment is considered under the critical path in the overall project schedule. To ensure successful implementation of the project, some critical equipments, such as turbomachinery, usually falls under the long lead equipment and needs to be purchased upfront prior to the commencement of the next stage. Depending on the overall project execution plan, the procurement of long lead equipment can normally start at the end of Front End Engineering Design (FEED) stage, before the detailed design phase or concurrent with detailed design phase (Harris and Abd. Rahman, 2014).

In some projects, a pre-screening exercise is conducted prior to the actual procurement. This is where a high level technical evaluation is performed prior to the actual procurement process. For example, Project A conceptual and FEED study has already sized the turbomachinery equipment as 3x50% with a minimum technical requirement of 25,000 kilowatt (kW) of site power rating for each gas turbine. Based on the pre-screening, not all turbomachinery equipment supplier has an existing gas turbine model that meets the power rating requirement. The pre-screening is useful for the Project Management Team (PMT) to reduce the number of potential bidders during the actual procurement as well as to speed up the evaluation process by having a small number of bidders. On the other hand, it also allows the PMT to have more time to zoom into more details on each bidders' submission.

During the acquirement organize, the specialized determination got from the FEED arrange is being sent to all bidders with the end goal for them to turn out with specialized offer proposition, which is assessed in a carefully way to guarantee consistence with the task specialized necessity (Harris and Abd. Rahman, 2014). The agreement grant to the effective bidder in providing the hardware happens amid the acquisition of long lead gear organize,

which more often than not will be covered with the following Project arrange: point by point configuration stage.

During this stage, the turning engineer typically goes about as the bundle engineer, taking care of the turbomachinery hardware seller and dealing with the gear configuration stage led by the merchant by guaranteeing the consistence with the Project specialized determination, and to catch up with the gear fabricating timetable, examination and testing plan (ITP) (Harris and Abd. Rahman, 2014). Then again, Harris and Abd. Rahman (2014) additionally guarantee that the turning designer will likewise include in basic hardware testing as recognized in the ITP to guarantee that the gear meets the specialized criteria as indicated in the agreement.

As suggested by Phalen and Scotti (2008), early procurement strategy can be one of the key strategic functions in addressing the market constraint that supports the overall project execution by identifying the long lead materials and equipment during the design phase. This can also be achieved by having a close integration between client and the equipment supplier. Suppliers can also become partners in the design process by having a partnership with key suppliers during the development stage, as their early presence into the project can inject more predictability into the equipment, procurement and supply chain. By having the strategic sourcing and supplier integration, it can also improve the security of critical equipment supply and reducing the overall risk of the project execution. It was also noted by Harris et. al (2013) that the utilization of Long Term Frame Agreement to supply critical equipment is identified as a characteristic of successful projects.

This approach was also taken by PETRONAS by project alliance with various Turbomachinery OEM by signing a long term Global Frame Agreement which indicates a long term relationship, optimizing project deadlines and cost reduction.

Detailed Design

Detailed design phase takes place once the project has been sanctioned to proceed for actual development, where the deliverables from conceptual and Front End Engineering Design (FEED) phases will be expanded further for detailed engineering (Harris and Abd. Rahman, 2014). During this detailed phase, various equipments are also procured concurrently, resulted in choosing the specific vendor for each equipment. Oeystein and

Dagfinn (1998) also highlight the important of conducting the Material Handling Review. The main objective is to follow the handling routes of each specific equipment from its location in the platform towards the landing destination or maintenance area. Material handling report will be utilized as the basis for the Material Handling Review, and it will also be assisted by drawings and 3D review model.

The review shall be conducted with a team consists of multi-discipline engineers, representatives from operations and also technical advisors or experts from the end users or design consultant. The Material Handling Review is usually conducted as a part of FEED and also detailed design phase. The final outcomes of the material handling are mostly related to surveillance issues in valve location, instruments location, design of ladders and stairs for accessibility, access requirement and material handling for maintenance purposes.

Harris and Abd. Rahman (2014) claim that one of the most important activities as a part of detailed design is Vendor Data Incorporation (VDI), where based on the engineering data provided by each particular vendor, the data need to be incorporated and integrated with the main platform. For rotating equipment especially turbomachinery, the VDI activities include the integration between other disciplines, such as piping tie ins, interconnecting cables, structural support, electrical power consumption and others. The major deliverable for detailed design phase is to bring the overall platform design to reach a certain standard or maturity identified as Approved For Construction (AFC).

According to Kim et.al (2008), it is identified that the challenges faced during the detailed design phase are also including the requirement for high flexibility of topside system design, vendor data management and experience level of the detailed design engineering subcontractor/consultant. Under the vendor data management, based on previous project experience, it was shown that an ineffective vendor data management will risk the project to a potential engineering delay due to lack of timely vendor deliverables and design data. Such risk can be mitigated by conducting an early procurement of long lead equipment such as Compressor and Turbine Generator based on FEED Data and to obtain early affirmation of vendor data as part of Detailed Design Engineering (Kim et. al, 2008).

Construction/Fabrication

Stage development stage happens once the illustrations have achieved the Approved For Construction (AFC) level. Development stage, or also called manufacture stage, is where the real stage is being assembled and created at an appropriate coastal creation yard. Pivoting designer will include in the development arranging stage preceding the real development, where the gear is installed into its area on the stage deck once the deck is prepared to be utilized. As a component of front end planning, the turning engineer needs to guarantee that the gear seating subtleties are right according to endorsed attracting preceding the hardware establishment. In the event that the hardware is ordered under truly difficult work, a legitimate lifting system must be arranged and affirmed by important gatherings before the genuine gear lifting and establishment.

This is to guarantee that the hardware establishment is being done in an appropriate way in keeping away from any potential occurrence. After the turbomachinery has been appropriately introduced, Harris and Abd. Rahman (2014) guarantee that the following stage will include other itemizing works, for example, hardware leveling, arrangement, interconnecting funneling/links tie-in and establishment of helpers gear, for example, Unit Control Panel (UCP), delta channel house, fumes silencer, seal gas condition unit, oil support, fuel gas system, rundown tank, ship loosed transmitters and different ancillaries.

Onshore Pre-Commissioning

During the onshore pre-commissioning works, there are five critical activities involved in turbomachinery equipment: (1) lube oil flushing; (2) hook up of ship loosed instruments; (3) Unit Control Panel (UCP) power up; (4) motor start up test from Motor Control Centre (MCC); and (5) Gas Turbine Dry Crank test. Ultimately, if the onshore pre-commissioning works are able to achieve dry crank at the fabrication yard, this is a big achievement to indicate that the turbomachinery has been successfully installed and able to link to the Unit Control Panel (UCP) (Harris and Abd. Rahman, 2014).

It is also noteworthy to highlight that not all projects are able to achieve the dry crank stage as these are all depending on project sequence, schedule and priority. Harris and Abd. Rahman (2014) define dry crank as the ability to start the gas turbine using the UCP by utilizing the motor starter or hydraulic starter up to the turbine crank speed, where

due to unavailability of fuel gas at the onshore fabrication yard, the gas turbine will be shutdown safely, indicating that the dry crank has been achieved.

Transportation/Installation (Applicable for Offshore Platforms)

The stage will be then transported to the seaward area by utilizing a freight boat or establishment scow once the stage creation has been finished at the manufacture yard. Before this, turning engineer needs to guarantee that the turbomachinery hardware has been safeguarded by seller prescribed practice and standard. Harris and Abd. Rahman (2014) likewise guarantee that once it has achieved the site, the stage establishment will be directed in like manner by means of an establishment freight ship.

Hook Up and Commissioning prior to Handover to End User

The attach exercises is characterized by Harris and Abd. Rahman (2014) as the ship loosed things which couldn't be introduced because of wellbeing reason and to dodge harms amid the transportation of the stage from the creation yard to seaward. The ship loosed things can be run from piping, links and auxiliary parts also. The measure of attach works relies upon the plan and development of the stage.

At last, the Project is preparing for the appointing stage. For the most part, the one that will be given need for charging ought to be the utilities, for example, control age, water and wellbeing gadgets since these utilities guarantee that the stage is prepared for residence by faculty.

When the utilities is set up, the task should prepare for procedure related dispatching, including the turbomachinery hardware (Harris and Abd. Rahman, 2014). When the hydrocarbon is brought into the system, the turbomachinery is required to be put under ceaseless continuance test for 72 hours preceding handover to end client or activity group.

Because of the consistently expanding development in the business, Phalen and Scotti (2008) have distinguished couple of basic issues amid the connect and dispatching stage, to be specific: (1) intense deficiency in the HR in building and dealing with the oil and gas offices; (2) increasing expense for the base material and fundamental materials; (3) limit imperative in gear and material assembling; just as (4) declining pool of talented development work.

CHAPTER – 3

METHODOLOGY AND PLAN

Research methodology in a way is a written game plan for conducting research. Research methodology has many dimensions. It includes not only the research methods but also considers the logic behind the methods was used in the context of the study and complains why only a particular method of technique was used. The basic task of research is to generate accurate information for use in decision making. Research can be defined as the systematic and objective process of gathering, recording and analyzing data for aid in making business decisions.

METHODOLOGY ADOPTED: - This research is aimed at studying the Project Management Life Cycle and Role of Project Manager.

RESEARCH DESIGN: The research design was used in this study is both 'Descriptive' and 'exploratory'.

DATA COLLECTION METHODS:

The data was collected using both by primary data collection methods as well as secondary sources.

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

a) Questionnaire

b) Interview

SECONDARY DATA: Secondary data that was used are web sites and published materials related to project management life cycle and role of project manager for the Farris Engineering as well as any relevant information of project management life cycle and role of project manager.

The **secondary data** was collected through:

a) Text Book

b) Magazines

c) Journals

d) Internet

SAMPLE SIZE: A survey of approximately 50 employees at projects at Ratnagiri Refinery and Petrochemicals Limited (RRPCL).

UNIVERSE: Universe refers to the total of the units in field of inquiry. Our universes were selected through random method among projects at Ratnagiri Refinery and Petrochemicals Limited (RRPCL).

CONVENIENT SAMPLING: It is that type of sampling where the researcher selects the sample according to his or her convenience.

SAMPLING TECHNIQUE: Sampling Technique was used in our study is Non-Probabilistic Convenient Sampling.

SAMPLING UNIT: Sampling frame is the representation of the elements of the target population. Sampling unit of our study was be in Mumbai.

METHOD USE TO PRESENT DATA:

Data Analysis & Interpretation – Classification & tabulation transforms the raw data was collected through questionnaire in to useful information by organizing and compiling the bits of data contained in each questionnaire i.e., observation and responses are converted in to understandable and orderly statistics are used to organize and analyze the data:

- Simple tabulation of data using tally marks.
- Calculating the percentage of the responses.
- Formula used = (no. of responses / total responses) * 100

REPORT WRITING AND PRESENTATION

Report Encompasses – Charts, diagrams

CHAPTER – 4

ANALYSIS

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 50 respondents are enclosed at the end of this project. All the calculations and numerical interpretations are for 100%.

1. How long have you been working in Ratnagiri Refinery and Petrochemicals Limited (RRPCL)?

Criteria	Frequency	Percentage
Less than 1 year	10	20%
1-3 years	12	24%
3-5 years	8	16%
5 years	14	28%
Above 5 years	6	12%

Table 4.1 Working in Ratnagiri Refinery and Petrochemicals Limited

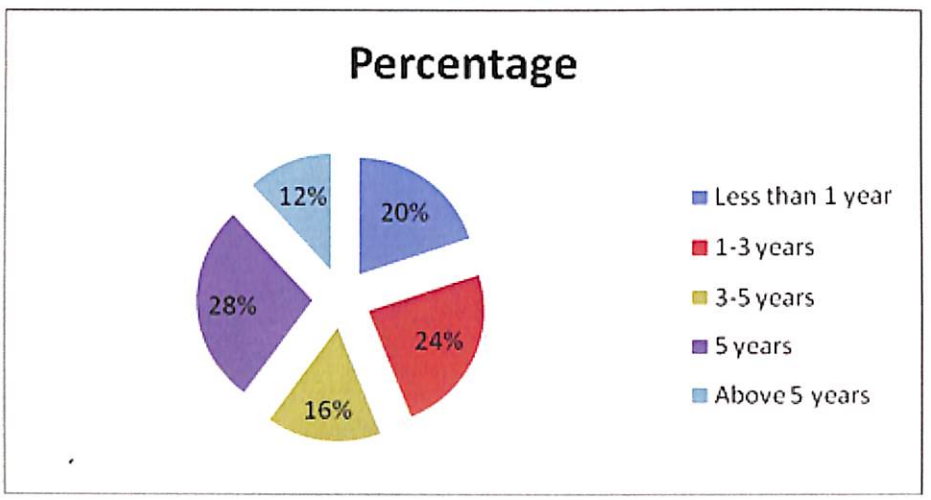


Figure 4.1 Working in Ratnagiri Refinery and Petrochemicals Limited

Analysis:

In the above pie chart show that 20% of the respondents have been working in Ratnagiri Refinery and Petrochemicals Limited (RRPCL) less than 1 year. 24% of the respondents said 1-3 years, 16% of the respondents said 3-5 years. 28% of the respondents said 5 years and 12% of the respondents said above 5 years.

2. Do you agree that the role of Project Managers in the Petrochemical Industry or project is very important?

Criteria	Frequency	Percentage
Strongly Agree	18	36%
Agree	14	28%
Neutral	10	20%
Disagree	6	12%
Strongly disagree	2	4%

Table 4.2 Role of Project Managers in the Petrochemical Industry

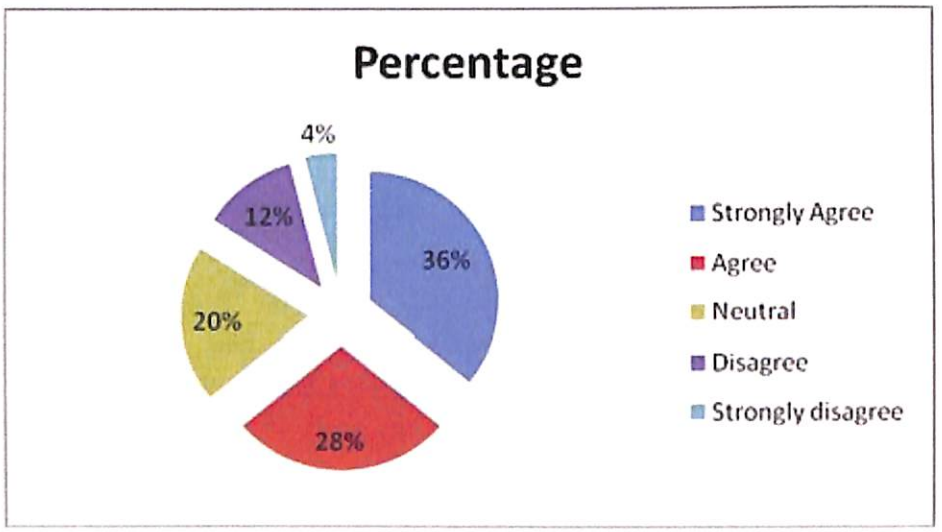


Figure 4.2 Role of Project Managers in the Petrochemical Industry

Analysis:

In the above pie chart show that 36% of the respondents strongly agree with the role of Project Managers in the Petrochemical Industry or project is very important. 28% of the respondents agree, 20% of the respondents neutral with the same and 12% of the respondents disagree with the above statement.

-

3. Do you know about Project management process, Lifecycle and Project Planning Stages?

Criteria	Frequency	Percentage
Yes	47	94%
No	3	6%

Table 4.3 Project management process

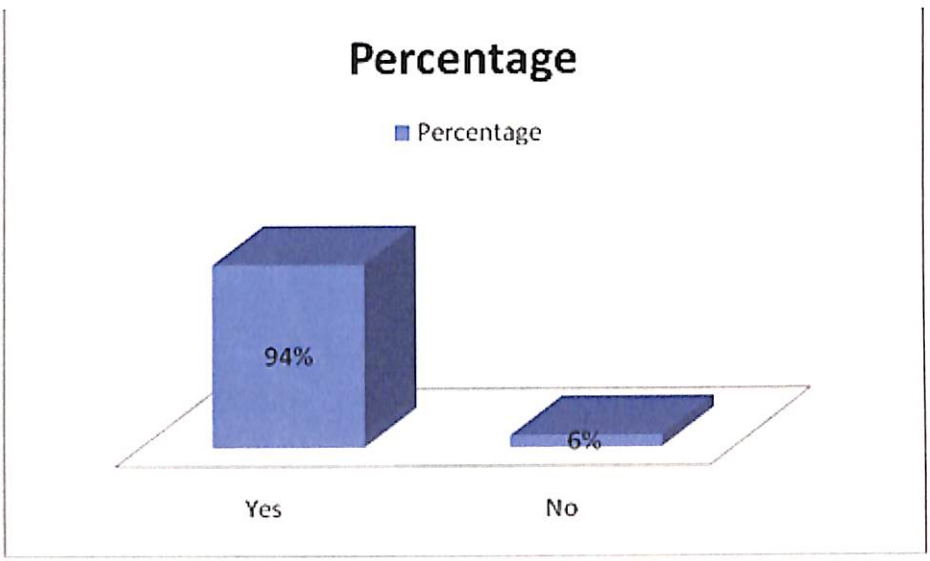


Figure 4.3 Project management process

Analysis:

In the above pie chart show that 94% of the respondents said yes that Project management process, Lifecycle and Project Planning Stages. 6% of the respondents said no with the same.

4. The project goals and objectives need to be clearly defined.

Criteria	Frequency	Percentage
Strongly Agree	21	42%
Agree	16	32%
Neutral	6	12%
Disagree	4	8%
Strongly disagree	3	6%

Table 4.4 The project goals and objectives need to be clearly defined

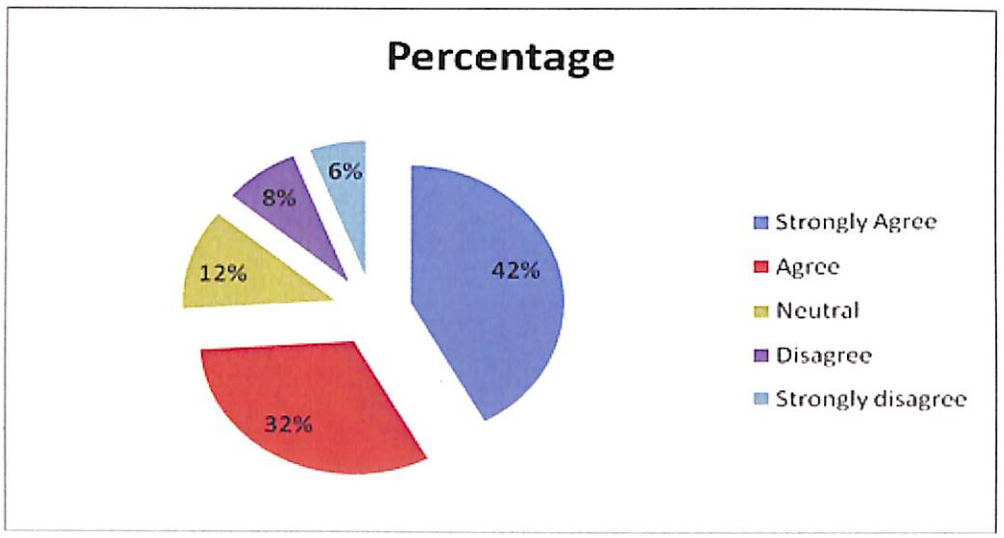


Figure 4.4 The project goals and objectives need to be clearly defined

Analysis:

In the above pie chart show that 42% of the respondents strongly agree with the project goals and objectives need to be clearly defined. 32% of the respondents agree, 12% of the respondents neutral with the same and 8% of the respondents disagree, 6% of the respondents strongly disagree with the above statement.

5. Do you feel that Project goals and objectives have to be socialized in Ratnagiri Refinery and Petrochemicals Limited (RRPCL)?

Criteria	Frequency	Percentage
Yes	45	90%
No	5	10%

Table 4.5 Project goals and objectives have to be socialized in RRPL

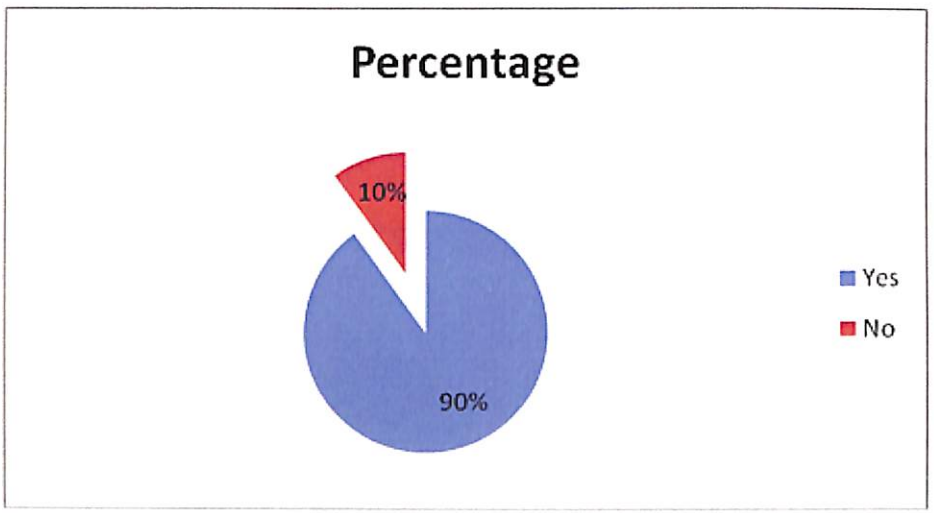


Figure 4.5 Project goals and objectives have to be socialized in RRPL

Analysis:

In the above pie chart show that 90% of the respondents said yes that Project goals and objectives have to be socialized in Ratnagiri Refinery and Petrochemicals Limited (RRPCL). 10% of the respondents said no with the above statement.

6. A model of stages of project life cycle is needed when managing projects by project manager.

Criteria	Frequency	Percentage
Strongly Agree	16	32%
Agree	12	24%
Neutral	10	20%
Disagree	8	16%
Strongly disagree	4	8%

Table 4.6 Stages of project life cycle

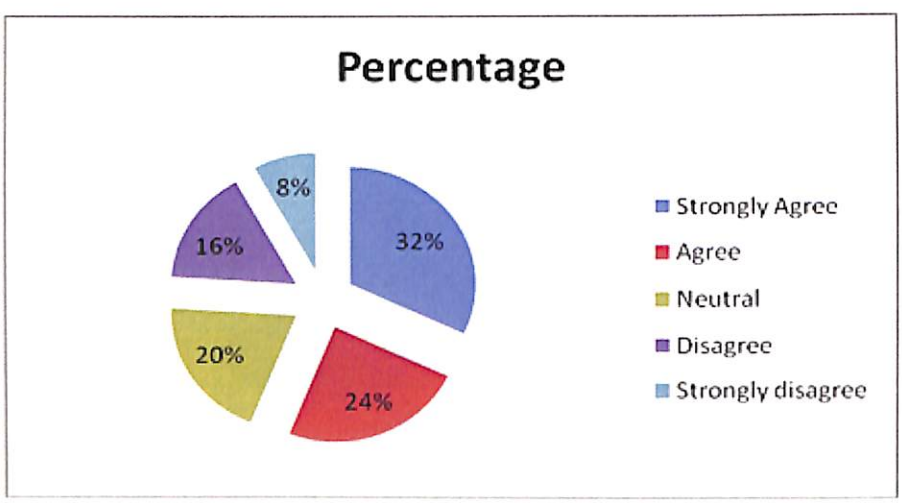


Figure 4.6 Stages of project life cycle

Analysis:

In the above pie chart show that 32% of the respondents strongly agree with the model of stages of project life cycle is needed when managing projects by project manager. 24% of the respondents agree, 20% of the respondents neutral with the same and 16% of the respondents disagree with the above statement.

7. The project management process must be clearly visualized and describe by project manager.

Criteria	Frequency	Percentage
Strongly Agree	18	36%
Agree	14	28%
Neutral	10	20%
Disagree	5	10%
Strongly disagree	3	6%

Table 4.7 The project management process must be clearly visualized and describe

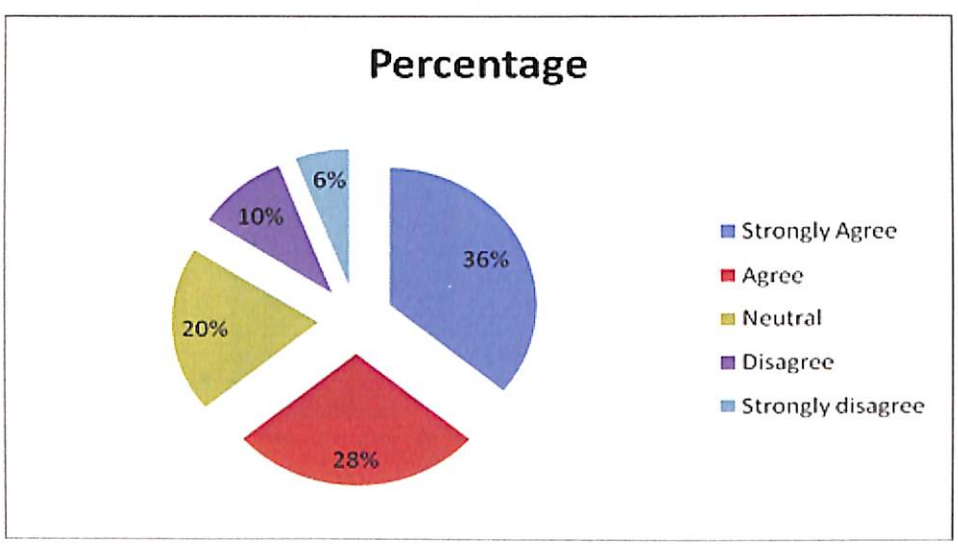


Figure 4.7 The project management process must be clearly visualized and describe

Analysis:

In the above pie chart show that 36% of the respondents strongly agree with the project management process must be clearly visualized and describe by project manager. 20% of the respondents neutral with the same and 6% of the respondents strongly disagree with the above statement.

8. 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.

Criteria	Frequency	Percentage
Yes	49	98%
No	1	2%

Table 4.8 Combination of Skills

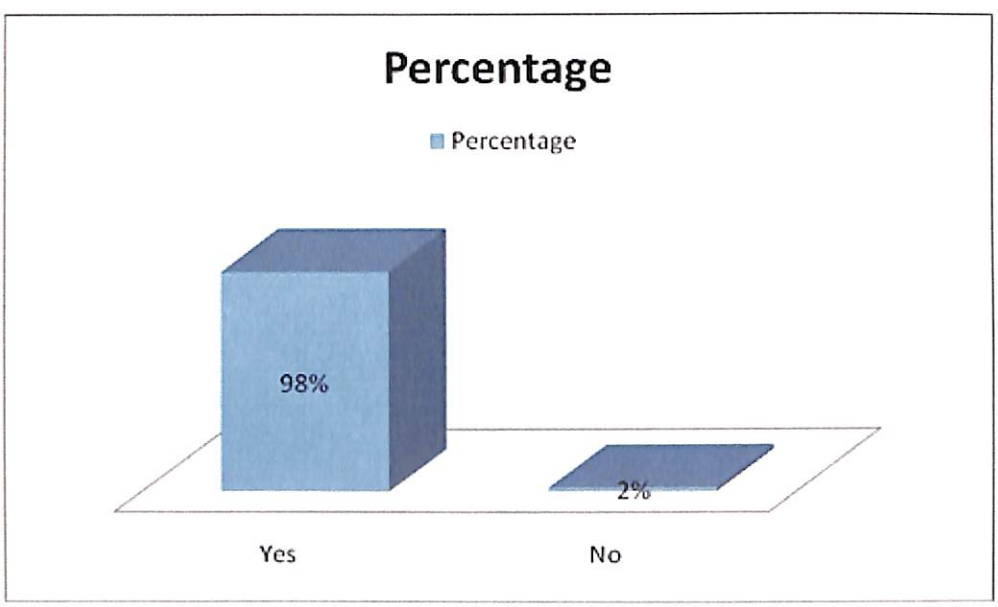


Figure 4.8 Combination of Skills

Analysis:

In the above chart show that 98% of the respondents said yes that 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. And 2% of the respondents said no with the above statement.

9. Do you agree that role of project managers in improving project performance in Petrochemical industry?

Criteria	Frequency	Percentage
Strongly Agree	20	40%
Agree	14	28%
Neutral	9	18%
Disagree	6	12%
Strongly disagree	1	2%

Table 4.9 Role of project managers in improving project performance in Petrochemical industry

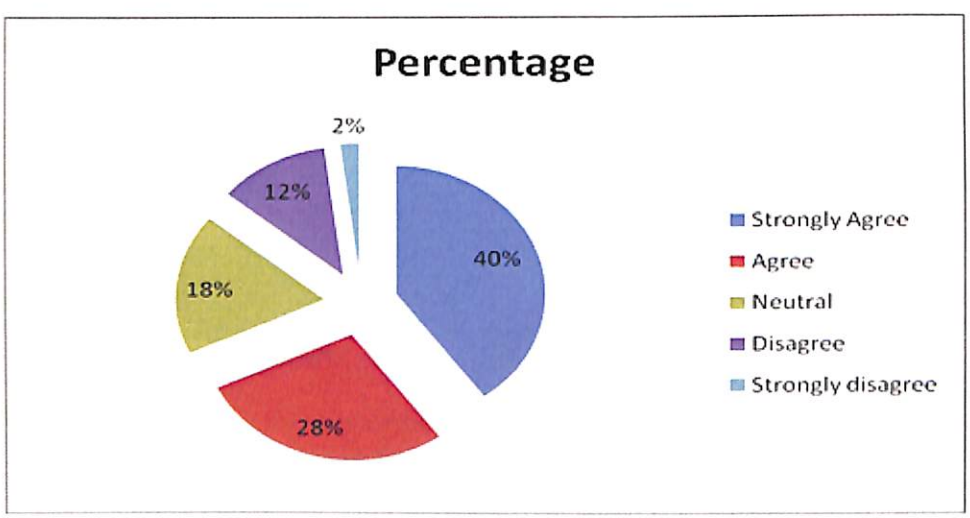


Figure 4.9 Role of project managers in improving project performance in Petrochemical industry

Analysis:

In the above chart show that 40% of the respondents strongly agree with the role of project managers in improving project performance in Petrochemical industry. 28% of the respondents agree, 18% of the respondents neutral, 12% of the respondents disagree with the same and 2% of the respondents strongly disagree with the above statement.

10. Do agree that the competency skills that a project manager should have to influence a successful project performance in Petrochemical industry?

Criteria	Frequency	Percentage
Strongly Agree	23	46%
Agree	14	28%
Neutral	8	16%
Disagree	4	8%
Strongly disagree	1	2%

Table 4.10 Competency Skills

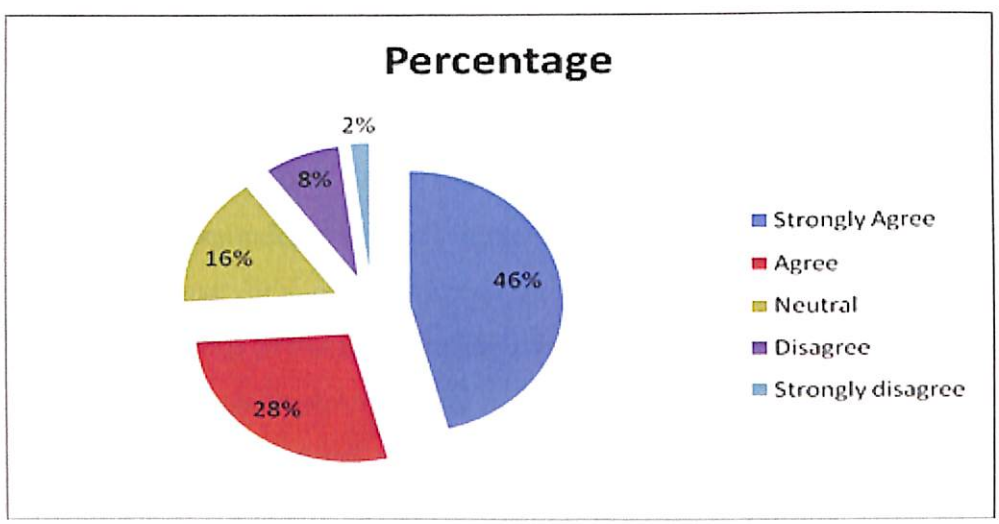


Figure 4.10 competency skills

Analysis:

In the above chart show that 46% of the respondents strongly agree with the competency skills that a project manager should have to influence a successful project performance in Petrochemical industry. 28% of the respondents agree, 16% of the respondents neutral,8% of the respondents disagree with the same and 2% of the respondents strongly disagree with the above statement.

CHAPTER – 5

INTERPRETATION OF RESULTS

Findings:

- 20% of the respondents have been working in Ratnagiri Refinery and Petrochemicals Limited (RRPCL) less than 1 year. 24% of the respondents said 1-3 years, 16% of the respondents said 3-5 years. 28% of the respondents said 5 years and 12% of the respondents said above 5 years.
- 36% of the respondents strongly agree with the role of Project Managers in the Petrochemical Industry or project is very important. 28% of the respondents agree, 20% of the respondents neutral with the same and 12% of the respondents disagree with the above statement.
- 94% of the respondents said yes that Project management process, Lifecycle and Project Planning Stages. 6% of the respondents said no with the same.
- 42% of the respondents strongly agree with the project goals and objectives need to be clearly defined. 32% of the respondents agree, 12% of the respondents neutral with the same and 8% of the respondents disagree, 6% of the respondents strongly disagree with the above statement.
- 90% of the respondents said yes that Project goals and objectives have to be socialized in Ratnagiri Refinery and Petrochemicals Limited (RRPCL). 10% of the respondents said no with the above statement
- 32% of the respondents strongly agree with the model of stages of project life cycle is needed when managing projects by project manager. 24% of the respondents agree, 20% of the respondents neutral with the same
- 36% of the respondents strongly agree with the project management process must be clearly visualized and describe by project manager. 20% of the respondents neutral with the same and 6% of the respondents strongly disagree with the above statement.
- 98% of the respondents said yes that 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. And 2% of the respondents said no with the above statement.

- 40% of the respondents strongly agree with the role of project managers in improving project performance in Petrochemical industry. 28% of the respondents agree, 18% of the respondents neutral, 12% of the respondents disagree with the same and 2% of the respondents strongly disagree with the above statement.
- 46% of the respondents strongly agree with the competency skills that a project manager should have to influence a successful project performance in Petrochemical industry. 28% of the respondents agree, 16% of the respondents neutral,8% of the respondents disagree with the same.

RECOMMENDATIONS:

A well-defined life cycle brings order and structure to the project. The Project manager should have the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of a project.

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 a project manager's 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 a project. Risks arise from uncertainty, and the successful project manager is the one who focuses on this as their primary concern. Most of the issues that impact a project result 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.

CHAPTER – 6

CONCLUSION AND SCOPE FOR FUTURE WORK

CONCLUSION

Project management is the utilization of learning, aptitudes, apparatuses, and strategies to project exercises to meet or surpass partners needs and desires from an project. Project management includes more than exactly what a project supervisor does, all group manager participate in some level of project administration, whether meeting due date, speaking with others, or evaluating errand spans. Everybody required in the project adds to its prosperity Project managers can assume an essential part in driving Advertising creation industry advancement. Effective project managements regularly get to be senior directors in their associations, in charge of key and approach choices.

They deliver the uplifting states of mind and outlook to changed projects that, at last, enhance the entire business. The customary part of project managements in controlling time, cost, quality, security and ecological issues, can now be supplemented by their part as drivers of progress with a specific end goal to guarantee the proceeded with improvement of the business in which they work. The growth of their current part must be acknowledged in the event that they know about the requirements in the business in general. Hence, the long haul vision and approach for the business should be obviously declared freely, so that different partners can reflect over it and figure out what it implies for themselves as people. Aside from reputation, such a dream needs a champion to urge partners to focus on it. Project management have a key part in supporting such a dream, and will be an essential part of the Advertising creation industry group to achieve its acknowledgment.

Oil and gas (O&G) industry has a vital influence as the country working, regardless of the way that every one of its office is having an extraordinary necessity. As a great many cash are expected to kick off an O&G Project, fitting activities are clearly fundamental in guaranteeing the accomplishment of a specific project. Viable task the executives approach is appeared as a standout amongst the best answers for this situation. It very well may be seen that the pertinence of having an organized project the board approach and direction, for example, Project Management Book of Knowledge (PMBOK) and Stage Gate Project

Management Process (SGPMP) will be the path forward for future Project execution. The usage can be additionally custom fitted made by every neighborhood nation necessity and business, where the upstream and downstream O&G tasks may have a few contrasts as far as endorsement expert and project stages. Consequently, as this paper has effectively accomplished its point of looking into the project the executives of O&G industry, further examination is relied upon to be completed in researching the particular basic achievement factors that guarantee the achievement conveyance of O&G Project around the world

SCOPE

We will be studying on project management life cycle and role of project manager. We have tried to find out the various factors which are affecting the project management of the company. Scope of our study is very wide.

LIMITATIONS OF THE STUDY

The report may be beneficial to Ratnagiri Refinery and Petrochemicals Limited (RRPCL). But there are some limitations of the study: -

- The size of the research may not be substantial, and it is limited to area.
- There may be lack of time on the part of respondents.
- There may be some bias information provided by hotel professionals.
- As only single area was 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.

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APPENDIX

QUESTIONNAIRE

Dear Respondents,

I am **HARPAL SINGH MARWAH** a student of **MBA (OIL AND GAS MANAGEMENT)**, as a part of my curriculum; I am to take a research Project on **"STUDY OF PROJECT MANAGEMENT LIFE CYCLE AND ROLE OF PROJECT MANAGER (A CASE STUDY OF PETROLEUM REFINERY COMPLEX PROJECT, HANDLED BY RATNAGIRI REFINERY AND PETRO CHEMICALS)"**

To enable to undertake above mentioned study, I request you to give your fair views. Your insights and perspective are important and valuable for my research.

Policy on Confidentiality: Please feel free to give your honest responses. The confidentiality of the information provided by the respondent is completely assured

Name : .....

Age : .....

Address : .....

Gender : .....

Contact No. : .....

Designation : .....

Q1. How long have you been working in Ratnagiri Refinery and Petrochemicals Limited (RRPCL)?

A. Less than 1 year
B. 1-3 years
C. 3-5 years
D. 5 years
E. Above 5 years

Q2. Do you agree that the role of Project Managers in the Petrochemical Industry or project is very important?

A. Strongly Agree
B. Agree

C. Neutral

D. Disagree

E. Strongly disagree

Q3. Do you know about Project management process, Lifecycle and Project Planning Stages?

A. Yes

B. No

Q4. The project goals and objectives need to be clearly defined.

A. Strongly Agree

B. Agree

C. Neutral

D. Disagree

E. Strongly disagree

Q5. Do you feel that Project goals and objectives have to be socialized in Ratnagiri Refinery and Petrochemicals Limited (RRPCL)?

A. Yes

B. No

Q6. A model of stages of project life cycle is needed when managing projects by project manager.

A. Strongly Agree

B. Agree

C. Neutral

D. Disagree

E. Strongly disagree

Q7. The project management process must be clearly visualized and describe by project manager.

A. Strongly Agree

B. Agree

C. Neutral

D. Disagree

E. Strongly disagree

Q8. 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.

A. Yes

B. No

Q9. Do you agree that role of project managers in improving project performance in Petrochemical industry?

A. Strongly Agree

B. Agree

C. Neutral

D. Disagree

E. Strongly disagree

Q10. Do agree that the competency skills that a project manager should have to influence a successful project performance in Petrochemical industry?

A. Strongly Agree

B. Agree

C. Neutral

D. Disagree

E. Strongly disagree