Dissertation:

Organizational Change Management: A study on the need for a re-structured organization within a functional configuration

By:

Abdulla Ibrahim Abdulla Al Marzouqi

M.Sc. in Project Management

Submitted to: Professor Ashly Pinnington Dean- Faculty of Business

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Abstract:

The objective of this study was to qualitatively examine the current organizational structure and systematically investigate and review proposed changes at an Oil Refining Organization. In this study a critical investigation will be conducted to mainly identify and recommend relevant dimensions of a new organizational structure and offer some tentative recommendations to the optimal approach in a project organizational selection context in order to help the current organization overcome cuncurrent organizational difficulties pertaining to managing projects.

First, a look at the three major organizational forms commonly used namely, functional, matrix and projectized organizational forms will be conducted, and how each is currently fitted into the current organization. Each of these forms will be investigated in terms of its pros and cons and expected effect on the parent organization. In addition, advantages and disadvantages of the proposed changes and the overall strategic leadership necessary to successfully implement the assigned projects within the framework of the newly discussed organizational structure will be looked into. Then, critical factors that might lead to choosing one form of structure over the others will be discussed by deciding about how to tie projects to the parent organization and how to organize the project teams. In a latter part of this paper a discussion on how a project management team can be organized and then consider some combination of the fundamental forms and examine the implications of using different forms of organizational structures.

Finally, a conclusion will be drawn on factors influencing the choice of the optimum organizational structure and the difficulties pertaining to deciding it should be explained. Moreover, some of the critical success factors that might lead to choosing one from of organization over the others and some details of the project team, and describing the various roles of the project staff will be examined. The details of organizing the project team as part of the new organization structure will be investigated as to describe the roles of the project staff in their constituent sections under the newly proposed organization, which will be looked into in details. It will also be concluded that in a functional organization, the introduction of projectized structure for the newly introduced organization may significantly increase the probability of successful outcome from projects.

"Into the 21st Century, project based management will sweep aside traditional functional line Management" (Rodney Turner, Editor International Journal of Project Management)

"Individuals assigned to matrix organizations are more frustrated by authority ambiguity than permanent members of functional organizations" (Reeser, 1969)

"Projects are the prime vehicles for employee development and for the successful accomplishment of work in organizations" (Tom Peters, 1998)

Table of Content:

Chapter 4: Research Methodology

Chapter 5: Analysis of the Interview Results

Chapter 6: Discussion

Chapter 7: Recommendations and Conclusion

CHAPTER 1

Chapter 1: Introduction to the Problem

1.1 Introduction

Not only do projects vary in terms of scope, complexity and uncertainty but they also take place within varying organizational forms. It is sometimes difficult for an organization to adopt a specific project based management methodology without skillful human resources. Therefore, in the current globally competitive markets, organizations are seeking information about obstacles to productivity and satisfaction in the workplace. Hence, there are several types of organizational forms which lead to better interactions with project leaders/managers and their reports who deal with team members, members of their functional organization, and other project teams having major impacts on organizational outcomes. Because projects are the primary way through which organizations accomplish change, the results of projects that bring about; can determine the success or failure of an organization (Pettigrew et al, 2001).

The current structure at the workplace is a functional structure headed by a Division Manager and five department managers. Each functional department namely Safety, Environment and Fire Department, Maintenance, Operations, Technical Services and Administration Departments are responsible for the projects they plan to carry out within the budgeted year. However, teams are formed with designation of team leaders in weak matrices (For weak matrix definition, see definition section 1.5) based on the nature of the project and the financial power delegated to each manager. Hence, teams are delegated some responsibilities for the whole bidding activities such as receipt of technical bids, perform evaluation of contractors' bids, presentation of evaluation results to high management and after awarding the projects, take the responsibility of supervising the project site activities till completion and hand over the project to operations.

As mentioned above, weak matrices structures are typically used to from project teams. A team is typically composed of persons from different functional units assigned to carry out above mentioned tasks. The project team is selected and approved according to delegation of authority and the basis of financial power delegated to each manager in the organization and is often superimposed on a functional hierarchical organization. Nevertheless, this type of internal organization face lots of difficulties in the day to day activities which will be explained further in later chapters.

1.2 **Problem Statement - Projects as part of the Functional Organization**

This research presents an analysis of a qualitative study carried out on the current organizational structure, which showed fundamental problems faced by staff assigned to projects. Worth to mention, after more than two decades of oil refining operations, the current division structure did not undergo essential organizational changes to overcome problems related to project work processes and remained purely functional. However, several organizational studies were conducted because of acquestion of new asstes and expantions but did not result in significant changes mainly due to lack of awareness of the importance of such change and did not recognize the need for a separate project-based organization. The organization is considered flat and is made of four levels which are Division, Department, Section and Groups.

An ordinary person can easily observe duplication of project works carried out by each department. Besides, often department staff do not know whom to consult to get their projects registered, either in the Capital or Operating Budgets as they lack basic knowledge about the difference between the nature of the two or basic information about financial requirements of budgeting. Sometimes they think that other departments are the right place to advise on where to register their projects and other times they approach different functional departments' staff for advice.

For instance, if management decided a project to construct a new building, or perhaps, to renovate an existing building, the project would probably be assigned to Technical Services Department, under direct supervision of Civil Engineers reporting to the Head of Engineering Development and would be managed by a civil engineer who would be more interested and experienced in the management of such project nature. A project involving a study and front end engineering design for recovery of fugitive gases would probably fall under the Safety, Environment and Fire Department, assigned to an Environment Engineer who would be less interested in managing projects. Therefore, for functionally organized projects, the project is assigned to the functional unit that has the most interest in ensuring its success or can be helpful in implementing it. Given the importance of these problems, a decision was taken to write a dissertation and explore an optimal option that would best fit the structure of the organization at the workplace.

Aims and Objectives

Aim:

The aim of this study is to find out the possible relationship between successful implementation of projects and organizational structure.

Objectives:

1. Study whether organizational structure has impact on project success or not

2. Review current organization structure and study the need for an organizational restructuring that best achieve organizational improvement.

3. Conduct a critical discussion and logical conclusion about the best possible organizational structure.

4. Gain better understanding of how best organizational change be carried out to bridge the gap and identify issues affecting current and future organizational performance in order to manage projects effectively.

5. Benchmark with the best practices to recommend required staffing to ensure effective, efficient and productive project outcomes to meet future business and operational requirements.

6. Perform logical steps to the transition between old and new structure to reach better organizational effectiveness and meet required change.

7. Assess awareness level of Project Management knowledge and practices and skills in the current organization to assess the rate of project performance and link it to project outcomes with a view of bringing about improvement.

8. Propose organizational structure that would best be used in the current organization

1.4 Summary of Dissertation

This paper presents an analysis of a qualitative study carried out on the current organizational structure at the workplace, showing fundamental problems faced by staff assigned to projects. The aim of this study is to find out the possible relationship between successful implementation of projects and organizational structure.

There are several types of organizational forms to choose from to manage projects, which were looked into in this study that benchmark the best practices and recommend required staffing to ensure effective, efficient and productive project outcomes which meet future business and operational requirements. The current structure at the workplace is a functional structure, which is facing plenty of constraints in the day-to-day project activities.

A literature review for the three major organizational forms commonly used namely, functional, projectized and matrix organizational forms were investigated to determine the most suitable one that would fit into the current organization. Different standard organization structures were explored along with their strengths and weaknesses. The literature review was conducted in order to explore the pros and cons expected to influence the selection of a proper organization structure for the current organization. The literature review consisted of reading around topics related to organizational change management, organization design and tools, organizational structure and theory and the link between organization structure and performance.

In addition to the type of organizational forms, advantages and disadvantages of the proposed changes, critical success factors that could lead to choosing one form of structure over the others were discussed by deciding about how to tie projects to the parent organization and how to organize the project team. In a latter part of this paper a discussion on how a project management team could be organized and then consider some combination of the fundamental forms and examine the implications of using different forms of such configurations.

The criteria that govern the selection of best suiting organization structure for a particular working environment was explored in the choice of the success factors governing the successful completion of projects against the choice of organizational structure. The same is true for the choice of an organization structure with a list of key

factors that would help in choosing the right organization structure for the given conditions on specific project performances. The analysis approach consisted of understanding the various organizational structures, their advantages and disadvantages. Then, a suitable structure could be chosen that could offer the most effective and efficient choice.

The research methodology consisted of interviews conducted by means of a study in the form of face-to-face interviews and focus group discussions in order to deal with scenarios related to problems faced by Company in managing project in its functional structure. The organization's current level of project management knowledge and skills were the targeted base line established for investigating project management practices within the organization.

Individuals who dealt directly and indirectly with projects having different positions perspectives and experiences were interviewed and responses were noted and analyzed. They were invited to participate in providing basic descriptive information and their opinions of how projects were viewed in the organizational context to assess how groups or units function. The respondents' feedback were summarized to provide measures of organizational awareness levels of project skills and knowledge possessed with each individual in the organization.

The common answer received from most interviewees on the question related to the required change for most success factors was that the functional groups in the organization were required to be freed up from project related works and that a full scale dedicated team be arranged under a single unit as an alternative to the organization currently used within the functional structure. Based on the above outcome, it was believed that there is strong relationship between the choice of the project structure and the successful outcome from projects and accordingly, recommended that engineers and staff in the current organization be re-organized under one integrated unit with centers focused around core project management functions.

It is concluded that the current organization faced lots of difficulties in organizing and managing projects due to the fact that business processes are duplicated thus adding additional workload on the organization. Retrospectively, it was recognized that this

study provided a better understanding of project management practices in the existing organization and obviously concluded that the results of this study suggest that planning and organizing a new project organization is necessary to overcome the everlasting conflict between the functional and project based structures and work processes.

This in fact necessitated re-structuring the organization by introducing a project based management separate from the existing one in a pure organizational structure; making it possible to design stable management structures with a dynamic composition that can easily exchange staff within the intended organization. It also represented examples of organization design targets that satisfy certain work flow requirements, and then presented generic and simple job descriptions for each discipline.

1.5 Definitions

Functional Structure:

In a functional structure each individual job is clearly defined starting from the head of the organization to the lowest position in the organization.

Matrix Structure:

In a matrix structure, individuals are assigned for project works in a combination of functional and projectized structures. Therefore, the team members keep their functional responsibility, while they are selected from their functional units and assigned in project teams. Thus, team members have to balance between the needs of their functional and project manager.

Weak Matrix (Coordination Model Configuration):

In this form of structure, an approved team chosen from their functional units is imposed on the hierarchy, hence, the project manager is not given enough authority on the selected team. Instead, he/she plays a coordinating role to report about the project progress. In addition, the selected team, give priority to their functional managers.

Balanced Matrix (Overlay Model Configuration):

In this kind of model, individuals assigned in project teams are given clear picture of their role when assigned to projects. The project manager in this case has enough power to use the services of each individual in the established organization that he/she can easily demand from the functional manager.

Strong Matrix:

In this type of matrix structure, the organization intending to carry out projects devote a project manager to manage the assigned project with line authority over the dedicated project team. However, power over the team is equally shared between the project and the functional manager.

CHAPTER 2

Chapter 2: Current Organizational Structure

2.1 Introduction

Established in 1999 as a public joint-stock company to take over the responsibility of refining operations of Crude Oil, Condensate and supply of petroleum products in the Emirate of Abu Dhabi in compliance with domestic and international specifications. Number of employees working in the Company is approximately 2,000 from over 40 Nationalities. (Abu Dhabi Oil Refining Company, 2005).

Company is responsible for developing the refining industry, which started with the establishment of the first Refinery where now it owns two Refineries, one in Abu Dhabi and the other is located in the Western Region of the Emirate. The company is also in charge of implementing national strategies aimed at enhancing the role of downstream industries in the local economy. The operation started with a refining capacity of 285,000 BPSD, Condensate processing capacity of 280,000 BPSD and Sulfur granulation capacity of 7,650 tons per day. (Abu Dhabi Oil Refining Company, 2005).

Company conducts high standard and efficient refining operations consistent with sound health, safety and environmental practices. Its activities are based on total quality management principles, in a customer and employee oriented environment. Its aim is to provide reliable, quality products that satisfy the requirements and needs of its customers and partners. (Abu Dhabi Oil Refining Company, 2005).

Company produce a range of finished and intermediate products such as Liquefied Petroleum Gas (LPG), Unleaded Gasoline, Naphtha grades, Jet-Fuel, Aviation Turbine Kerosene, Domestic Kerosene, Gas Oil, Straight Run Residue, and Liquid & granulated Sulfur. (Abu Dhabi Oil Refining Company, 2005).

In the future, Company intends to work on enhancing its performance to meet its overall objectives. It also plans to improve its cost control and adopt state-of-the-art equipment and technology to optimize its operations. Currently, it is working on a mega project to build an additional grass root refinery with around 400,000 Barrels of crude oil processing capacity. (Abu Dhabi Oil Refining Company, 2005).

2.2 <u>Company at a glance</u>

Following the discovery of oil in Abu Dhabi in 1958, and with the first export shipments of crude in 1962, plans were drawn up for a grass root refinery with a capacity of 15,000 barrels per stream day (BPSD) to meet a growing local need for petroleum products. However, the growth in demand for oil products was so rapid and work began almost immediately to install additional refining capacity to further process 60,000 BPSD. Requirements continued to grow in the fast-developing Emirate, so, additional units for Gas Oil Desulphurization and Sulphur recovery were expanded. The expanded Refinery started up with a rated capacity of 85,000 BPSD of the first Refinery that is named as Operating Division A for the sake of this study. A Salt and Chlorine Plant, was merged with the Refinery to form Refining and Chlorine Operating Division under a single unit. Subsequently, the Salt and Chlorine Plant was permanently de-commissioned in 2001. Two power plants, owned and operated by Abu Dhabi Power Company, and a Lube oil blending/filling plant, owned and operated by an Oil Distribution Company, were located adjacent to the Refinery. (Abu Dhabi Oil Refining Company, 2005).

Aiming at becoming a leader in the oil refining business, Company is now working on expanding its activities in the downstream sector. It is also exerting all possible efforts to face the challenges of the 21st century in a rapidly changing market. Besides meeting growing demand for enhanced products and services, the company is playing a positive role in advancing the local economy and boosting the national income. In fact, it is now in the process of implementing a series of new and ongoing investments, which will help the company's meet its objectives for the 21st century, including the task of fulfilling national aspirations for quality assurance and environmental protection. It is also keen on implementing national policies aimed at providing employment opportunities for the national workforce. (Abu Dhabi Oil Refining Company, 2005).

In addition, the company aims to continue to actively pursue its role towards greater achievements for the benefit of the country and its people. It is exerting all possible efforts to seize today's opportunities and meet tomorrow's challenges. These efforts will result in adding substantial increases to UAE economy by achieving a net Operating Refining Capacity of 900,000 BPSD by the year 2013. (Abu Dhabi Oil Refining Company, 2005).

Company Operating Divisions

The Main operating divisions are Operating Division A and B, which constitute the Company core organization and business. They are referred to as the Business Line/Units. They produce over 23 million tons per year of products for the local and export markets.

2.3.1 Operating Division A

Operating Division A mainly intended to supply the local market with finished products. It consists of a Hydro Skimming Complex designed to process Bab field Crude as well as a mixture of Asab-Sahil, Shah and Thammama Condensate fields. Finished products from the Refinery are as follows: Liquefied Petroleum Gases, Naphtha, Aviation Turbine Kerosene, Domestic Kerosene, Gas Oil, Straight Run Residue and Liquid Sulfur. (Abu Dhabi Oil Refining Company, 2005).

These are produced by the following primary and secondary processing units:

Refinery units include: Crude Distillation Unit (85,000 BPSD): As a first step, prior to the actual distillation process, Crude Oil is Desalted to remove the undesirable salts, water and sludge which are generally associated with any type of crude. After final heating in a furnace, the Crude is then fractionated in an Atmospheric Distillation Column into the basic four raw petroleum fractions of Naphtha, kerosene, Gas Oil and Straight Run Residue (SRR), which is further, processed in downstream units except SRR, which is pumped to Refinery B located 240 Kilometers from Refinery A for further possessing. (Abu Dhabi Oil Refining Company, 2005).

Naphtha Hydrodesulphuriser Unit (23,000 BPSD) sweetens the Straight Run Naphtha from Crude Unit. Three products are produced in this unit namely, Heavy Naphtha, Light Naphtha and Sour Liquefied Petroleum Gases (LPG). (Abu Dhabi Oil Refining Company, 2005).

Kerosene Merox Unit (21,000 BPSD) converts Mercaptans in straight run kerosene into disulphide to meet the final product quality for aviation kerosene. (Abu Dhabi Oil Refining Company, 2005).

Catalytic Reformer Unit (14,000 BPSD) processes the Heavy Naphtha cut to improve its anti-knock properties prior to using it as a Gasoline blending component. The unit is a continuous regeneration type and does not need to be shut down periodically for regeneration of catalyst. The product generated from this unit "Reformate" is pumped to Refinery B and is used as Gasoline blending component. (Abu Dhabi Oil Refining Company, 2005).

Gas Oil Hydrodesulphuriser Unit (22,500 BPSD), the Gas Oil is Hydroteted to reduce Gas Oil sulfur content to 0.15 wt% to improve product quality. . (Abu Dhabi Oil Refining Company, 2005).

LPG Treating and Recovery Unit (3,500 BPSD) where the raw LPG from Naphtha Hydrodesulphuriser and Catalytic Reformer Units are processed in this unit. Butane produced is used as a blending component in Gasoline and blended with Propane to form LPG for domestic use. . (Abu Dhabi Oil Refining Company, 2005).

Excess Naphtha Stabilizer Unit (3,500 BPSD) where Excess Naphtha from Crude Unit is stabilized prior to export to Operating Division B. (Abu Dhabi Oil Refining Company, 2005).

Gas Sweetening Unit (35 tons/day H2S Removal): Sour Gases produced in the Refinery facilities are sweetened using amine solution to remove hydrogen sulphide to minimize sulfur oxide emissions. (Abu Dhabi Oil Refining Company, 2005).

Sulphur Recovery Unit (35 tons/day): The acid gases produced from Gas Sweetening Unit are converted to liquid sulfur, which is then transported to Operating Division B Sulfur Handling Terminal via road tankers. . (Abu Dhabi Oil Refining Company, 2005).

Jarn Yaphour Crude Oil Stabilization Plant (10,000 BPSD): The Oil/Gas Separation Plant is designed to stabilize Crude from Jarn Yaphour Wells, located some 30 kilometers from Abu Dhabi. The separated gas is further treated to remove hydrogen sulphide, water and hydrocarbon condensate before it is injected into Main Gas Network owned by a different company. The Stabilized Crude is sent to the Refinery

Crude Distillation Unit for further separation into petroleum fractions. (Abu Dhabi Oil Refining Company, 2005).

Additional Effluent Water Treatment facilities were installed to adhere to rigid oil in water specification of 10 ppm maximum. (Abu Dhabi Oil Refining Company, 2005).

2.3.2 Operating Division B

Operating Division B is located 240 kilometers west of Abu Dhabi City, the Industrial Complex was developed as a major contributor to the national economy and represents a series of multi million dollar investments. (Abu Dhabi Oil Refining Company, 2005).

The story began when plans were laid to transform a remote desert site into a self-contained industrial town, geared to fulfilling the down stream requirements of Abu Dhabi's booming oil and gas industry. Centered around Operating Division B, the complex was officially inaugurated by the late His Highness Sheikh Zayed bin Sultan Al Nahyan, the visionary behind Abu Dhabi's remarkable development and prosperity. (Abu Dhabi Oil Refining Company, 2005).

Soon after commissioning the original 120,000 barrels per day (BPSD) Hydro skimming refinery, plans were drawn up to add a 27,000 BPSD Hydro cracker complex. To consolidate operations, the General Utilities Plant, was set up to provide electricity and water for the area, was merged with the Refinery. In support of the company's HSE policy, a central Sulfur Handling and Granulation Plant was established to handle all the liquid Sulphur recovered in Natural Gas Liquefaction facilities. Its operations were also integrated with the Operating Division B Division. After its expansion in early 2001, the granulation capacity, at 7,650 tons per day, has become one of the largest in the world. (Abu Dhabi Oil Refining Company, 2005).

Two 140,000 BPSD condensate processing trains were commissioned in year 2000-2002 to process condensate produced in the on-shore gas fields of Abu Dhabi. Currently these are two of the largest such condensate splitters in the world. Meanwhile, support facilities such as berths, power generation and water production

facilities continued to be expanded to meet the growing needs of the industrial area. (Abu Dhabi Oil Refining Company, 2005).

The original Hydro skimming complex was designed to process 120,000 BPSD of crude oil, mainly for the export market. Growth in demand for Abu Dhabi's high quality refined products lead to the continuous expansions at Operating Division B. (Abu Dhabi Oil Refining Company, 2005).

The range of refined products include Liquefied Petroleum Gas, Super Unleaded Gasoline (98 Octane), Special Unleaded Gasoline (95 Octane), Premium E-Plus (91 Octane), Naphtha grades, Jet-A1 and Kerosene grades, Gas Oil grades, Straight run Residue, Bunker grades 180 and 380 cst and Granulated Sulphur. (Abu Dhabi Oil Refining Company, 2005).

These are produced by the following primary and secondary processing units:

Crude oil Distillation (120,000 BPSD): After desalting, crude oil is distilled to produce full-range naphtha, kerosene, light gas oil, heavy gas oil and straight run residue, which are further processed in downstream units. (Abu Dhabi Oil Refining Company, 2005).

Naphtha Hydrodesulphurization (34,350 BPSD): The full-range naphtha from the crude oil unit and heavy naphtha from the Hydro cracker unit is hydro treated to remove the Sulphur compounds and then LPG is stripped from whole naphtha. After dehydration, the raw LPG is sent to the neighboring Company LPG processing plant for further processing while the whole naphtha is split into light naphtha, used for gasoline blending, and heavy naphtha, used as feedstock for the Catalytic Reformer Unit. (Abu Dhabi Oil Refining Company, 2005).

Catalytic Reformer (19,150 BPSD): The heavy naphtha is processed to improve its anti-knock properties by using a bimetallic platinum based catalyst. The Reformate obtained is used as the main blend component for gasoline production. The hydrogen-rich gas is used in the reaction sections of the hydrotreaters and the remaining gas goes to Refinery Fuel Gas system. (Abu Dhabi Oil Refining Company, 2005).

Kerosene Hydrotreater (20,780 BPSD): The unit improves the burning quality of kerosene by desulphurization and saturation of aromatics required to meet international specifications for jet fuel. (Abu Dhabi Oil Refining Company, 2005).

Gas Oil Hydrodesulphurization (21,850 BPSD): The unit removes Sulphur compounds in the heavy gas oil from the crude oil unit using a cobalt/molybdenum oxide-based catalyst. The hydrotreated heavy gas oil is used as a blending component to produce different grades of gas oil. (Abu Dhabi Oil Refining Company, 2005).

Vacuum Unit (46,000 BPSD): The Vacuum Unit processes atmospheric residue from the crude oil unit to produce heavy vacuum gas oil as feedstock for the Unibon unit. In addition, Residue is supplemented from Operating Division A. (Abu Dhabi Oil Refining Company, 2005).

Unibon Unit/Hydro cracker (27,000 BPSD): This Unit converts the heavy vacuum gas oil feed into lighter products in the reactor section by passing the feed, plus hydrogen, over catalysts under high temperature and pressure. The products from this reaction are then separated in the fractionation section to yield high value finished products ranging from LPG to gas oil. (Abu Dhabi Oil Refining Company, 2005).

Hydrogen Plant (60,000 Nm3/hr H2): The Hydrogen Unit converts natural gas and steam into hydrogen with the aid of catalysts. Propane can also be used as an alternative feed. (Abu Dhabi Oil Refining Company, 2005).

Two Sulphur Recovery Plants (44/50 tons per day): These units recover sulfur from hydrogen sulphide-rich gas produced in the Hydrodesulphurization and Unibon units by converting it into elemental sulfur through a thermal and catalytic reaction. The liquid sulfur is then sent to the Sulphur Handling Terminal for granulation and export. (Abu Dhabi Oil Refining Company, 2005).

Two Condensate Splitters (2x140,000 BPSD: Each splitter is designed to process condensate from the On-shore Gas Development and Asab Gas Development fields. The splitters fractionate the condensate into unstabilized light naphtha, medium naphtha, heavy naphtha, kerosene, light gas oil (LGO), heavy gas oil (HGO), and

atmospheric residue, which are further processed in downstream units. (Abu Dhabi Oil Refining Company, 2005).

Two Naphtha Stabilizers (2x27,500 BPSD) Each Stabilizer is designed to process 27,500 bpd of unstabilized light naphtha from the condensate splitters. LPG after treatment is sent to neighboring company while stabilized light naphtha is routed to storage and blending. (Abu Dhabi Oil Refining Company, 2005).

Two Kerosene Sweetening Units (2x52,000 BPSD): Kerosene produced in the Condensate Distillation Units contains mercaptans and naphthenic acids. The Merichem Sweetening units reduce the mercaptans by converting them into disulphide. (Abu Dhabi Oil Refining Company, 2005).

2.4 Summary of Chapter

The Company was established in 1999 to take over the responsibility of refining operations of Crude Oil, Condensate and supply of petroleum products in the Emirate of Abu Dhabi. The current processing capacity is about 500,000 Barrels of crude and condensate. Number of employees working in the Company is approximately 2,000 from over 40 Nationalities. (Abu Dhabi Oil Refining Company, 2005).

It owns two refineries, one in Abu Dhabi and the other is located in the Western Region of the Emirate, which are the main operating divisions, namely operating Division A and B, which constitute the Company core organization and business. Company produce a range of finished and intermediate products such as Liquefied Petroleum Gas (LPG), Super Unleaded Gasoline (98 Octane), Special Unleaded Gasoline (95 Octane), Premium E-Plus (91 Octane), Naphtha grades, Jet-Fuel, Aviation Turbine Kerosene and Kerosene grades, Gas Oil grades, Straight run Residue, Bunker grades 180 and 380 cst, Liquid & granulated Sulfur. Currently, it is working on expanding its activities in the downstream sector with a mega project to build an additional grass root refinery with around 400,000 Barrels of crude oil processing capacity. These efforts will result in adding substantial increases to UAE economy by achieving a net Operating Refining Capacity of 900,000 BPSD by the year 2013. (Abu Dhabi Oil Refining Company, 2005).

CHAPTER 3

Chapter 3: Literature Review

3.1 <u>Introduction</u>

In order to research project organizations, articles were found as one of the key sources to research various organizational structures for this study. In an attempt to make some sense out of the large and varied research literature on organizational restructuring, seventy journal articles and some books were referred to source information describing the works of scholars who attempted to research topics having similar overviews. These articles address related issues on the intended dissertation topic, which were later evaluated and analyzed. It is worth mentioning, that a critical examination of such research papers were carried out in addition to some chapters in academic books and articles. Primarily and secondary sources such as refereed journals, academic textbooks, articles and references were located by mainly using the access to University of Manchester (my Athens) research database to find academic related articles for researched topic.

The objective of this literature review is to come up with the pros and cons and expected effect on the parent organization. A literature review for the three major organizational forms commonly used namely, functional, projectized and matrix organizational forms were investigated and how each would fit into the current organization.

In addition, type of organizational forms, advantages and disadvantages of the proposed changes and the overall strategic leadership necessary to successfully implement the assigned projects within the framework of the newly proposed organizational structure were also researched. Then, organizational change management, design, tools, theory and critical success factors that could lead to choosing one form of structure over the others were used from a generic list introduced in the literature by deciding about how to tie projects to the parent organization and how to organize the project itself.

In a latter part of this paper a literature review was conducted on how project management team could be organized and then consider some combination of the fundamental forms and examine the implications of using different forms of organizational structures.

3.2 Organizational Change Management

The objective of this section is to review the move towards more effective organization where change should be managed systemically. The fundamental argument for this application is that the introduction of organizational change is composed of elements that are not simple and clearly identifiable but are interrelated and interacting. It may vary from organization to another. However, the majority of researched strategies offer a general discussion of change management, rather than specific action plan. These mostly include issues such as what should be changed, the order in which changes should take place, how the changes should be introduced, who should be in control, to which factors should the change champion be responsive and how to measure the success of the change.

3.2.1 Management by Projects

In a study of Guangming et al (2003: 109) found that Traditional businesses are carried out in traditional functional organizations, but the case study indicates that anything representing a change is carried out as a project. They further add that firms are organized by …, several methods at different levels. They go on to say that managing organizations by projects is a common practice these days as opposed to traditional business organizations representing a change process.

> Moving from a non-project organization to one in which projects are organized and used to accomplish special tasks to a full-fledged project-oriented organization presents management of the firm with an extraordinarily difficult and challenging transition. (Guangming et al, 2003: 109).

Joan et al (2005) claims that a far more effective approach and essentially important is to notice in the content of this subject, is the importance of the elements of change process and what should be emphasized during the change process. Joan et al (2005) has drawn attention to the fact that these elements may include participation of individuals and groups in the process of change, the empowerment of people, the creation of a change culture, a clear presentation of purpose and vision, the reliance on trusted leaders who will lead the change process and reliable communication plan. These general philosophies can be retrieved in different theories of change, which have already been formulated from the 1950s onwards (Joan et al 2005).

"Managing change is difficult and most transformational change initiatives fail (Jarret, 2003:22). As said, "Perhaps a different approach is needed to understand change". It is the view of Jarret (2003) that Experiences of others and researched literature showed that some change approaches do not work for most companies. The reasons for this poor performance is that organizational "resistance" never planned well and the majority believe that change can be mitigated as long as assumptions are pre-defined.. On the other hand, Some suggest that successes of transformational change are the exceptions rather than the rule. There appears to be a series of myths and half-truths about change that have become the basis of failed organizational interventions (Jarret 2003).

It is of extreme importance to explain some of the assumptions about change and provide ideas about other factors that influence the change process. Thus, assumptions concerned with changes in organizational processes, structures, culture and politics are explored and resistance to change first needs to be understood.

According to Dobbs (2005), the organizational change can be categorized into four types. Firstly, changes related to organizational processes involving activities across boundaries of the functional departments. Second, changes concerning organizational functions, coordination and control in the existing structures. Thirdly, there are changes in cultures, values, beliefs and behaviors in terms of shaping business practices and processes. Fourthly, changes in power distribution and balance of managerial forces in the organization.

3.2.2 Resistance to Change

The work of Frank (2007) revealed a literature-based case study research of private sector companies. In the study, the literature has considered 'political process factors' as critical for implementing change which holds true for private and public sector organizations alike. Hence, Frank (2007) made it clear that related research findings from the private sector would often be a rich experience for understanding and managing the challenges of public sector change implementation. Hence, in order to enhance effectiveness of organizations, public sector appear to be more vulnerable to implementing private sector management systems, structures and processes because

implementing public sector change often appears to be less effective than expected (Frank, 2007).

Frank (2007) further point out that that changes in industry, are under certain conditions confronted with resistance. Many reasons have been identified which clarify this resistance. Several are connected to individual personalities, being either more practical (e.g. new knowledge to be learned) or emotional (e.g. fear of the unknown). Frank (2007) reports that understanding and controlling these human barriers is an important part of the (planned) management of change processes, which often occurs in organizations. Change management can have many applications in several situations, but it is mainly applied in organizational change management (Frank, 2007).

David et al (2005) has drawn attention to the fact that managing change is tough as told earlier, but part of the problem is that there is little agreement on what factors most influence transformation initiatives. The works of David et al (2005) makes clear that over the last five decades, academics, managers, and consultants, realized that transforming organizations is difficult, and has divided over the subject. They have appraised the importance of changing organizational culture and employees' attitudes. It must therefore be recognized that as they show that in most organizations, two out of three transformation processes do not make their ways. Nevertheless, part of the problem is that there is little agreement on what factors most influence transformation programs. David et al (2005) further argue that if five executives are separately asked to name one factor critical for the success of change programs, probably one will get five different answers, that is because each executive looks at initiatives from his or her viewpoint and, based on their personal experience, focus on different change success factors.

Elli et al (2001, p. 110) pointed out that "it may be well understood that once organizations decide to take up few projects and any time such projects are initiated, two questions arise. First, how to link the project to the current organization and Second, how to organize the project itself." Elli et al (2001) further observed that "Despite much discussion in practice and academic literature, there is a lack of information about systematic approaches to manage project change."

The work of Ibbs et al (2002), in their introduction of what is called a comprehensive "change management system", they founded the five basic principles of change management listed as: (1) promote a balanced change culture; (2) recognize change; (3) evaluate change; (4) implement change; and (5) continuously improve from lessons learned.

> Ibbs et al (2002) further drawn attention to the fact that changes are common and may be damaging or beneficial whether we see change as a conflict or a valuable lesson depending only on our prospective. Moreover, it is the view of Ibbs et al (2002) that changes and conflicts at work and even in our daily lives are very common. They further indicate that for instance, lack of timely and effective communication, lack of integration, uncertainty, changing environment, and increasing complexity are the drivers of change. By applying this change management system, companies can minimize harmful change and promote beneficial change and retrospectively mitigate failure.

<div align="center">(Ibbs et al 2000: 159)</div>

Mintzberg (1983) cites possible reasons as skepticism, resistance; politics, ideology contested at managerial and operating levels and lack of cooperation among actors are seen as causes of change implementation failures. In line with the above reasoning, and according to political theorists, organizations in general are characterized by power dependencies and conflict of interest between a wide range of different actors of organizational sub-units. Political behavior in change processes is often deemed as resistance to change (Minztberg, 1983).

In the context of organizational change, results used as the basis for mitigating the consequences of resistance to change as it pertains to organizational change. The researchers offer a definition and present the results and retrospectively accounts for variance in employee intention to resist change not explained by skepticism and lack of trust. In an interesting article by Van der Samagt (2006), presented the "4 Cs for Change" model. It is said that the main goal in any process of change is the superficial or cosmetic changes are of no use. It is added that the model of change, which brings together the essential elements are as follows: (1) Content- Good communication is open, honest and timely. (2) Commitment – Add and encourage incentives (3) Capabilities – Develop Skills (4) Culture – Build a Culture. (Van der Samagt, 2006).

As organizations rely increasingly on their employees to adapt to change, however, employees often resist change. There are many potential reasons for this resistance, but one that has received increased attention recently is employee doubt about change. Hence, current understanding of how this develops and influences reactions to change, is limited by lack of research (Van der Samagt, 2006).

3.2.3 The Hard and Soft side of Change Management

References to the works of Todeva et al (1997), the change management context is defined here as the implementation process of a planned change initiative with already identified objectives and targets directing and framing the prospective plans. The planned change had a strong focus on developing the managers responsible for the implementation into change leaders through true involvement and influence in the change process. (Todeva et al 1997)

Harold et al (2005) point out the distinction between soft and hard factors influencing change. They claim that many change management initiatives have focused on soft issues, such as culture, leadership, and motivation. Such elements are important for success, but the authors go on to say that managing these aspects alone is not sufficient to implement transformation projects. What is missing, they believe, is that focus should be on other aspects of change management: the hard factors. Some of the hard factors that affect a transformation initiative is the term DICE, a short form of (Duration, Integrity, Commitment and Effort). The article further state that duration is the time until the change program is completed and time between reviews and milestones and there should be no rush towards change. On the other hand, the project team performance integrity and ability to complete the initiative on its specified duration is the other hard factor. Moreover, the time necessary to complete the tasks committed to change by top management and employees display the third hard factor of change. Furthermore, the number of people required executing the plan, and the financial results that intended actions are expected to achieve if effort of employees are well managed. However, Harold et al (2005) argued that if companies do not pay attention to the hard issues first, they believe that transformation programs will break down before the soft elements come into play leafing to failure.

According to Michael (1997) Management of change does not always run smoothly and to plan, claiming that it is evidenced by the high failure rates. However, the analysis carried out help build an improved understanding of change management, and provides implications for future change management practice. Michael (1997) reports that different types of organizational change need to be managed together as a whole since they are interrelated and interacting, implying a need for a mix of methods and methodologies. It is simply that the objective is to examine the case of change management by comparing what actually happened with what might have happened if organizational change had been managed systemically (Michael 1997).

3.3 Organizational Design and Tools

Different standard organization structures were explored along with their strengths and weaknesses. The criteria that govern the selection of best suiting organization structure for a particular working environment was explored in this section. The same is true for the choice of an organization structure with a list of key factors that will help in choosing the right organization structure for the given conditions on specific project performances.

3.3.1 The Design Selection and Configuration of Structure

Egon (2005) cites the works of Mintzberg (1980) who presented and suggested the typology of five basic configurations in the research on organizational structuring. The elements of organizational structuring show a tendency to appear in five basic configurations, which are Simple Structure, Machine Bureaucracy, Professional Bureaucracy, Divisionalized Form, and Adhocracy. As Egon (2005) has indicate and believed that the chosen structure is a simple structure that the effective Organization will favor some sort of configuration type of a logically consistent clustering of its elements as it searches for harmony in its internal processes and environment (see table below for some mechanism used to illustrate the elements of the three basic studied structures). However, it is claimed that some organizations will inevitably be driven to hybrid structures as they react to contradictory pressures or while they effect a transition from one configuration to another, and here too it is believed that the typology of five can serve as a diagnostic tool in organizational design as illustrated for the sake of this study (Egon, 2005).

The following table represents the criteria for Organization Design Selection:

Table # 1: Criteria for Organization Design Decisions (adapted from Mintzberg, 1980)

Criteria	Functional	Matrix	Projectized
Project uncertainty	L	H	H
Used technology	S	C	N
Project complexity (multi-discipline)	L	M	H
Project duration (2-3 years)	Sh.	M	Lo
Size (overall)	Sm.	M	La
Importance	L	M	H
Customer (only operation)	D	M	O
Interdependency (within)	L	M	H
Interdependency (Between)	H	M	L
Time Criticality for completion	L	M	H
Resource Criticality	De	De	H
Budget flexibility	L	H	M

H: High   M: Medium   L: Low   S: Standard   Sh: Short   Sm: Small

Lo: Long   D: Diverse   De: Depends   C: Complicated   N: New

La: Large   O: One

Mercer (1983) wrote, "The functional structure is characterized by having few support staff, a loose division of labor, minimal differentiation among its units and a small to medium line hierarchy." According to Mercer (1983), "It is above all, makes minimal use of planning and liaison devices. Its coordination is largely effected by direct supervision. Specifically, power over all-important decisions tends to be centralized." The opinion of Mercer (1983) is that "The classic case of this type of structure is that projects tend to be small and dependency between units is high."

It is the view of Mercer (1983) that the Matrix structure is characterized by having more support staff and large-size units in the core operating business that rely on the functional units for grouping of task throughout the structure. Decision making process

is relatively centralized with distinction between staff and line management in matrix organization driving the organization into a different configuration. Projects in this type of structure tend to be medium in size and dependency between units is medium because units staff extend their services to multiple projects (Mercer 1983).

In the article by Mercer (1983), the projectized structure is characterized by having the highest number of support staff and highly complex in its multidisciplinary project staff. Hence, it makes maximum use of planning and coordination procedures. It is a very different structural configuration, one that is able to select experts drawn from different specialties into smoothly functioning project teams. Mercer (1983) further argued that it has the tendency to group professional specialist in small unit-based teams to do their project works. It coordination is largely effected by direct supervision of a single line manager who rely on liaison to encourage mutual adjustment within and between units and teams. Specifically, power over technical decisions tends to be de-centralized. Projects in this type of structure tend to be large interdependency within the organization is high and with outside units is low (Mercer 1983).

3.3.2 Organizational Design Variables

For Organizational structuring studies, it is essential that specifications of jobs and design parameters be researched to link the objectives of this study to reviewed literature so that relevant information is drawn. This can better be understood through the combination of groups of elements and design parameters into ideal or pure types, which is called configurations.

The following table adapted from Bate (2000) illustrates the elements of the projectized structure configuration:

Table # 2: Elements of the structural configuration (adapted from Bate (2000)

Elements/ Design Parameters Specification of Job	Simple projectized structure
Type of supervision	Direct Supervision (manager)
Required training	High
Formalization of behavior	low

Grouping	Functional (disciplined functions)
Unit size	large
Planning and control system	high
Lesion devices	Few (daily meetings /e-mail)
Centralization	Decentralized (delegation of authority established)Centralized (strategic project decisions)
Age of workers	Varies (young and experienced)
Technical Knowledge	High (mostly engineers)
Environment complexity	low
Environment dynamism	high
Power focus	Delegated power over technical decisions
Decision making (technical)	Informal (delegated)

The works of Bate (2000) illustrated in the above table describes the elements found in the literature, which appear to be most important in understanding the structuring of organizations. The tendency was to deal with these elements analytically rather than in terms of synthesis, typically to study the relationships between pairs of them in cross-sectional studies. As shown in above table, this simple structure characterized above all other structure as organic as it has above all coordinated effectively by direct supervisor (manager).

According to Bate (2000) staff are highly skillful and trained with many support staff having minimum differentiation among its units/sections where staff can be exchanged amongst them easily. Little of its behavior is formalized and it makes maximum use of planning and control systems such as project planning or communication devices as shown in the table. Specifically, power over technical decisions tend to be decentralized and in the hands of engineers. On the contrary, strategic decisions, for go/no go for major projects are maintained in the hands of higher managers.

Bate (2000) found that section or grouping into units and communication flows informally in the structure, most of it between the manager, the head of sections and staff. Likewise, internal decision making is informal, with the decentralization of power allowing for rapid response. Above all, the environment of the simple structure tends to be at one and the same time simple and dynamic. A simple environment can be

managed by a single individual and so allows decision making to be delegated by that individual. And a dynamic environment means organic structure; because the future state of the environment can not predicted, the organization cannot effect coordination by standardization. Another condition common to simple structure is that technical decisions would require an elaborate support and technical justification, to which power over technical decisions would have to be delegated.

3.3.3 Value Based Organization and Transition Matrix

In the following table Marrewijk (2004) points out some of the tools that new organizations should adopt to introduce new approach to more innovative and more sustainable/ responsible ways to handling business.

Table # 3: The Transition Matrix for the Pure Project Structure (adopted from Marrewijk (2004)

Principle	Systematic-Driven Organization
Values	Obedience, discipline, long-term orientation & systematic thinking
Structure	Network structure with common goal and section-wise flexible.
Leadership style	Manager, planning, budgeting and long term resource optimization
Safety and Health	Management System on Health, Safety and Environment
Dept. People Mgt.	Supportive, participative, competitive and interactive
Work environment	Individual and collective alignment of day-to-day work requirements

Research by Marrewijk (2004) suggested in the above table indicates the values of the new measurement formats that is the foundation for a systematic set of management to be used in the selection of an organization type. It also shows the paradigm of shifts of various management disciplines, suggesting the basic guiding principles between people and their organization. For instance, the transition matrix above suggests four leadership styles: the manager and the basic values that a manager should possess like long terms resource optimization.

3.3.4 Link between Structure and Culture

Amongst all tools that are used in controlling a new structure is culture. Culture is defined in terms of components and parts and its relevance to the decision on type of

selected structure. The logical nature of the components and of the connections between them are identified and analyzed by Baligh (1994) (See table below). These connections are used as a basis for the argument that there is a meaningful concept of the fit between the components of the organization structure and those of its cultural setting.

Lau et al (1995) goes on to say that a theory on the goodness and badness of fit between structure components and culture components were studied and two of its many pieces were developed in detail. Additionally, some effects of the environment and technology on the connection between the organization structure and its performance were discussed in what was known as the contingency theories of organization. Lau et al (1995) wrote that "since both culture and organization structure are complex concepts, it is argued that another factor which affects the connection between the organization structure and its performance is the cultural setting of the structure."

In this paper both views are accepted and a new form is given to the culture argument. This will help in supplying the building blocks to develop a theory that gives conclusions on the organization structures that perform well and those that perform badly in a particular cultural setting.

The following table is adopted from Lau et al (1995). Lets take these two examples of mapping fit and arguments in their support.

Table # 4: The fit between Structure and Culture (adapted from Lau et al 1995)

Culture setting	A. If culture	B. If culture
1	Values unselfishness over selfishness	Believes that man has only a low level of control over the transformations
2	Believes that cooperation is more effective than competition in the group	Believes that the individual more highly than the group. Values selfishness over unselfishness
3	Believes that harmony in personal relations is best at getting cooperation	Believes that competition serves the individual better than corporation to reach individual goals
Then	**The organization structure that fits it at a high level has**	
a	High level of participation by all members of the group	Low level of participation by all members of the group
b	Decisions made by consensus	Decisions made by highest level in

		the organization
c	Rewards of individuals based mostly on group performance	Rewards to each individual is based on his or her performance
d	Low frequency on information about performance of people (one in a year)	High frequency on information about performance of people (once per quarter)

According to Lau et al (1995), the arguments for the mapping under part A is that the structure properties a, b and c will produce a fairly high level of coordination in the specified performance and will raise the level when people help each other to fill in the missing staff in the section or choose well from the assigned tasks. In addition, work production will be high and cost will be low because of properties of cultural setting 1, 2 and 3 in the table. Moreover, this structure will evolve over consensus decisions which is easy when people believe in harmony.

On the contrary, the authors argued that the argument for the mapping under Part B is that the structure properties a, b and c would unlikely produce a high level of coordination and responsiveness in the specified performance and will lower the level of people when people do not help each other to fill in the missing staff in the section or whole department.

In addition, work production will be low and cost will be high because of properties of cultural setting 1, 2 and 3 in the table. Moreover, this structure will evolve over managerial decisions which will slow down the work and this structure would be called in the traditional structure, a bureaucratic with centralized decision making leading to less efficient work environment (Lau et al 1995).

These findings indicate that managers decide to give priority to programs designed to strengthen to the human relations value and efficiency. Managers must be aware of this shifting balance. They must evaluate whether prescriptions for organizational success make sense. Decisions should reflect the organization's value structure (and its deficiencies), its technology, its environment, and its structure as well as show these elements fit together. (Lau et al 1995).

The work presented by Zheng-guang et al (2006) is related directly to group dynamics and basically a process by which human resources are continuously identified, allocated

and expanded in ways which make these resources more available to the organization. The most serious problem facing a manager in a large, is the organization complexity, namely is how to plan and manage in a rapidly changing, high-demand, resource-limited environment (Zheng-guang et al 2006).

Organization Development methods involves the application of behavioral science knowledge in a collaborative and participative process in response to some perceived need within the organization (Zheng-guang et al 2006). It is a planned and systematic way to alter patterns of organizational behavior. Typical objectives include

- Creating an open, problem solving environment throughout the organization
- Building trust among individuals and groups
- Increasing the sense of ownership of organization objectives
- Helping managers to manage agreed objectives (Zheng-guang 2006:473)

3.4 <u>Organizational Structure and Theory</u>

The purpose of this section is to review the nature of organizational structures and their relations to organization theory and present it in a form, which will enable the review of its validity in relation to this study. Formal organizational structures affect the organization success to a high degree. The nature of organizations determines their activities, the information support they need, and the type of information system they use. Therefore, their structures influence all the important performance measures of the organizations.

3.4.1 Organization Theory and new Structures

Organization theory suggests that in complex, changing environments; tasks and people ought to be subdivided into tasks that are more specialized across individuals within a project team, across functions within a business unit, and across business units within a corporation. In all cases, this increased coordination highlights the importance of the interaction between the units, whether they are individuals, or groups in units (Caroll and Burton, 2000).

In a different article written by Dunne et al (1987). a question was asked in relation to the above statement whether this can be usefully applied to the newly proposed

organization. Does the organization differ on a wide variety of characteristics, including differences in individuals and tasks? A better understanding of the relationship of group structure and the level of interdependency between individuals on group performance under various tasks explaining group performance and advances the understanding of organizations by suggesting that there is an increasing range of interconnections between tasks that explains the variation in staff interaction. This raises another question of how much integration was needed, or to what level of interdependency is associated with the best possible unit performance (Dunne et al 1987).

Nevertheless, complexity theory does not explicitly addresses the question of how much and to what extent interconnection can best be integrated amongst individuals or groups in an organization. Then, it was of course retrospectively left to us to understand its true complexity as it was clearly understood that each configuration is a simplification of an organization. Well, the answer to these questions can be seen from exploring the concurrently executed projects, where each change creates need for communication, decision-making, and potentially extra work in the form of rework. (Dunne et al 1987)

From reviewed literature, partially because of these perspectives, organization theorists appear to be focusing greater attention on the way called "do business" specifically, the processes that are used in generating organizational knowledge. For example, the production of organizational knowledge characterized as a "language game," while others have suggested that that production is dominated by a "uniqueness of business" (Eriksen ,1973).

The work of Homburg (2000) leads to the fact that design of new organizational forms can begin with an analysis of existing organizational constraints and identification of ways to change these process arrangements. Homburg (2000) argues that traditionally, management 'theory' has dealt with prescriptions for improving managerial efficiency but has not yet prescribed a substantial scientific hypothesis relating to the nature of human organizations. Should this be recognized as management theory of organizations, a number of important implications resultant from it will affect our view of the human elements and their relationships with organizations (Homburg 2000:463).

3.4.2 Link between Theory and various Organizational forms

A review of some literature indicates that organizations with newer forms of structure tend to be more innovative and consequently have greater success (Bohte and Meier (2001). Some of the better-known methods of structures are by function, project or a matrix. Each of these methods were investigated in terms of its effect on innovation and work performance. Most organizations are structurally designed to assure reliability of performance in classical organization Structures. The classical bureaucratic organization is built upon the hierarchical superior-subordinate relationship in which authority and initiation flow from the top down is practiced. This type of structure embodies the concepts of specialization and specification (Bohte and Meier 2001).

Bohte and Meier (2001) point out that "Like families, organizations structures are defined on logical connection between people…. The set and the logical order create a 'pattern' of the people in the set, something that we may call a structure" Bohte and Meier (2001) P. 36. In addition they say that this structure is often described on paper as a family tree. It is a fundamental concept that makes the organization chart of boxes connected by lines has the meaning of Organization Structures. What is important is that organization structure is logically identical to one that describes the organization main business functions and work requirements (Bohte and Meier 2001).

The functional form, which is the traditional approach, combines activities around a various project or product, customer, geographic area or business function. The pure project form on the other hand combines activities around specific projects or problems, cutting across functional units to involve personnel of various skills and specialties, of technical and non-technical skills. Nevertheless, there is a continuum of designs between the functional and project forms, with the matrix form being half way in between, combining the two approaches with a dual authority relationship. Here the project managers exercise planning, scheduling and cost control over people who have been assigned to his projects, while functional managers exert line control in terms of technical direction, training, compensation (Snow et al 2002).

In fact, research show that there is growing trend/ interest in project organizations (Snow et al 2002). However, there has not been sufficient research that generally explores key changes in organizations with respect to topic chosen in this dissertation.

In the contrary, most of the arguments are that changes in organization structures is normally conducted in isolation of the current trend toward a general shift to customer-focused organizational structures. Additionally, these research papers give attention to reengineering structures around core processes such as marketing departments, restructuring in government and private sectors etc.

As explained in previous paragraph, researchers initially discuss two specific changes related to the overall shift: changes concerning primary marketing coordinators and increasing marketing activities (Snow et al 2002). They introduce the concept of a customer-focused organizational structure that uses groups of customers as the primary basis for structuring the organization. They identify typical organizational transitions as firms move toward a project-based organizational structure and discuss the challenges firms face in making this transition. As an example, many companies have changed their organizational structures to become more responsive to company needs.

3.4.3 Organizational Structure and Project Performance

Chatman (1989) point out that designing an organization requires the skillful application of knowledge. The relevant research findings from fields such as psychology, economics, logistics, information technology, and change management and knowledge base is very diverse, including organizational structure, tools, benchmarking and human intellectual factors. Moreover, in actuality most re-design issues involve analysis of current organizations, that diagnosis misalignment and other problems, and changes made to the organization to achieve increased effectiveness and performance. Thus, organization design can be thought of as "scientific art," and its best practitioners have a deep understanding of how organizations work as well as how they can and must be changed (Chatman 1989).

There are several points that were found interesting while organizational restructuring takes place. According to Camarinha-Matos et al (2005), "the choice of organizational design becomes crucial for performance since organizations may face different functional demands that are determined by environments and strategic intentions."

> Organizational structure design provides constrains to realized strategy, and thus influences organizational performance. Hence, regulate the information flow in the

organization and thereby influence its ability to adapt to changes in the environment and anticipate the consequences of policy changes in the organization. Therefore, the design of the organization is crucial for organizational performance since it influences the organization's ability to act and react effectively.

(Camarinha-Matos 2005:7)

A study by Landry (2000) has indicated that an organization structure is more or less flexible according to the number of performances that meet some given conditions. It helps direct the search for the best performance in the set that meets the level of optimality for actual implementation. First, a performance in the set meets some predetermined level of optimality for some circumstance, which the structure may realistically encounter. Second, each performance is implementable within some finite length of time, measured from the time the performance is chosen to the time it is actually done. Over time, a structure that learns is one which uses its experience to increase the detail of the performances in the set, reduce that number of circumstances for which the performance is the search starter, and reduce the time of deriving the performance that meets the optimality level for implementation (Landry 2000).

Landry (2000) points out that increasing the number of performances in this set may increase and will never decrease the number of circumstances in the other set. Once the level of optimality and time period are set, then it follows that a structure that is to increase its flexibility must increase the number of performances that meet the conditions.

The more detail in the definition of the performance, the shorter the time to complete the detail required and implement that performance. The fewer the number of circumstances identified as that for which a performance is marked to be used to start the process of deriving the performance that meets the required level of optimality, the shorter the time it takes to make the derivation. The higher the level of optimality required in the implemented performance, the longer the time it takes to make the derivation. When these two are set, then the number of performances that are in the set that meet them defines the level of property of its performance (Landry 2000).

Loschnin (1999) makes clear that the issue presented herewith is motivated from the following considerations. First of all organizations are well recognized on certain

objectives, which are either pre-defined by designers or formed temporarily by emergent developments. Secondly, organizational stability reflects the capabilities of an organization to show whether it is with certain plans, the organizational objectives are reached in specific scenarios.

Meanwhile, Peterson (1998) argued that in design and transformation of organization structures, practice typically goes ahead of theory. What is needed as stated is to define properties of the new structure, which determine the properties of its performance. Peterson (1998) further goes to say that "these properties are, ownership, and real job involvement and then show the nature of these relations."

"So, new forms evolve and prove their viability first, and then everybody must be convinced that this is exactly what is needed. Therefore, organization structure is the most sensitive characteristic displayed by a business organization in the process of its adaptation to the changing environment (Peterson 1998: 26).

In an article by Loftin et al (1982), has expresses similar view stating that as the result of new changes, organizations can change their internal structures and adjust its behaviors to achieve organizational objectives and performances. In order to coordinate individual activities of team members during the manning process, teamwork is well recognized as an efficient way to decrease conflicts between staff activities and eliminate duplication of works. Analogous to traditional organizations, project organizations also conform to specific organizational rules, pattern and structures (Loftin et al 1982).

To quote from Grunow (1995), "Organizational structures describe how team members in the organizations should coordinate their activities to achieve organizational objectives efficiently."

> Further, the design of the organization provides constraints on the behavior of the organization, specifically its strategic orientation. The realized strategy is the organization's bet on how to adapt to its perceived environment, and the execution depends critically on accurate and timely information. Under some circumstances, it provides different information and interpretation; alternative organization designs support different strategic orientations. Related, organizational effectiveness can be as a multidimensional construct and

therefore the organization must trade off different strategic orientations if they are supported by alternatives.

(Grunow 1995: 96)

In terms of the project implementation success, Buenger (1996) believes that organizational structure effect should be examined to achieve the best results from the implementation and get the benefits of these systems immediately. Buenger (1996) conclude that there are three different perspectives that influence project success: organizational flexibility, organizational fit, and informational power.

In the other part of the paper, Buenger (1996) explains these different perspectives as organizational flexibility, is one of the most important features that helps organizations to respond to significant and unpredictable changes. "Organizational structure appears to be an influence factor on pr success in project success as far as structure influences the flexibility and innovative ability of an organization." Buenger (1996) further argues that regarding this statement it can be said that organic structures allow a greater capacity for independence, show a creative direction of information flow.

3.5 Comparative Organizational Forms

3.5.1 Introduction

This analysis approach consists of first understanding the various organizational structures, their advantages and disadvantages. Then, a suitable structure can be chosen that could offer the most effective and efficient choice. Hence, having asked questions to solve above mentioned problems, a special kind of a project configuration is necessary to avoid conflicts between functional and project teams. The main objectives of the organization is to free up the functional groups with a full scale technical talents groups arranged under a single unit as an alternative to the weak matrix organization being currently used within the functional structure. The current organization represented in its constituent departments carrying out projects should be re-organized into one integrated department with centers or sections focused around core functions. By doing this, the department should be able to eliminate duplication and provide better management of projects. Likewise, as projects grow even more complex which is always the case in the current organization, the authority of the project manager in a pure projectized structure is required.

In the process of leading fundamental change in a complex organization, the advantages and disadvantages of the three major forms commonly used to adopt projects into the parent organizations was examined (**see Appendix for illustration of existing structure in Figure #2**). The ordered set of staff depicted herewith is the existing organization that is often described as a hierarchical chart where the up and down location of staff are connected by a line representing the relation of logical order. In the contrary, most of the arguments were that changes in organization structures being discussed herein, was normally conducted in isolation of the current trend toward a general shift to customer-service based organizational structures where in this case operations department was the main owner of the process plant and the whole organization is intended to serve its needs.

The organizational structure types are:

• Functional structure (classical hierarchical structured organization having several levels arranged in a tree-like structure)

• Matrix structure (combination of the functional and pure project organization where resources are shared and managed across functions)

• Pure project structure (project manager maintains complete line authority over the entire project and associated resources)

3.5.2 The Functional (Classical) Structure

Rappoport (1989) had drawn attention to the fact that at the beginning of the 20th century a German sociologist Max Weber described an ideal organization and mentioned the following characteristics:

"Division of labor: Each employee's job is well defined and broken into simple and routine tasks. Well defined authority hierarchy: A multilevel formal structure with a hierarchy of positions where each lower level is under the control of a supervisor." (Rappoport 1989).

> Impersonal nature: Authorizations are applied uniformly and impersonally to avoid undue bias. High formalization: There are formal rules and procedures to guarantee uniformity and to control the behavior of the

employees. Employment decision based on merit: Employment decisions are based on technical qualifications and performance of the candidates. Career tracks for employees: All the employees are expected to pursue a career in the company. Distinct separation of members' organizational and personal lives: Anxiety and the interests of the individuals are kept completely separate to stop them interfering with the organization's activities.

(Rappoport 1989: 456)

In this kind of structure that Weber described, positions are arranged in a pyramidal hierarchy. Authority increases as one climbs the organizational ladder, which characterizes general bureaucracy Rappoport (1989).

The work of Robert (1997) revealed that the traditional management structure has survived for more than two centuries. However, recent developments in the business world, such as the change in technology and increased stockholder demands, have created strain on existing organizational forms.

Robert (1997) observed that all jobs take place within the functional groups and are headed by a department head. Very strong concentration of technical expertise is maintained by each department. While all projects must flow through the functional departments, each of them can make use of the most advanced technology. This makes this type of structure well suited to mass production.
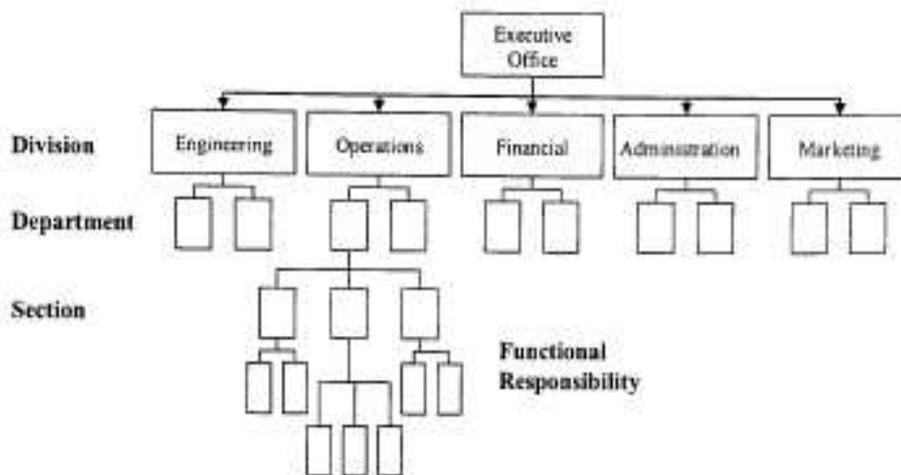
Figure # 1: Traditional Management Structure

The research by Robert (1997) suggested that there are advantages and disadvantages of using a functional department as the administrative home for the project execution assuming that one has chosen the appropriate functional unit to carry out the intended project.

In the view of Robert (1997) is that the advantages of the functional structure is that the flexibility in the use of maximum number of staff from the organization. Experts can be assigned temporarily to projects and be reassigned to their normal work. Hence, better technical control (knowledge and responsibility sharing), Staff can be switched back and forth between different functional departments or sections so flexibility in the use of work force.

In the article by Robert (1997) it is concluded that having specialists in the organization, knowledge sharing and experience exchange will be easily accessed leading to potential source of creativity and solutions to technical problems and also functional departments will guarantee the normal path of advancement for individuals where their assignment to projects would be advantageous to their growth and advancement. It is further reported that easier budgeting and cost control are available and easily defined and understandable policies, procedures and lines of responsibilities.

Reference to Barnett et al (1993) revealed that the disadvantages of the functional structure is that the functional unit had its own work to do, which is given more attention over the work of the projects. Furthermore, no customer focal point and slow response to customer needs, staff is oriented toward the activities particular to its function, therefore, project success in not a primary goal of the department and individuals are not held accountable to the success and failure of the project and decreased motivation and innovation.

According to Barnett et al (1993), the tendency to ignore project issues as normal work issues and problems are given priority to solve and complex coordination, with additional time required for approval decisions. Additionally, the motivation of people assigned to projects often lack focus and it generally takes longer to complete a project. Similarly, cross-departmental communication for knowledge sharing tend to be slow and difficult. No one individual is directly responsible for total works and decisions normally favor the strongest functional groups.

41

3.5.3 The Matrix structure

Dijksterhuis et al (1999) made clear that the matrix structure is a half-way between, combining the functional and the projects forms with a dual authority relationship whereas project managers exercise planning, scheduling and cost control over department staff while functional managers exert line control in terms of technical direction, training, compensation, etc. In other words, it is a pure project organization overlaid on the functional configuration of the parent organization.

Dijksterhuis (1999) pointed out that a weak matrix is known to be the closest to a functional structure which is being used in the current organization. The disadvantages of this structure is that the project coordinators secure resources from multiple functional areas but have less power over the team. This kind of structure is developed to combine the advantages of the two types of forms that are mentioned above; pure functional structure and the pure project structure.

In figure 2.3, the direction of project responsibility and the functional responsibility can be seen. Functional departments are responsible for maintaining technical excellence on the project. Project managers have responsibility and the accountability for project success.

Carrol et al (2002) cited the work of Robbins (1983), defined a matrix structure as follows, "a rapidly changing, adaptive, temporary system organized around problems to be solved by groups of relative strangers with diverse professional skills." Carrol et al (2002) found that this form of structure has the characteristics of low complexity, low formalization, and decentralized decision-making. It has a high degree of horizontal differentiation based on formal training. Carrol et al (2002) claimed that the most important strength of the matrix structure is the ability to respond rapidly to changes in the environment.

The matrix has a dual chain of command. In this type of structure, every employee has two bosses, a department manager, and a project manager, to report. As Carrol et al (2002) stated, for a matrix to function mutual coordination and cooperation are critical factors. Thus, these organizations act like project teams. They are organic with little

formalization. This kind of structure eliminates almost all of the disadvantages of the traditional structure.

According to McKinley et al (1999), the advantages of the matrix structure are that critical skilled staff is available to all projects which ensure maximum utilization of staff expertise allowing better company wide balance of resources for concurrent projects are execution. McKinley et al (1999) reported that in addition, consistency with the parent organization tends to be preserved in terms of policies and procedures and there is less fear of when the project is completed.

The opinion of McKinley et al (1999) is that the project manager has maximum control of the project resources, including cost and personnel. They further argue that for each project, policies and procedures are developed independently. Quick responses are available for changes, inconsistency resolution, and project needs. The functional groups stand mainly as support for the project. Due to the sharing of key people, the program cost is minimized. People can work on different problems, thus better control on people is possible. A strong technical base can be developed, and much more time can be directed to complex problem solving. Knowledge exists for all projects equally. There is a better balance between cost, time, and performance. There is a fast development of specialists and generalists. Authority and responsibility are shared (McKinley et al 1999).
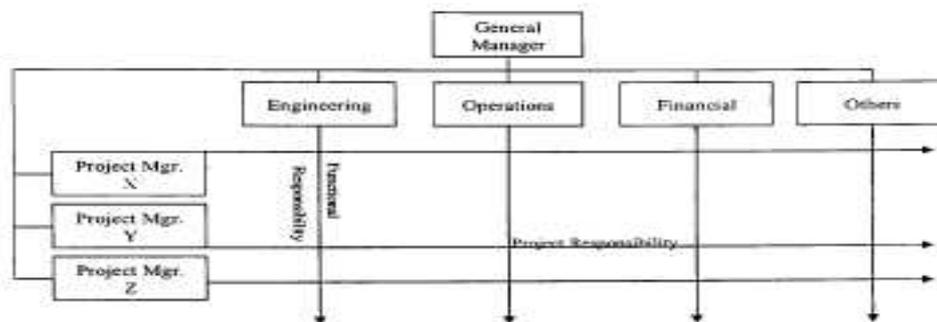
Figure # 2: A Typical Matrix Structure

The research by Hoogendoorn et al (2007) expressed a similar view stating that "the disadvantages of matrix structure is conflict faced between functional managers and project managers over resources that is because movement of resources from one

project to another to satisfy several project schedules may foster politics amongst project and functional managers.

> Likewise, staff feels that they have two bosses, their functional heads and the project manager violating the principle of unity of command creating doubt about who is charge. In such cases project managers need to use their negotiating skills to get resources to deliver project on time.

(Hoogendoorn et al 2007: 52)

Turning to Kolodny (1979), commented that "multidimensional information and work flow. Double reporting. Constantly changing priorities. Difference between management goals and project goals. Difficulty monitoring and controlling. Every project organization works independently. Thus, duplication of efforts does not exist.

Compared to the traditional structure, more time and effort are necessary to define policies and procedures. Possibility that the functional manager is biased to their own priorities. Balance between organizations (project and management) and between time, cost, and performance must be monitored. Because of dual reporting people do not feel that they have any control over their own fate (Kolodny 1979: 549).

3.5.4 The Projectized Structure

In the case of projectized structure, the project is separated from the rest of the organization. Fligstien and Feland (1995) stated that having its own staff and administration. This form of project organization combines activities around the specific projects. This kind of structure develops as a division within the division.

Robert (1997) in his article on organizational alternatives for project managers believes that If projects flow continuously, then work is stable and conflicts are at minimum level. The author further argues that the most important benefit of this type of structure is that one individual maintains complete authority over the whole project. Pure project organization structure has strong communication abilities that result in a very quick reaction time (Robert 1997).

According to Roberts (1990), the major downside of this kind of structure is the cost of maintaining the organization. There is not possibility to share an individual with

another project with the purpose of reducing costs. As compared to traditional structure, pure project structure keeps activities on schedule with fast reaction times. But the technology is not as well developed as in the traditional structure because of the lack of strong functional groups which create technical communication in the company (Roberts 1990).
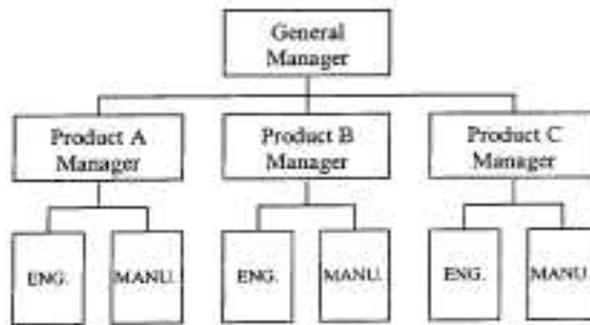
Figure # 3: Pure Project Organization Structure

Burton and Obel (1998); indicate that as with functional organization, this type of configuration has its unique advantages and disadvantages. The advantage is that the project manager has full line authority on the project(s) and all members of the project are directly reporting and responsible to only the Project Manager (Burton and Obel 1998).

> Moreover, there is shorter communication lines between staff and project manager resulting in faster communication and decisions. Also, staff motivation tend to be high and project team develop high level of commitment and cohesiveness emerges within the project team.
>
> (Burton and Obel 1998: 405)

Tsoukas (1993) believes that it is a relatively simple means of completing a project that does not disrupt ongoing operations with a workforce dedicated to the project, there is a high project focus and projects tend to get done more quicker, since team members devote their full attention to the project. Provides complete line authority over the project, strong communication ability, very fast reaction times, unprofitable product lines can be determined and eliminated easily, a focal point develops for outside company customer relations, interface management becomes easier as unit size is

decreased, and upper-level management has more time for executive decision making (Tsoukas 1993).

On the other hand, Romme (2003), given this evidence seems to be strong that the disadvantages as that staff get overloaded if organization takes on several projects and hiring of experts with critical technical skills is maintained on the project longer that needed as they may not be available when needed resulting in higher project cost and team members worry about life after project completion which may be valid reasons for some to think that projects may get intentionally delayed (Romme 2003).

The other disadvantages are summarized by Carrol et al (1993) stating that in multi-product companies the cost is high to maintain this kind of form in terms of effort, facilities and personnel, technical interchange between projects is not possible. It is further sated that technology suffers because of the lack of the strong functional groups, and upper-level management is needed to balance the workloads as projects start up and phased out, especially in terms of the controlling the facilities and equipment (Carrol et al 1993).

3.6 <u>Summary of Chapter</u>

A literature review for the three major organizational forms commonly used namely, functional, projectized and matrix organizational forms were conducted in order to put forward a proposal for a new organizational structure. Besides, type of organizational forms, advantages and disadvantages of the proposed changes and the overall strategic leadership necessary to successfully implement the assigned projects within the framework of the newly proposed organizational structure were also researched. Then, organizational change management, design, tools, theory and critical success factors that could lead to choosing one form of structure over the others were used from a generic list introduced in the literature by deciding about how to tie projects to the parent organization and how to organize the project itself. In a latter part of this paper a literature review was conducted on how project management team could be organized and then consider some combination of organizational configurations to come up with meaningful forms of organizational structures.

CHAPTER 4

Chapter 4: Research Methodology

4.1 Introduction to Research Methodology

In this study, the possible influence of the organizational structure on project implementation success was investigated. There were many criteria or success factors in achieving project success, which include time taken to approve a project, its importance in the view of the organization, ease of reporting, interdependency between or with unit etc. It was very useful to examine each type of organizational structure and determine the success factors and its influence on project success so it could be more accurately determined if the company achieves its objectives or not. On the other hand, in this study organizational structure was one of the most important variables that would be discussed with respect to the goals of this study.

This research was conducted by means of an interview schedule and focus group discussions in order to deal with scenarios related to problems faced by Company in managing project in its functional structure. The organization's current level of project management knowledge and skills was the targeted base line that must be established when investigating project management practices and capabilities for applying project management disciplines within any organization.

The interview schedule was composed of 45 questions, three for each success factor and was conducted with individuals having experiences between 2 and 18 years who dealt directly and indirectly with projects. Moreover, focus groups were divided into three sessions. Two sessions each with three staff members who are directly involved in project works and the third session consisted of three staff members who are less involved in the project activities from a separate group.

4.2 <u>Research Question</u>

How does choice of organizational structure when comparing functional, matrix and pure project structures, affect the success of its project?

4.3 <u>Sample, Data Collection Methodology and Strategy</u>

The interview schedule and focus group discussions were useful tools that can provide an honest feedback. The attempt was to create a small, but as far as possible, representative sample to conduct this research upon. To a lesser extent, the choice was also driven by the willingness of company staff to get interviewed to determine common and different overviews. In this research, staff were asked basic descriptive information about their specific group or unit of our organization, and invited them to provide their opinions of how projects were viewed in the organizational context to assess how groups or units function. Individuals who had different positions and perspectives were useful when interviewed. Yet, providing the names was voluntary. In so doing, it was hoped to gain insight into differences within and across units, and better understand what was required to create an effective organization. The respondents' feedback in the interview schedule and focus group discussions were aggregated to provide measures of organizational awareness levels of project skills and knowledge possessed with each individual in the organization.

Interviews were one of the most valuable and useful sources of information about the organization for gaining information on the perceptions and beliefs of people; their ideas for change and their opinions on organizational norms and culture. However, not all interview information may be accurate and it depends on the person being interviewed, usually, there were questions specifically designed to let the person answer accurately.

In structured interview schedule, which tend to be the most common in organizational work, the interviewer should have a list of questions to make sure certain topics were covered. The advantage of structured interviews was that they allow the exploration of specific topics, while allowing people to tell the interviewer what they think was important.

On the other hand, focus groups were found to be a good source of data collection and gave more accurate answers to results from qualitative measures. In fact, they allow the researcher to request people to answer the questions instead of having multiple interviews with individuals. Furthermore, the researcher can collect more than one answer and analyze them separately.

Meanwhile, these questions were intended to have some new ideas related to our organization in order to test the interview scheduale results, and get opinions on whether change management approach were required to our organization works. In other words, as explained earlier, qualitative data were gathered and could lead to better understand of the existing configuration.

The interview scheduale was conducted with staff at the workplace. The questionnaire was composed of 45 questions, three for each success factor. Common questions were in the form of what is going well and what is not; what helps/supports projects and hinders them; how they perform towards the goals of their organization; while, what obstacles they face to achieve performance and success; and what it takes to get the organization to change that is required in order to overcome problems pertaining to achieving the organizational targets.

The interview schedule was conducted with individuals who dealt directly and indirectly with projects having more or less involvement in project activities and responses were collected from qualified people. Staff experiences ranged between 2 and 18 years of work with the Company to ensure proper feedback. Sample size for the interview schedule was selected from three responses per group per success factor. Thus, it was enough sample size to get comparative results for the research keeping in mind that they were all either directly or indirectly involved in project activities.

The interview schedule was conducted with individuals who have more involvement in project activities namely Refinery Division Manager; Engineering Support Section Head and Senior Development Engineer. Equally, the same interview scheduale was performed with staff who were less involved in project activities that are Process Engineering Section Head and two Inspection Engineers.

Because the interview schedule was conducted with staff in the Company, the expected results would be reliable. Therefore, the sample was chosen from a target population of

six staff directly or less involved in managing projects, two focus groups each consisting of three members each directly involved in projects who were asked same questions to verify the aggregated answers. Thus, any findings about the sample can be applied to the population. The interview schedule contained questions related to the selected success factors.

The focus groups were divided into three sessions. Two sessions each with three staff members who were directly involved in project works by positions namely civil development engineer, mechanical development engineer and project engineer in the first session and project process engineer and two project civil engineers in the other session respectively. The third session consisted of three staff members who are less involved in the project activities from a separate unit namely Process Engineering Section Head, and two Plant Inspection Engineers.

4.4 <u>Interview Schedule</u>

In order to assess the affect that organizational structure on project success, the interview schedule was designed to address the following:

• The factors helping/supporting the organization to achieve its targets in view of each project success factor

• The factors hindering/reducing the organization to achieve its targets in view of each project success factor

• The required change in the organization to achieve its targets in view of each project success factor

The interview schedule consisted of three parts for 15 success factors totaling 45 questions:-

According to the literature, there are many factors (SF) that could be used to measure project success. The following fifteen success factors were utilized in the research:-

(SF1) **Time to approve a project**: the process of approving a project in the existing organizational structure and how flexible it is in the view of respondents

(SF2) **Project complexity**: In terms of its scope and quality requirement.

(SF3) **Project Size**: to test the project size that the organization is capable to handle

(SF4) **Project Importance**: to view the project performers' opinion about how they perceive the importance of projects to their positions in the organization

(SF5) **Satisfy Customer needs**: Are they satisfying customer needs?

(SF6) **Dependency (within units)**: How dependent the project performing unit on each other.

(SF7) **Dependency (between units)**: How units depend on each other to perform projects

(SF8) **Implementation Time**: How much time it takes to complete a project

(SF9) **Reporting Functionality**: Effectiveness and completeness of the reporting functionality within the organization

(SF10) **Organizational Change Management**: to see to what extent a change in the organization would affect the project performance

(SF11) **Scope management**: How good the project scope is managed.

(SF12) **Project Team Composition**: Adequacy of selected project team to monitor project progress

(SF13) **End user participation**: what is the level of participation expected from the project beneficiary?

(SF14) **Training needs** the quality of training requirements for staff responsible for performing projects

(SF15) **Overall Project Success**: How important it is for the performing unit that the project is ended successfully according to the targeted time, budget and quality.

4.5 <u>Summary of Chapter</u>

The attempt was to create a small, but as far as possible, representative sample to conduct this research upon. To a lesser extent, the choice was also driven by the willingness of company staff to get interviewed to determine common and different overviews. Interview schedule and focus group discussions were performed to investigate problems faced by Company project management practices and capabilities for applying project management disciplines. The interview schedule was composed of 45 questions, three for each success factor and was conducted with individuals who directly and indirectly dealt with projects. Moreover, focus groups were divided into three sessions. Two sessions each with three staff members who are directly involved in project works and the third session consisted of three staff members who are less involved in the project activities from a separate group. Questions were in the form of what helps/supports projects and hinders them; and what change is required in order to overcome problems pertaining to achieving the organizational targets for the questioned success factor.

CHAPTER 5

Chapter 5: Analysis of the Interview Results

5.1 <u>Respondents Feedback on Interviews and Focus Groups</u>

An interview was conducted with staff at the workplace. The interview schedule was composed of 45 questions, three for each success factor. Questions were asked to test what is going well and what is not; what helps/supports projects and hinders them; how they perform towards the goals of their organization; while, what obstacles they face to achieve performance and success; and what it takes to get the organization to change that is required in order to overcome problems pertaining to achieving the organizational targets.

The interview schedule was performed with staff who were involved in project activities either directly on indirectly and responses were aggregated from qualified people. The interviewed staff had been selected based on their experiences, which ranged between 2 and 18 years to ensure proper feedback. Sample size for the interview schedule was selected from three responses per group per success factor.

The interview schedule was conducted with individuals who have more involvement in project activities namely Refinery Division Manager; Engineering Support Section Head and Senior Development Engineer. Equally, the same interview scheduale was performed with staff who were less involved in project activities that are Process Engineering Section Head and two Inspection Engineers. (See appendix D)

Because the interview schedule was conducted with staff in the Company, the expected results would be reliable. Therefore, the sample was chosen from a target population of six staff directly or less involved in managing projects, two focus groups each consisting of three members each directly involved in projects who were asked same questions to verify the aggregated answers. Thus, any findings about the sample can be applied to the population. The interview schedule contained questions related to the selected success factors.

Three focus groups sessions were conducted with staff in the Company. Two sessions each with three staff members who were directly involved in project works by positions namely civil development engineer, mechanical development engineer and project engineer in the first session and project process engineer and two project civil engineers

in the other session respectively. The third session consisted of three staff members who are less involved in the project activities from a separate unit namely Process Engineering Section Head, and two Plant Inspection Engineers. (See Appendix E)

5.2 Interview Results

5.2.1 Analysis and interpretation of interview -Division Manager

Focusing on understanding the needs of the business as a whole, its strategic direction, and identifying initiatives that will allow a business to meet those strategic goals, division manager answered that projects are justified and planned ahead of time so that they can start as soon as approved and that delegation of authority is well written and being used. He further added that organizations might need to introduce change to solve business problems which may have been identified by analysis, referred to above in order to contribute to enhance objectives, processes and resources, and suggesting ways by which organization re-design can be obtained.

As far as efficiency is concerned, it is believed that it can be achieved in two ways: by reducing rework and by shortening project length. In addition, customer demands are met by having group of project coordinators who have interest in the works assigned to them. Nonetheless, he emphasized that the ideal organization for projects is to organize a dedicated organization to execute project separate from the existing structure by introducing a dedicated project team into the organization which will he believes that would be an excellent initiative and will resolve many problems related to project works. However, this could be subject to the number of projects approved to execute each year.

On the other hand, division manager pointed out that there are many factors hindering project progress, for instance, the time it takes to approve a project because of the delegation of authority and that work force are overloaded with multiple projects. Furthermore, made clear that day-to-day operation hinder project works as staff give less priority to project activities.

It is in the view of division manager that availability of enough manpower is detrimental to successfully complete projects to their required budget, time and quality and that this can be only achieved by having a complete organizational change.

5.2.2 Analysis and interpretation of interview -Engineering Support Section Head

Engineering support section has an important role in ensuring plant reliability and availability. In the opinion of Engineering Support Section Head is that there are some factors that help project progress such as the fact that prior to approving a project, it is screened at every stage of its progress (i.e. initiating, planning, implementation, close-out). In addition, the organization adopts the team approach and customer support wherein teams in self-units and multi-cross-departmental teams are formed to run projects.

Meanwhile, Engineering Support Section Head expressed a similar view that is - inflexibility in the organizational structure retrospectively hinders project activities and on this basis it may be inferred that staff are facing difficulties balancing between project needs and day to day plant works requirement; where in some cases it was observed that staff get disassociated from project activities in early stages because of lack of manpower.

Given the above evidence, it can be seen that specialization in managing project is necessary and according to Engineering Support Section Head, it is necessary to have separate unit to manage projects with dedicated team gathered from each unit in order to change cultural attitude towards projects

5.2.3 Analysis and interpretation of interview -Senior Development Engineer

The Senior Development Engineer job responsibilities range from project budgeting, project development, execution to project reporting. He noted several factors in the current organization that help projects to succeed such as teams are formed form multi-discipline background to prepare projects for normal and urgent works. Hence, he added that staff have better project management skills feel that projects are more important to them where project requirements are same according to established procedure.

On the other hand, he claimed that there are many problems faced with in relation to project organization such as the organizational structure itself. According to him, the view of two discipline engineers may differ on certain scope requirement, which contribute to delay in approving project documents. He reported that red-tapism is another source that hinders project execution that is the time it takes to complete a project because of the organizational structure itself.

Furthermore, in the opinion of Senior development engineer is that there is no link between job function and requirements to manage projects as all Company staff are required to know procedure for executing projects.

The indications are therefore according to him is that there shall be permanent team to endorse projects so decisions making is faster. Given this evidence, it can be seen that a project team must be established for projects from initiation to close-out stage. The team should be available full time to take over project responsibility who can take sole decisions about project issues.

5.3 <u>Focus Group Discussion Results</u>

Focus groups are a great qualitative data-gathering tool and give researchers more accurate answers to results from qualitative measures. They allow the researcher to ask a group of people the same questions at the same time rather than conducting individual interviews; not only get individual responses, but also helps in getting participants to react to others views. Thus, it creates synergy that can expand the researcher data as people build on each other's ideas. Focus groups stimulate more and often deeper level conversation and ideas, building energy and allowing for greater creativity (Centre for Leadership and Organizational Change, University of Maryland, accessed 11th August 2009: http://www.cloc.umd.edu/).

In the focus groups discussions, series of carefully designed, open-ended questions were asked to get the answers needed. These questions were intended to have some new ideas related to our workplace organization in order to test the study results, and get opinions on whether we require an advising approach to our organization works and how it might be improved. This approach allowed to go directly to get the right

feedback. In other words, as explained earlier, we have gathered qualitative data and want to better understand it.

The focus groups were divided into three sessions. Two sessions each with three staff members who are directly involved in project works who are civil development engineer, mechanical development engineer and project engineer in the first session and project process engineer and two project civil engineers in the other session respectively. The third session consisted of three staff members who are less involved in the project activities from a separate unit namely Process Engineering Section Head, and two Plant Inspection Engineers.

5.3.1 Focus Groups 1& 2 - Engineers directly involved in projects

There were various views given about how projects are managed in the organization. It is in the view of both groups that the questions were adequate to get the right answers and the answers gave variety of opinions about the incomplete scope of requirements resulting in variation orders to the extent that same discipline engineers from same department may differ on basic requirements. It is observed that similar answers were give by the interviewed staff in this study.

In addition, many have stressed and pointed out on the fact that the concept of project management are not very well spread around in the organization and there is no commitments from individuals assigned to projects works. All have agreed that change is required which will mainly focus on eliminating the current obstacles faced by teams in managing projects effectively. Thus, they have agreed totally on the idea to completely move towards a project based organization and restructure the current configuration into an efficient and dedicated project team.

Having reviewed and identified each individual perspective on each answer, the common answer derived from the asked questions were that availability of system and procedure, was helping the organization achieve its targeted objectives from projects whereas the lack of delegation in the project process was hindering the progress on projects. It must therefore be recognized that all have expressed a similar view that the most common answer for the required change was to have a dedicated team or unit to manage the projects independently from the current functional organization.

5.3.2 Focus Group 3 – Interview results with engineers less often involved in projects

Process Engineering Section Head main responsibility is to ensure that plant operation is in line with design parameters and advise operations on the established process ranges according to the plant operational philosophy. They hire consultants to study plant problems and investigate abnormal processes. He was of the view that his section take projects seriously and follows the project requirements established by the clear

company system and procedures that is in his opinion is an added value that helps him to carry out projects in a systematic manner. He opines that projects are assigned to the right departments/sections and communication between departments are easy when it comes to receiving inputs on project documents and feedback on scope of requirements are clear and adequate.

On the Contrary, he believes that manpower availability and approvals from others hinder project approvals. He feels that no proper support is given as project authorities are split among departments and projects are considered less important to others. On the other hand, he deems that change is important and alternatively in each department staff can be assigned to project activities or a single organization can be created to plan and execute projects.

Inspection engineer main job description is to ensure the quality control/assurance of static equipment repair works and welding works are performed according to standards. They engage outside parties for studies on corrosion problems and remainant life assessment of equipment. He took this opportunity to express his opinion about the way projects are performed in his section. He stated that scope of works and requirements are circulated and commented by others from various departments. In addition, availability of information to write clear and adequate Scope of Work is helping project progress and that clear cut objectives agreed with the customers. Also official communication system is well established. Hence, in order to overcome staff unavailability, more than one engineer is assigned on a single project.

He added that delegation of authority is lengthy and hinders the process of project approval in the organization. Moreover, some procedures are not standardized and Quality requirements differ from project to project. He believes that staff are overloaded with various projects which range from low to costly projects. He is of the view that staff in same department can resolve problems on their level when new requirements arise during project execution stage. He also believed that staff should be spared on full time basis for projects and be arranged with focal points in each department to deal with managing projects.

The other inspection engineer was also interviewed. In his opinion, job requirements are clear and management is supportive. He thinks that staff within the same department are cooperative and reply on project documents are received on time. In addition, projects progress and area of concern is given proper attention from management and same team is maintained for a project till project completion. Meanwhile, he thinks that the scope of work are sometimes written by non experienced people. He added that in particular projects quantum of works is high and individuals are assigned to multiple projects. The most effecting factor that hinder projects in his opinion is that required personnel are unavailable especially during leave season which affect project progress.

In order to overcome the above-mentioned problems, Inspection Engineer advised that organizational structure should be made flexible enough to manage project. He suggested that staff should work with each other in a dedicated team to manage projects. In addition, he believes that project performance should be trended and analyzed as assigned to individuals so that each staff member can know about his performance. The optimum solution in his opinion is to group people from other departments under one single unit to ensure that the right persons participate in project execution.

5.4 <u>Commonality and Differences</u>

5.4.1 Interviews

Results from the Organizational Interviews provided valuable information about commonality and differences amongst interviewed staff. One may notice that those who were more involved in projects, commonly agreed that projects are justified and planned ahead of time so that they could start as soon as approval were granted because projects were screened at every stage of progress which was mainly due to Company established systems and procedures including a Delegation of Authority (DOA).

From projects complexity and size perspectives, the common overview was that work method flow was fixed for approving projects irrespective of the size. However, manpower were noticed to have been overloaded with multiple small and bigger sized projects that is due to inflexibility in the organizational structure to balance between

project needs and day to day plant activities, and accordingly work load was seen to be increasing.

Furthermore, interviewees agreed to have dedicated organization to execute project separate from the existing structure owing to the fact that project organizational structure must be defined based on project sizes (i.e monetary size, Multidisciplinary nature) and that a full time team must be established to take over project responsibility who can take sole decisions about project issues.

On the contrary, interviewees differed by saying that DOA is lengthy and does not cascade down to staff level, rather, it is only meant for management level only. Moreover, having close proximity of staff within same unit and authority by one manager on his staff sometimes did not help in getting required information to develop complete project requirements, and at the same time, did not eliminate miscommunication in some instances where people in same or across units had differed on project requirements.

5.4.2 Focus Group Discussion Results

Results from focus group discussion provided adequate information about commonality and differences amongst staff for analysis purpose. The general opinion is that incomplete scope of requirements resulted in various variation orders. It was observed that similar answers were given by the interviewed staff in the interview schedule, despite the fact that the merit of scope of work circulation to all departments did not help in avoiding project delays and variations. Besides, all have commonly stated that despite the clear understanding of works and needs, company established systems and procedures were not seen to have helped in smoothing out the projects progress, but at the same time elongated the project approval process.

Some have suggested that staff recruitment should be on need basis, that is to engage or outsource outside agencies to supply manpower and specialist services to manage projects, although, the least to have minimum pre-defined staff on direct hire basis either in their single departments or in a dedicated unit to manage the specialist services so as to keep the flexibility during project peak requirements such as Turnarounds and major project execution. Meanwhile, it could be very well noticed during the discussion

that staff with the least involvement in project execution view projects less importantly as project activities are not under one authority and split among departments. It was in fact stated that if staff feel that project were related to their job function, they would take them more seriously and would foresee the benefit it could bring about if executed.

5.5 <u>Summary of Chapter</u>

The interview schedule and focus group discussions were performed with staff who were involved in project activities either directly on indirectly and responses were aggregated from qualified people. The interviewed staff had been selected based on their experiences, to ensure proper feedback. Results from the organizational interviews and focus group discussions provided valuable information about commonality and differences amongst interviewed staff. Most of commonality was the agreement by all that Company projects system and procedures were to some extent helpful, and that the establishing a dedicated unit to handle the project would be a meaningful solution to projects issues faced by the Company.

CHAPTER 6

Chapter 6: Discussion

6.1 <u>Further Analysis and Discussion</u>

In this section, the collective views of the referred literature review and the interview schedule will be analyzed and compared. In the opinion of many researchers referenced in the literature review, it was of utmost importance to describe new organizational forms that were widely accepted by practice. On this basis it may therefore, be inferred that this analysis has shown the traditional organizational methods for change and development found in the literature review and their analogues that are widely adopted in practice, which do not necessarily ensure achievement of the ultimate goal that is to have a perfect organizational structure as you may notice while reading through this section.

To start with, Jarret (2003) claimed that managing change is difficult and most transformational change initiatives fail! This could obviously be realized in some instances, where researchers talked about complexity in organizations leading to formation of matrix organizations or other types of forms that were adopted in the Company and may not be the solution to the problems faced in the studied organization, rather would allow the readers of this dissertation to link the study results conducted by means of interview schedule and focus group discussion to the main literature review.

It is to be noted that in previous sections of this paper, some elements of change were explored to show how tasks and processes could be decomposed from one single unit to several sections, altered and interlinked to create new forms of organized groups and units (See Appendix A). Hence, an important practical problem that I faced with when I attempted to research the alternative design criteria (success factors) for performing the desired task was to improve the work processes while choosing the criteria for organization design selection which also posed some challenges. That was resolved in the explanation provided previously when I developed an approach to the study of the work processes, which resulted in the proposed configuration. In this view, the design of the business and work processes was highly reliant on the coordination mechanisms chosen to manage dependencies among tasks and resources involved in the work processes. This was tested in the part of the interview schedule pertaining to the interdependencies within and between units that is retrospectively mitigated by the

division of the proposed department into three sections in a sequential work process manner.

Typically, if the suggested approach was adopted, there would be strong resistances because people would be afraid of the unknown. Many people think that the current organizational form is just fine and do not understand the need for change. This is clearly noticed in the answers given by those who have less involvement in project works because the coordination is limited to the unit they work in unlike those who have more involvement who emphasized on the need for a restructured organization.

Like in any typical organization, people doubt that there are effective means to accomplish major organizational change. Often there were conflicting goals in the organization, for example, to increase resources and reorganize manpower needs under a new department would be realized as a conflict with the divisional objectives to cut costs in terms of justifying operating expenses. In other words, change may go against how employees believe things should be done.

Interestingly, most of the writers in the literature review agreed as stated earlier that change might threaten the self-interests of some people within the organization, which may potentially lead to diminishing their power or influence and accordingly, employees so affected may fight the change. Refer to Jarret (2003) when he stated that that experiences of others and researched literature showed that some change approaches do not work for most companies and Frank (2007) further pointed out that that changes in industry, are under certain conditions confronted with resistance.

The reason for this organizational resistance would be that change is never planned well and the majority of the interviewees believed that change could be mitigated as long as assumptions are pre-defined and well planned. It is of extreme importance to recall that people self-interest issues could be threatened by proposed change, which might give a feeling of loss of status, security, familiarities with existing procedures, and self-confidence. In addition to the general assumptions listed above, there are a few other basic guidelines to keep in mind in considering the adoption of the management of change approach as to communicate the intent for change prior to implementing it.

In the criteria for the design selection, fifteen success factors were chosen carefully for the sake of this study and Mintzberg findings of five basic configurations were used to develop Table 5 in the research methodology chapter showing how the various elements are incorporated into the three basic studied configurations that would best suit the proposed organization. To begin with a description of the elements found in the literature, was used which appear to be most important in understanding each configuration.

Mercer (1983) explained about the characteristics of the three basic configurations in reference of Mintzberg and stated that the functional structure is characterized by having few support staff, a loose division of labor, minimal differentiation among its units and a small to medium line hierarchy…. It is above all, makes minimal use of planning and liaison devices… Specifically, power over all-important decisions tends to be centralized and that is the classic case of this type of structure that is projects tend to be small and dependency between units is high. This is fact what was noticed in answers given by the interviewees

The Matrix structure is characterized by having more support staff and large-size units in the core operating business that rely on the functional units for grouping of task throughout the structure. Decision making process is centralized with distinction between staff and line management in matrix organization driving the organization into a different configuration. Projects in this type of structure tend to be medium in size and dependency between units is medium because units staff extend their services to multiple projects (Mercer 1983).

Mercer (1983) characterized the projectized structure to have the highest number of support staff and highly complex in its multidisciplinary project staff (See Appendix A of the proposed organization). Hence, it makes maximum use of planning and coordination procedures. It is a very different structural configuration, one that is able to select experts drawn from different specialties into smoothly functioning project teams. It was further argued that projectized structure has the tendency to group professional specialist in small unit-based teams to do their project works. Its coordination is largely effected by direct supervision of a single line manager, here, called Manager, Project Management Department who rely on liaison to encourage mutual adjustment within and between units and teams. Specifically, power over

technical decisions tends to be de-centralized. Projects in this type of structure tend to be large and interdependency within the organization is high and with outside units is low.

The following table was configured using Mintzberg (1980) works showing how the various success factors were incorporated into the three basic configurations. Following comparison table was developed to test the research questions and expected assumptions and relationships between the type of organization chosen and the rate of the project success depicted as (L,M,H). The configured ratings were comprehended from the interview schedule and focus group discussions for the completion of this study. This could lead to the targeted outcome of this dissertation that is to figure out the type of organizational structure that would best fit the newly suggested configuration.

Table # 5: Fifteen Success Factors ratings against organizational configuration

(adapted from Mintzberg, 1980)

Success Factors	Functional	Matrix	Project Structure
Time to approve a project	L	L	**M**
Project complexity	L	H	**H**
Size (overall)	L	M	**H**
Importance	L	M	**H**
Satisfy Customer Needs	L	M	**H**
Interdependency (within unit)	L	M	**H**
Interdependency (Between units)	M	H	**L**
Implementation Time	L	H	**H**
Reporting functionality	L	L	**H**
Organization Change Management	L	M	**H**
Scope management	M	L	**H**
Project team composition	L	M	**H**
End user participation	L	H	**M**
Training needs	L	M	**H**
Project Success	L	M	**H**

Key: H=High, M=Medium, L=Low.

According to Caroll and Burton, (2000) the increased coordination among units highlight the importance of proper interaction between the units, whether they are individuals, or groups in units. Organization theory suggests that in changing environments such as project management environments; tasks and people ought to be subdivided into tasks that are more specialized across individuals within a project team. The valid question that was asked in the literature review should now be answered. To what level of dependency should the best possible configuration be associated with, how much integration was needed, and whether this can be usefully applied to the newly proposed organization? The answer to the above questions can be derived from

exploring the existing configuration, where each change creates need for communication, decision-making, and potentially extra work in the form of rework.

To better understand the relationship of group structures and the level of interdependency between individuals under the various functional sections, Dunne et al (1987) explained about group performance and the understanding of organizations by suggesting that there should be an increasing range of interconnections between tasks that explains the variation in staff interaction. In fact, the complexity theory does not explicitly address the question of how much and to what extent interconnection should best be integrated amongst individuals or groups in the organization. Then, of course, it was retrospectively left to us to understand its true complexity by means of this study as it was clearly understood that the main problem was the duplication of work noticed in the current organizational structure and the interdependences between each configuration due to the nature of the organization being a simple configuration.

Worth to mention, you may refer to the work of Homburg (2000) stating that design of new organizational forms can begin with an analysis of existing organizational constraints and identification of ways to change these process arrangements. However, he argued that management 'theory' had dealt with prescriptions for improving managerial efficiency but has not yet prescribed a substantial scientific hypothesis relating to the nature of human organizations.

Nevertheless, it could be comprehended that theoretical consideration of the organizational design and theory of management and behavior of humans relationships within organizations did not necessarily provide a systematic step by step approach to the classical problems faced by the Company to mitigate the increasingly needed coordinating functions, rather, helped in understanding the human nature to resist change in this application.

6.2 <u>Choosing an Organizational form</u>

6.2.1 Choosing an Organizational Configuration- What should be changed?

In order to narrow down this study, a look into the current organizational structure to possibly carry out a change by introducing a new **projectized structure** (staff re-organization) was investigated. It may be a new project department to administer all projects exclusively meant to imitate, develop, tender and execute projects independently from other departments in the current organization. Alternatively, a complete organizational change, as opposed to smaller changes such as providing more staff to the current structure was studied. Examples of organizational change may include a change in each department function, restructuring Maintenance and Technical Services departments by eliminating some sections responsible of project coordination and combining them under one Department (e.g., restructuring to one Department-managed sections). Some may refer to as organizational transformation.

It is worth mentioning that projectized structures specify clear path for the organization's head to every position within the organization. The beauty of this structure is that each individual reports to only one manager. Unlike functional structures, the projectized structure changes over time because it is built around current projects of the organization. The growth of the organization would be dependent upon the new projects emerging as old projects reach their conclusion.

On the other hand, an organization developing many new but small size projects would likely find a functional structure best to fit its intentions. Nevertheless, a company with long, large, complex and important projects should favor the pure project organizational structure (R. Youker, 2004). It is reminded that in the Literature Review, Projects in this type of structure tend to be large. (See Appendix B for 2003-2008 yearly budgets).

6.2.2 Leadership role in the change process- Getting the balance right.

There must be management support and acknowledgement of the project management team in a departmental form. This change should include more explicit authority for the project managers. Accordingly creating an independent organization to take up the responsibility of such function will be an optimal solution to the current problems faced by each department in fulfilling its requirements. Here management is responsible to translate peoples' vision to a realistic plan and carry out the change plan. Change is usually best carried out as a team-wide effort. Hence, "the inability to recognize or/and manage complexity can cause the best-intentioned projects to fail" (Kim & Wilemon, 2000)

From a global perspective, the aim is to better understand how best organizational change be carried out to improve project outcomes and list down the steps required to perform the transition to change. Usually organizational change is instigated by major problems e.g., major backlogs leading to needs for dramatic increases in number of complex projects. Typically, organizations must undertake organizational change to evolve to a different level in their project management role going from a highly reactive to project organization problems to a proactive role and planned problem-solving attitude.

In a large company hosting more than two thousand employees, it's going to probably take a long time and a lot of effort to bring about change. For a large company it may take 5 years for the real results of the change to come through. That is a long time for a top management team to maintain focus and involvement. There are many reasons why a company may find it difficult to change. Major changes can only happen if top management takes the lead, yet top managers may not be capable of taking the lead in an environment of resistance. Top managers may perform excellently when things are going well for the company, but may not have the skills to lead the company through a period of change in a tough environment. Yet, change agents are the people lower down the organization who really make the change happen. However, It's not enough for one person to manage change, whole top management team has to be on board.

Change management should be part of any strategy development process. Top management should consider the need to change, make some tough decisions, and set

the targets, but unless the great mass of the company's employees change, then nothing is going to happen. Hence, team working should be generally acceptable throughout the new organization. The need for transformational change while rethinking and redesigning this major process. Typical activities which require retuning would be rewriting the engineers and staff job descriptions, defining new work processes, changing delegation of authority and financial reporting.

Thus, top management has to make the organization both willing and able to grow. They must inspire the workforce to give their very best so that the dual strategy of expansion and growth can become a reality. This reflects that change management approaches of the past need to be expanded so that they make explicit reference to corporate strategy in terms of the prospective organization and encompass both elements of restructuring and elements that look to future success in the management of projects.

Changes as in resource reallocation necessitate the adaptation of a new organizational set from one form to another. The effectiveness of applying design scenarios and innovations to the area of organization (Organizational redesign) as in the case of this dissertation, can lead to achieving main goals and maintain requirements for its day-to-day functioning. The behavior of the department staff and their interaction together should result in overall organization behavior and effectiveness that fulfills the goals of the organization. Nevertheless, the work environment will change over time, so do the forthcoming constraints explained in latter sections of this overview.

The current organization represented in its constituent departments carrying out projects should be re-organized into one integrated unit/department with centers or sections focused around core functions. Department should be able to eliminate duplication and provide better management of projects. Likewise, as projects grow even more complex in size and budget which is always the case in the current organization, the delegation of authority to the project manager in a projectized structure is required. **(See statistics below from 2003-2008 for Capex Budget)**

Table # 6: Budget Year vs. Budgeted amount (derived from Capex budget)

Year	2003	2004	2005	2006	2007	2008
Budget (AED) '000	60,440	152,355	161,100	200,918	451,498	586,737

Keeping in mind that the organization should continue functioning while adaptation takes place, i.e., it is not possible to stop the organizational activities in order to reorganize, and then start again. Thus, it is stated that coordination between departments and team members during the transition stage is critical. In this case, adaptation can be expressed as an on-going process in which the organization moves from one form with its attendant task allocation to a different one through a series of incremental steps that preserves overall functionality and performance. Therefore, the first logical step would be to appoint a new department manager (DM) who should select and recruit the new team. The DM job function is explained in a later part of this paper.

The process of design recommended is a sequential one. First, a set of team members is assumed to be in one section that best fits the other section structure. Then decide on the design and so on. Next, decide the costs and availability of the new set of staff, as needed by the determined design. Next, the remaining staff required is determined for a better combination with a set that they require. A series of such steps should produce better total designs up to some point. At each stage of the process, the availability and cost of the matching staff set are balanced against the efficiencies and costs of the remaining staff.

Each property of the structure of the organization may be usefully defined and interlinked. This will allow analyzing and designing each of the operating conditions separately before linking teams together. For instance, linking Project Development Section with Project Execution Section staff and their relations at times when a member of the organization is on leave and the subordinate from another section is appointed to resume the responsibilities. Meanwhile, the behavior of department staff should be analyzed, and that involves the study of the relations between team members. The kinds of employees chosen into the set depend on their positions in the hierarchy. However, these positions must depend on the availability and costs of people who are needed to fit in with these positions.

On the other hand, the biggest benefit of the projectized structure is that the department head has authority over the project team and organizations within this structure are focused totally on projects. Besides, effective transformational leadership promotes the

development of the individual member of the team and gives the manager the necessary tools to address individuals' needs within the organization to develop further.

A Transition Matrix (See Table # 2) summarizes core value shifts per discipline/department, developed in each of the ideal type organization models and particularly in the subsequent pure project type organizations which indicate required person/organization interaction values with self-assessment industry specific matrix. Principles such as values, leadership style, etc are described to generally illustrate the majority of the new department approaches against its Systematic-driven approach.

It is felt that top level management will see change as an opportunity to strengthen the business, but for many employees, change may never be welcomed because uncertainty is the biggest force which cause employees to resist change. Employees may become nervous or worry about their ability to meet new job demands under the new department; they may think that their job security is threatened.

In the context of this study, different sub-topics concerning this research may be used such as resistance to change as a classical example leading into more literature review. From the above, it seems that the change instigator can manage resistance to change by educating people about the need for change. For instance, meetings with department managers and company staff can be planned so that staff is given the opportunity to raise their views to the change instigator.

6.2.3 Communication tools to instigate change

An increasing number of organizations are engaged in production or services that require extraordinary attention to avoiding major errors because errors could lead to destruction of the organization and/or a larger public. The studied organization main business is to process crude oil to final marketable products such as Gasoline, Diesel, Jet Fuels and Liquefied Petroleum Gas. It is known to be hazardous (in its operation and engineering sense) and until they experience failure, they are generally invisible to the public at large, which their supports are needed but fails to realize the costs required to obtain them. This requires defining organizational processes necessary to operate safely a complex organizations that can do great physical harm to themselves and their surrounding environments if operations are not adequately processed and communicated less effectively.

While most part of managerial life continues to involve productive wandering managers as the organization's firefighters who negotiate, motivate, resolve conflicts, monitor and disseminate information, develop relationships, and allocate resources, E-mail can also be used as a communication tool in the new organization for the new inter-departmental communication and to totally discontinue the current practice of official communication between sections in the individual departments. Some interviewed staff expressed that communication is a challenge in the existing structure.

To effectively communicate, the new appointed manager can use this tool to manage the reporting function to be well informed and well situated who may quickly and effectively respond to workplace issues and conflicts. However, there has been a significant change in the use of technology-based communication processes in today's organizations, a continuing revolution that both amends and expands existing definitions of managerial work. "Fires" in organizations are now routinely engaged and fought on-line. It is considered part of a manager's daily business to improve an organization. In that lots of projects deal with organizational improvement, and many companies have business support departments for this sake.

6.3 <u>Summary of Chapter</u>

In this section, the collective views of the referred literature review, the interview schedule and focus group discussion were analyzed and compared. Accordingly, the analysis illustrated the traditional organizational methods used to study organizational change management explained in the literature review and their analogy that are widely adopted in practice by conducting the interview schedule and focus group discussion.

Accordingly, a comparison table was developed to test the research questions and expected assumptions and relationships between the type of organization chosen and the rate of the project success. The configured ratings were comprehended from the interview schedule and focus group discussions. This could lead to the targeted outcome of this dissertation that is to figure out the organizational structure that would best suit the newly suggested configuration.

Then the leadership role in the change process was explored. It was suggested that top management should consider the need to change, make some decisions to instigate change, and set targets to ensure that change should be generally acceptable throughout the new organization. Thus, top management should steer the organization to be both willing and able to grow. They must inspire the workforce to achieve targeted strategy of expansion and that growth can become a reality. This reflects that change management approaches be expanded so that they make explicit reference to corporate strategy in terms of the prospective organization in the management of projects.

CHAPTER 7

Chapter 7: Recommendations and Conclusion

The purpose of this section is to show the proposed design of a suitable organization. A procedure to define and determine roles and responsibilities is accordingly explained. The "Who does what?" defines what one must then decide the discipline-wise engineering function that is necessary in each department or section.

7.1 <u>Key Recommendation -The Project Team</u>

Two aspects of organizations should be dealt with here. Management must decide either which department or sub-department be an independent unit or whether it is reasonable for instance for a specific task be performed by department A rather than Department B. The importance of such decisions is obvious. Thus, many efforts have gone into classifying organizations. One form has been named as projectized organization, for example. Nevertheless, neither naming nor creating advanced forms of displaying organization will help in choosing the right organization until unless a systematic approach is considered.

The changes recommended after thorough explanation of each structure is that projectized structure be used to create a new independent department called Project Managment Department (PMD). To implement these strategic function, PMD should be composed of the three entities (Sections); Project Budgeting and Cost Control Section, Project Development Section and Project Execution Section. This would include yearly budgeting of approved projects, initiation of the technical specification, tendering, awarding activities, implementation, supervision and project termination.

The newly formed Department should be responsible for coordinating all of the activities and providing the overall strategic leadership necessary to successfully implement the assigned projects in its yearly rolling plan. The management goals, proposed functions of these sections of the new Department should be but not limited to the following:

1. To assure all departments that it will respond effectively and without delay in the new assigned projects and deliver in the timely manner.

2.   To build an organization that better addresses the common linkages between the strategic needs for projects and the requirements to accomplish them in the planned time, cost and quality.

3.   To recognize the need to program a priority- project-based concept.

4.   To provide effective assistance to any department that needs support to take up project on temporary or urgent basis due to unforeseen circumstances.

7.2 <u>Recommendations for a Good Leader</u>

Project Management Department Manager: should be selected with care. His key responsibilities and typical characteristics for a good change leader should be as follows:

- An ability to work with a wide range of people. The new team will include people from many functional departments and levels.

- Must have good communication skills to be able to communicate goals and targets to the newly formed team and take responsibility to co-ordinate staff from many functional units who have different working backgrounds and styles.

- Able to take and mitigate risks. Many people who may be successful in their old departments may be unable to change their behavior.

- Ability to hire sufficient resources to perform assigned tasks.

- Able to delegate to make sure that change take place to balance between leadership and involvement in day to day details.

- Able to listen so that team members can have the opportunity to communicate their ideas, exchange thoughts.

- Be skilled in problem-solving techniques as the start will throw up all sorts of problems and the most appropriate way will have to be found to solve each one.

- Be a good builder of team effectiveness to bring people together and get them to work as an effective team.

- Be able to keep track of project progress where many projects will be happening simultaneously to have them all under control.

- An ability to present the projects status and the results of the teams' work and suggests improvements and corrective actions

- Be able to go back to top management for guidance, support and advice.

For the key team members of various disciplines that may be assigned in each Section with appropriate numbers: (See Appendix A)

7.3 Conclusion

It is concluded that many organizations face difficulties in organizing and managing project due to the fact that the concept of project management contradict with the fundamental design principles associated with traditional organizational structures in functional configurations. In addition, most projects are multidisciplinary which require coordinated efforts of a variety of specialists and skillful staff. Hence, a good project management system balances the needs of the parent organization and the projects by defining the interface between them in terms of authority, resource allocation and integration of project outcomes into mainstream operation.

From the study conducted on staff in the organization, the evidence seems to be strong that work processes at the workplace are duplicated thus adding to coordination workload as mentioned in the problem statement of this study. These concurrent projects pose many managerial challenges. It is clear therefore that some improvements would enhance projects performance, but would never eliminate the problems.

Nevertheless, these improvements like having project teams assigned form time to time to execute project would be more likely to occur where staff are more skilled in particular areas creating a learning organization that experiment and innovate by seeking and exploiting this kind of creative organizational adding another layer of coordination workload within the project teams.

It must therefore be recognized that this study provides empirical evidence on project management effectiveness with the intent of contributing to a better understanding and improvement of project management practices. It is obviously concluded that the results of this study suggest that planning and organizing a new project organization is a must to overcome the everlasting confilct between the functional and project based types of structures and the mix between the two in the form of matrix structures adopted in the current configuration. This in fact necessates re-sturcuring the managerial practices and the leadership behavior of functional managers by introducing a project based management seprate from the existing functional and task based

management.. Thus, it could be concluded that theoretical consideration of the organizational design and theory of management and behavior of humans relationships within organizations did not necessarily make it possible to find an appropriate approach to this classical problem to provide for the increasingly needed coordinating functions, but helped in understanding the human nature to resist change in this application.

It is worth mentioning that that common issues and similarities that previously had in mind such as potential human problems in forming project organizations and the fact that project team assigned to matrix organizations are more frustrated by authority ambiguity than permanent members of functional organizations. Hence, some criticism of the functional form of organization is that it induces human problems for which this study discussed unique human problems to project organizational forms.

It is clear therefore, that in order to mitigate or eliminate such constraints; the organization should change itself so that the changing constraints can be interpreted as changing requirements for redesigning the organization. This paper proposed such formalizations for the area of organizational change, in the context of organizational redesign due to constraints faced by the Company in its existing configuration. Thereafter, it represented examples of design targets that are known to satisfy certain design requirements in the form of success factors used to test the relationship between the choice of organizational structure and achieving successful implementation of projects. Then presented generic job descriptions for each discipline, which enabled this study to evaluate the intended successfulness of the whole redesign process.

In summary, analysis of the problem statement in this study leads to two basic conclusions, which could be used for future studies:

(a) The variety of management organization structures analyzed to adapt to the changing environment of a separate project organization can be accepted and is in fact necessary;

(b) Enhancement of the project units in a pure organizational structure makes it possible to design stable management structures with a dynamic composition that can easily exchange staff within the intended organization. Further, implementation of the content of this study in a large-scale can bring about essential new forms of organizational units

similar to the proposed one but may be in a bigger scale depending on the company size. It may help make large-scale organizations structures far less complex and increase their flexibility without disturbing their functional configurations.

7.4 <u>Future Research</u>

The contribution of this qualitative study will provide necessary literature for future research on how a Company project strategy can be influenced by the re-design of its organization to move from a qualitative study into a quantitative one. The major component of this study can be used as a reference to engage a consultant to carry out a consultancy study to use other types of surveys and research methods in order to determine the required staffing in a quantitative measure and re-design the organization to use its human capital to the most efficient manner possible.

For future research, it is recommended to study the Company organizational structures in detail, and compare it with other Oil and Gas Companies in the region and in different countries. For example, this study can be used to describe the achievement can bring about if decided for implementation in terms of the most effective success factors used in it. If formulated in terms of the chosen success factors, it would be very helpful to companies to achieve successful implementations of their projects. In conclusion, a consultant might better investigate the organizational structure of the Company in detail in terms of the features that it has. Then, before implementation starts or during the decision making period, the projectized structure suggested in this study can be referenced in order to get to the required level of desired success.

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APPENDICES

APPENDIX A

Proposed Various Disciplines in each
Section in the Department

Project Planning and Cost Control Section PCCS:-

- Sr. Project Estimation Engineer- The engineer is in charge of project scope cost estimation and analysis of commercial and priced bids, engineering changes, and documentation

- Capex Coordination Engineer- The engineer is responsible for the coordination, estimation and preparation of annual capital budget and review of its monthly performance.

- Opex Coordination Engineer- The engineer is responsible for the coordination, estimation and preparation of annual operating budget and review of its monthly performance.

- Sr. Project Accountants- analysis and payment of contractors Invoice Payment Certificates and Authorizations for Expenditures

- Project Accountants- to work under the supervision of their seniors and coordinate with their counterparts in the Finance Division for daily, monthly and yealry reporting of costs. Their responsibilities should be clearly distinguished from plant accountants job responsibilities.

Project Development Section (PDS)

- Process Development Engineer- The engineer is in charge of review of plant process problems and changes required to project scope development, specifications, and drawings updations, engineering changes, and documentation and review approval of Material submissions of contractors

- Control/Automation Development Engineer- The engineer is in charge of review of plant Control/Automation problems and changes required to project scope development, specifications, and drawings updations, engineering changes, and documentation and review approval of Material submissions of contractors

- Mechanical Development Engineer (Static/Piping)- The engineer is in charge of review of plant static equipment problems and changes required to project scope development, specifications, and drawings updations, engineering changes, and documentation and review approval of Material submissions of contractors

- Electrical Development Engineer- The engineer is in charge of review of plant Electrical problems and changes required to project scope development, specifications, and drawings updations, engineering changes, and documentation and review approval of Material submissions of contractors

- Civil Development Engineer- The engineer is in charge of review of plant Civil/Structural rehabilitations and changes required to project scope development, specifications, and drawings updations, engineering changes, and documentation and review approval of Material submissions of contractors

- Rotating Equipment Engineer - The engineer is in charge of review of plant Rotating Equipment reliability and changes required to project scope development, specifications, and drawings updations, engineering changes, and documentation and review approval of Material submissions of contractors

Project Execution Section (PES)

- HSE Engineer – The engineer will ensure that all contractors' work is performed in a safely manner

- QA/QC Engineer – The engineer will ensure that all contractors work is performed in the standard quality according to internationally recognized standards

- Sr. Project Engineer (Mechanical)- The engineer is responsible for the installation of mechanical equipment (static and rotating), its testing, commissioning and support in coordination with the contractors

- Project Engineer (Electrical)- The engineer is responsible for the installation of electrical equipment, its testing, commissioning and support in coordination with the contractors

- Project Engineer (Civil)- The engineer is responsible for the installation of Civil and structural works, its commissioning and support in coordination with the contractors

- Site Supervisor(s)/Coordinators for Maintenace/operations and safety- These Supervisors will liaise with Maintenance Operation and HSE department for contractors works within their premises by allowing workers to perform project activities.

- Administrator (Typist)- Will type letters and general correspondence between company and contractors
- Technical Records Clerk/Assistant- will keep As Built documentation and archiving of documents for future reference.

APPENDIX B

2003 – 2009 List of Capital Projects
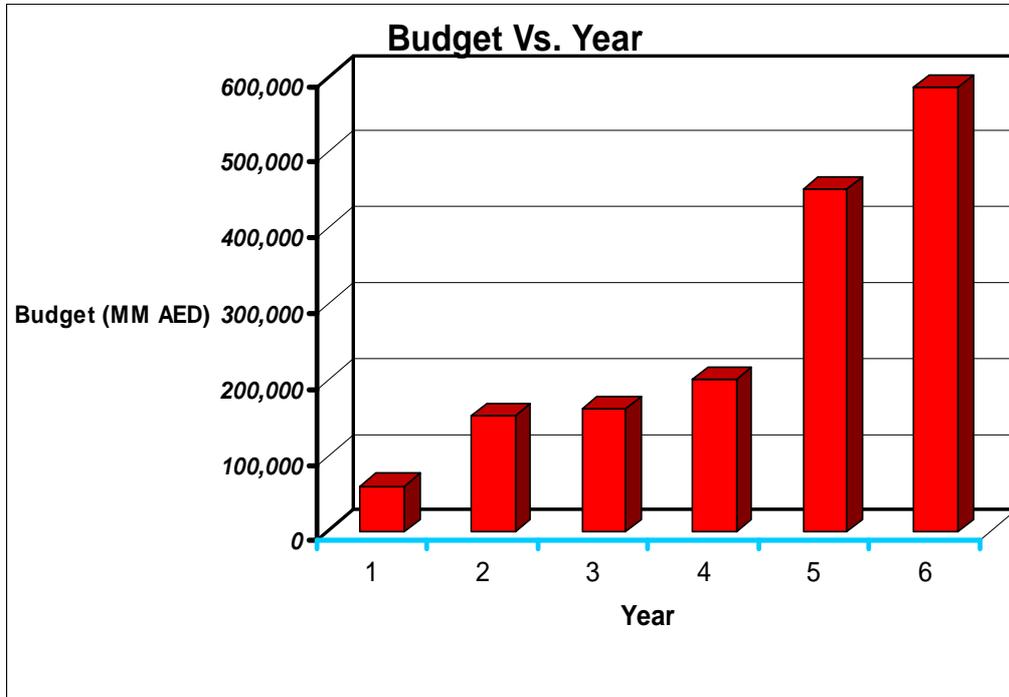
Figure # 4: Budget Year vs. Budgeted amount in AED

Table # 7: Year 2003 Capital Budget Items (In-progress and new)

S/NO.	PROJECTS TITLE	COST
1.	AIR MONITORING SYSTEM	350
2.	DEBOTTLENECKING OF REFORMER UNIT	35,200
3.	SEGREGATION OF LEADED AND UNLEADED SLOP	600
4.	UPGRADING & REPLACEMENT OF HVAC SYSTEM AT OMCR	600
5.	INSPECTION & REPAIR OF STORAGE TANKS	3,800
6.	SHIFTING OF STEEL SHELTER	3,205
	2002 PLANT & EQUIPMENT IN PROGRESS	
1.	IMPLEMENTATION OF PIP CONSULTANT RECOMMENDATION	700
2.	AUTOMATIC POUR CLOUD & FREEZE POINT APPARATUS	200
3.	AUTO DISTILLATION ANALYSERS	240
4.	LOW SULPHUR ANALYSER	200
5.	AUTO RVP ANALYSER	110
6.	COLOR COMPARATOR	60
7.	CONDUCTIVITY METER	30
8.	AUTO FLASH POINT ANALYSER (ABEL)	60
9.	ANALYSER (H2S AND SO2) FOR UNIT 72	440
10.	DOUBLE MECHANICAL SEALS FOR PUMPS	400
	PROJECTS PROPOSED FOR 2003	
1.	ANTI SURGE PROTECTION AND ADDITIONAL	600
2.	AIR CONDITIONING EQUIPMENT FOR PLANT PLC SHELTER	450
3.	UPGRADING OF LPG LOADING SYSTEM	500
4.	REPLACEMENT OF TUG BOAT BERTH TERMINAL	500
5.	REVAMPING OF GAS DETECTION SYSTEM	1,800
6.	REPAIR OF CONCRETE STRUCTURES & BUILDINGS **PLANT & EQUIPMENT PROPOSED FOR 2003**	3,700
1.	FUGITIVE EMISSIONS MONITORING EQUIPMENT	50

2.	DIGITAL SOUND LEVEL METER	25
3.	FIRE TRUCK	2,000
4.	DIGITAL AMBIENT AIR MULTIGAS DETECTOR	25
5.	ULTRASONIC THICKNESS METER	30
6.	COOLER CIRCULATORS	200
7.	PNA ANALYZER	300
8.	JET FUEL THERMAL OXIDATION TESTER (JFTOT)	250
9.	ALIGNMENT TOOL KIT FOR ROTATING EQUIPMENT	100
10.	MOBILE DIESEL PUMPS	100
11.	TURBINE FLOW METERS	1,200
12.	CONDENSER COILS FOR AC UNITS	75
13.	HONEYWELL TDC 3000 CARD ASSEMBLIES	60
14.	RESISTIVE LOAD BANKS FOR UPS	180
15.	LOAD BANKS FOR EMERGENCY DIESEL GENERATOR	150
16.	INSTRUMENTS FOR SULPHUR TRUCK LOADING FACILITY	100
17.	CORROSION MONITORING EQUIPMENT FOR OMCR	50
18.	TEMPERATURE BATH FOR INSTRUMENT WORKSHOP	50
19.	CHEMICAL FILTERS FOR SUBSTATION 57	150
20.	WELDING MACHINES FOR WORKSHOP	100
21.	DIAPHRAGM PUMPS	80
22.	MANLIFT FOR WORKSHOP	100
23.	VALVE TEST BENCH FOR WORKSHOP	150
24.	VACUUM TANKER	350
25.	AIR CONDITIONING EQUIPMENT FOR LABORATORY	100
26.	RADIO EQUIPMENT	100
	OFFICE EQUIPMENT, FURNITURE & VEHICLES PROPOSED IN 2003	
1.	VEHICLES	620
	TOTAL	**60440**

Table # 8: Year 2004 Capital Budget Items (In-progress and new)

S/NO	PROJECTS TITLE	COST
1	**2003 PROJECTS IN PROGRESS**	
1.1	ENHANCING PLANT RELIABILITY AVAILABILITY AND MAINTAINABILITY	14,200
1.2	UPGRADING OF SLOP DRAINAGE SYSTEM	600
1.3	INSPECTION AND REPAIR OF STORAGE TANKS	12,300
1.4	AC EQUIPMENT FOR WATER TREATMENT PLANT PLC SHELTER	650
1.5	REVAMPING OF GAS DETECTION SYSTEM	1,800
1.6	REPAIR OF CONCRETE STRUCTURES AND BUILDINGS	3,700
1.7	INTEGRITY STUDY AND UPGRADING & ENHANCEMENT OF FIRE PROTECTION SYSTEM	1,500
2	**2003 PLANT & EQUIPMENT IN PROGRESS**	
2.1	IMPLEMENTATION OF PIP CONSULTANT RECOMMENDATIONS	900
2.2	DOUBLE MECHANICAL SEALS FOR PUMPS	400
2.3	FIRE TRUCK	2,000
2.4	COOLER CIRCULATORS	125
2.5	PNA ANALYSER	300
2.6	JET FUEL THERMAL OXIDATION TESTER	325
2.7	TURBINE FLOW METERS	755
2.8	INSTRUMENTS FOR SULPHUR TRUCK LOADING FACILITY	100
2.9	CHEMICAL FILTERS FOR SUBSTATION 57	150
2.10	VACUUM TANKER	350
3	**PROJECTS PROPOSED FOR 2004**	

3.1	GENERAL REFINERY SHUTDOWN 2005	60,700
3.2	PHOSPHATE INJECTION FACILITY	600
3.3	CONSULTANCY SERVICES FOR CIVIL WORKS	2,000
3.4	REPAIR OF JETTY CONCRETE STRUCTURES AND SHORELINE PROTECTION	15,700
3.5	INSPECTION AND REPAIR OF STORAGE TANKS	15,000
3.6	REVAMPING OF CATHODIC PROTECTION FOR CRUDE TANKS AND STORAGE AREA II	1,200
3.7	REPLACEMENT OF PIPELINES IN STORAGE AREA	8,000
3.8	REVAMPING OF ESD SYSTEM FOR BOILERS	6,000
4	**PLANT & EQUIPMENT PROPOSED FOR 2004**	
4.1	ALLOY ANALYSER	200
4.2	PH METER	40
4.3	DENSITOMETER	120
4.4	PORTABLE FLUE GAS ANALYSER (MAX 5)	150
4.5	ONLINE DENSITY METER FOR BOILERS	150
4.6	CRANE TRUCK	200
4.7	ELECTRICAL DESIGN & SIMULATION (EDSA) SOFTWARE	100
4.8	ULTRASONIC DISINFECTOR	25
4.9	AIR HOSE RESPIRATOR	30
4.10	SELF CONTAINED BREATHING APPARATUS (SCBA)	60
4.11	MULTIGAS DETECTORS	40
4.8	PROTECTION RELAYS FOR SUBSTATION 70 SWITCHBOARDS	400
4.9	LABORATORY EQUIPMENT	665
5	**OFFICE EQUIPMENT, FURNITURE & VEHICLES PROPOSED IN 2004**	
5.1	VEHICLES	820
	TOTAL	**152,355**

Table # 9: Year 2005 Capital Budget Items (In-progress and new)

S/NO	DESCRIPTION	EST. BUDGET (DHS. '000)
1	**2005 PROJECTS IN PROGRESS**	
1.1	REVAMPING OF GAS DETECTION SYSTEM	3,250
1.2	INTEGRITY STUDY AND UPGRADING & ENHANCEMENT OF FIRE PROTECTION SYSTEM	4,500
1.3	REPAIR OF JETTY CONCRETE STRUCTURES AND SHORELINE PROTECTION	23,900
1.4	INSPECTION AND REPAIR OF STORAGE TANKS (PHASE III)	20,300
1.5	REPLACEMENT OF PIPELINES IN STORAGE AREA II	9,180
1.6	CIVIL WORKS FOR YEAR 2005 (PHASE I)	15,500
1.7	CONSULTANCY SERVICES FOR HYPOCHLORITE GENERATOR FOR SEAWATER INTAKE	800
1.8	CONSULTANCY SERVICES FOR ADDITIONAL CRUDE OIL TANK	1,500
1.9	OPERATIONAL IMPROVEMENT TO PROCESS UNITS	74,838
2	**2005 PLANT & EQUIPMENT IN PROGRESS**	
2.1	REMOTE OPERATED VALVE FOR REFORMER UNIT	825
2.2	FLOW METER FOR SEAWATER COOLING SYSTEM	75
3	**2005 OFFICE EQUIPMENT, FURNITURE & VEHICLES IN PROGRESS**	
	NIL	
4	**PROJECTS PROPOSED FOR 2006**	
4.1	CONSULTANCY SERVICES FOR STUDY & INVESTIGATION OF SOIL & GROUND WATER	2,500
4.2	REPLACEMENT OF HALON SYSTEMS FOR SUBSTATIONS & CONTROL ROOMS	5,000
4.3	NEW DECOKING QUENCH DRUM AND FUEL GAS FILTERS	1,500
4.4	UPGRADING & REPLACEMENT OF OBSOLETE PUBLIC ADDRESS SYSTEM	1,300
4.5	UPGRADING & REPLACEMENT OF OXYGEN ANALYZER IN	700
4.6	REPLACEMENT OF CLAY FILTERS	3,000
4.7	CIVL WORKS (PHASE II)	18,200
4.8	EXPERT REAL TIME ADVISORY SYSTEM FOR DCS OPERATORS (GENSYM)	2,000
4.9	CHEMICAL INJECTION SKIDS FOR SEAWATER SYSTEM	2,700

4.1	PROVISION OF SPENT CAUSTIC SURGE VESSEL FOR LPG SWEETENING UNIT	1,500
4.11	PROVISION OF BYPASS FOR KERO FEED COALESCER OUTLET TO FILTER IN MEROX UNIT	275
5	**PLANT & EQUIPMENT PROPOSED IN 2006**	
5.1	INTERVENTION AND RESCUE VEHICLE	600
5.2	POLLUTION CONTROL EQUIPMENT FOR SEAWATER OUTFALL	515
5.3.	NDT EQUIPMENT	145
5.4	LAB EQUIPMENT	850
5.5	UPGRADING OF FTNIR ANALYSER	60
5.6	REPLACEMENT OF FLARE SEAL VESSEL	2,000
5.7	MOBILE 50 TONS CRANE	400
5.8	mobile air conditioning unit	350
5.9	THREE PHASE ELECTRICAL RELAY UNIT & METERS	225
5.1	INDUCTION HEATERS FOR BEARINGS	40
5.11	STROBOSCOPE	40
5.12	CENTRAL GPS UPDATED MASTER AND SLAVE CLOCKS	200
5.13	ELECTRICAL TEST WORK BENCHES	50
6	**OFFICE, EQUIPMENT FURNITURE & VEHICLES PROPOSED IN 2006**	
6.1	VEHICLES	1,600
7	**PROJECTS UNDER DEVELOPMENT**	
	PROJECT UNDER DEVELOPMENT	500
	TOTAL	**200,918**

Table # 10: Year 2007 Capital Budget Items (In-progress and new)

S/NO	DESCRIPTION	EST. BUDGET (DHS. '000)
1	**2006 PROJECTS IN PROGRESS**	
1.1	UPGRADING & ENHANCEMENT OF FIRE PROTECTION	54,500
1.2	REPAIR OF JETTY CONCRETE STRUCTURES AND SHORELINE PROTECTION	23,900
1.3	INSPECTION AND REPAIR OF STORAGE TANKS (PHASE III)	20,300
1.4	CIVIL WORKS FOR YEAR 2005 (PHASE I)	22,750
1.5	HYPOCHLORITE GENERATOR & COOLING WATER INJECTION SYSTEM	16,400
1.6	ADDITIONAL CRUDE TANK	43,700
1.7	OPERATIONAL IMPROVEMENT TO PROCESS UNITS	74,838
1.8	CLEANING OF SOIL & GROUND WATER	16,500
1.9	REPLACEMENT OF HALON SYSTEMS FOR SUBSTATIONS & CONTROL ROOMS	8,000
1.1	NEW DECOKING QUENCH DRUM AND FUEL GAS FILTERS	2,700
1.11	UPGRADING & REPLACEMENT OF OBSOLETE PUBLIC ADDRESS SYSTEM	1,300
1.12	UPGRADING & REPLACEMENT OF OXYGEN ANALYZERS	700
1.13	CIVIL WORKS (PHASE II)	18,200
1.14	CHEMICAL INJECTION SKIDS FOR SEAWATER SYSTEM	2,000
1.15	EXPERT REAL TIME ADVISORY SYSTEM FOR DCS OPERATORS (GENSYM)	4,350
1.16	PROVISION OF SPENT CAUSTIC SURGE VESSEL FOR LPG SWEETENING UNIT	2,500
1.17	PROVISION OF BYPASS FOR KERO FEED COALESCER OUTLET TO FILTER IN MEROX UNIT	1,000
1.18	REPLACEMENT OF OILY WATER SEWER SYSTEM	31,115
1.19	REPLACEMENT OF COOLING WATER RTR PIPELINE	24,880
2	**2006 PLANT & EQUIPMENT IN PROGRESS**	
2.1	INTERVENTION AND RESCUE VEHICLE	600
2.2	CENTRAL GPS UPDATED MASTER AND SLAVE CLOCKS	200
3	**2006 OFFICE EQUIPMENT, FURNITURE & VEHICLES IN PROGRESS**	
3.1	NIL	
4	**PROJECTS PROPOSED FOR 2007**	
4.1	INSPECTION AND REPAIR OF STORAGE	40,000

	TANKS (PHASE IV)	
4.2	UPGRADING OF COOLING WATER PUMPS	1,500
4.3	11KV POWER & CONTROL CABLE FOR ADRD	15,000
4.4	UPGRADING OF MOV POWER DISTRIBUTION BOARDS AND LIGHT FIXTURES	750
4.5	DEEP WELL ANODE BEDS	1,600
4.6	ADDITIONAL EQUIPMENT AND PIPING WORKS	6,000
4.7	GENERAL REFINERY SHUTDOWN 2009	6,000
4.8	UPGRADING OF EXISTING DCS SOE MODULES	1,500
5	**PLANT & EQUIPMENT PROPOSED IN 2007**	
5.1	FIRE HOSE BINDING MACHINE AND HYDROTEST KIT	75
5.2	HIGH CAPACITY RIREWATER and FOAM MONITORS	735
5.3.	SELF CONTAINED BREATHING APPAATUS (SCBA)	600
5.4	NDT EQUIPMENT	55
5.5	LAB EQUIPMENT	940
5.6	DIESEL ENGINE DRIVEN FORKLIFT	150
5.7	DIESEL ENGINE DRIVEN AIR COMPRESSOR	85
5.8	UPGRADE FOR ENTIS+ TANK GAUGING & MONITORING SYSTEM	380
5.9	REPLACEMENT OF ONLINE GAS CHROMATOGRAPH	450
5.1	VALVE TEST BENCHES FOR WORKSHOP	550
5.11	POTABLE POWER QUALITY METER	50
5.12	INSURANCE SPARE ROTOR FOR COMPRESSOR	1,600
5.13	UPGRADING OF AC UNIT FOR WAREHOUSE	195
6	**OFFICE, EQUIPMENT FURNITURE & VEHICLES PROPOSED IN 2007**	
6.1	VEHICLES	1,850
6.2	FIRE SAFE CABINETS	500
7	**PROJECTS UNDER DEVELOPMENT**	**500**
	NIL	
	TOTAL	**451,498**

Table # 11: Year 2008 Capital Budget Items (In-progress and new)

S/ No.	DESCRIPTION	EST. BUDGET (DHS. '000)
1	**2007 PROJECTS IN PROGRESS**	
1.1	UPGRADING & ENHANCEMENT OF FIRE PROTECTION SYSTEM	72,799
1.2	INSPECTION AND REPAIR OF STORAGE TANKS (PHASE III)	20,300
1.3	HYPOCHLORITE GENERATOR FOR SEAWATER COOLING SYSTEM	16,400
1.4	ADDITIONAL CRUDE OIL STORAGE TANK	43,700
1.5	OPERATIONAL IMPROVEMENT TO PROCESS UNITS	74,838
1.6	CLEANING OF SOIL & GROUND WATER AT OPERATING DIVISION A	16,500
1.7	REPLACEMENT OF HALON SYSTEMS FOR SUBSTATION & CONTROL ROOM	6,900
1.8	CIVIL WORKS (PHASE II)	36,628
1.9	EXPERT REAL TIME ADVISORY SYSTEM FOR DCS OPERATORS (GENSYM)	2,438
1.10	PROVISION OF SPENT CAUSTIC SURGE VESSEL FOR LPG SWEETENING UNIT	3,683
1.11	REPLACEMENT OF OILY WATER SEWER SYSTEM	32,399
1.12	REPLACEMENT OF COOLING WATER RTR PIPELINE	24,880
1.13	INSPECTION AND REPAIR OF STORAGE TANKS (PHASE IV)	41,387
1.14	UPGRADING OF COOLING WATER PUMPS	1,500
1.15	11KV POWER & CONTROL CABLE FOR ADRD	15,000
1.16	DEEP WELL ANODE BEDS	2,700
1.17	ADDITIONAL EQUIPMENT AND PIPING WORKS	10,000
1.18	UPGRADING OF EXISTING DCS SOE MODULES	1,500
1.19	GENERAL REFINERY SHUTDOWN 2009	71,800
2	**2007 PLANT & EQUIPMENT IN PROGRESS**	
2.1	HIGH CAPACITY FIREWATER AND FOAM MONITORS	735
2.2	SELF CONTAINED BREATHING APPARATUS (SCBA)	600
2.3	UPGRADE OF ENTIS TANK GAUGING & MONITORING SYSTEM	380
2.4	REPLACEMENT OF ONLINE GAS CHROMATOGRAPH	450
2.5	UPGRADING OF AC UNIT FOR WAREHOUSE	195
3	**2007 OFFICE EQUIPMENT, FURNITURE & VEHICLES IN PROGRESS**	
3.1	FIRE SAFE CABINETS	1,300
4	**PROJECTS PROPOSED FOR 2008**	
4.1	MIGRATION OF VAX BASED AUTOMATION SYSTEM	1,300
4.2	REPLACEMENT OF 3.3 KV SWITCHGEARS IN SUBSTATION 11 & 29	7,700
4.3	UPGRADING OF REDUNDANT ULG PROJECT FTNIR ANALYZERS	2,500
4.4	REPLACEMENT OF REGENERATOR VESSEL	8,000
4.5	UPGRADING OF EXISTING CCTV SYSTEM	1,200
4.6	DC UPS IN SUSBTATION	750
4.7	UPGRADING OF PROTECTION RELAYS FOR SUBSTATION	750

4.8	UPGRADING OF UPS CONFIGURATION FOR OMCR	100
4.9	TRAINING SIMULATOR	10,000
4.10	SYNCHRONIZING FACILITY FOR 11 KV SWITCHBOARD IN SUBSTATION 57	200
4.11	REPLACEMENT OF PM/ APM FOR HONEYWELL DCS SYSTEM	3,800
4.12	IMPLEMENTATION OF SIL RECOMMENDATION	18,000
5	**PLANT & EQUIPMENT PROPOSED FOR 2008**	
5.1	PERSONNEL PROTECTION AND MONITORING EQUIPMENT	660
5.2	NDT EQUIPMENT	200
5.3	LAB EQUIPMENT	600
5.4	MOBILE RADIO EQUIPMENT FOR FIRE VEHICLES AND ADDITIONAL RADIO SETS	170
5.5	EQUIPMENT RELIABILITY MONITORING INSTRUMENTS	360
5.6	WORKSHOP EQUIPMENT	460
5.7	REPLACEMENT OF OBSOLETE DENSITY ANALYSER	120
5.8	ADDITIONAL ONLINE MOISTURE ANALYZER	500
5.9	MOTOR FOR SEAWATER PUMP	600
5.10	PARTIAL REPLACEMENT FOR MAJOR EQUIPMENT	14,600
5.11	CATALYSTS FOR VARIOUS REACTORS	13,800
6	**OFFICE EQUIPMENT, FURNITURE & VEHICLES PROPOSED IN 2008**	
6.1	VEHICLES	855
7	**PROJECTS UNDER DEVELOPMENT**	500
	TOTAL	**586,737**

APPENDIX C

Existing and Recommended
Organizational Chart

Operating Division A Current Structure

Notes:
Section 4 under Maintenance and Section 3 under Technical Services
Departments should be eliminated in the new structure
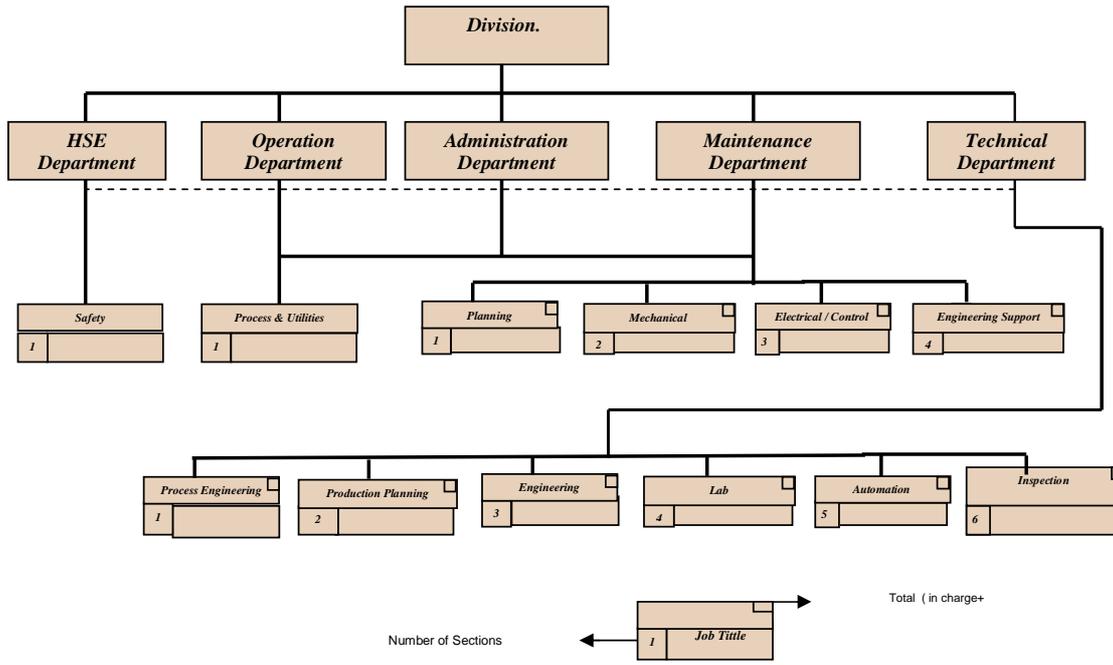
Figure #5: Operating Division A Current Organizational Structure

Operating Division A New Structure

In addition to the existing structure

Figure content:
- Project Management Department
  - Budgeting and Cost Control (1)
  - Project Initiation Section (2)
  - Project Execution Section (3)

Total (in charge+

Number of Sections

Job Tittle (1)

*Notes:*
New department made of 3 new sections
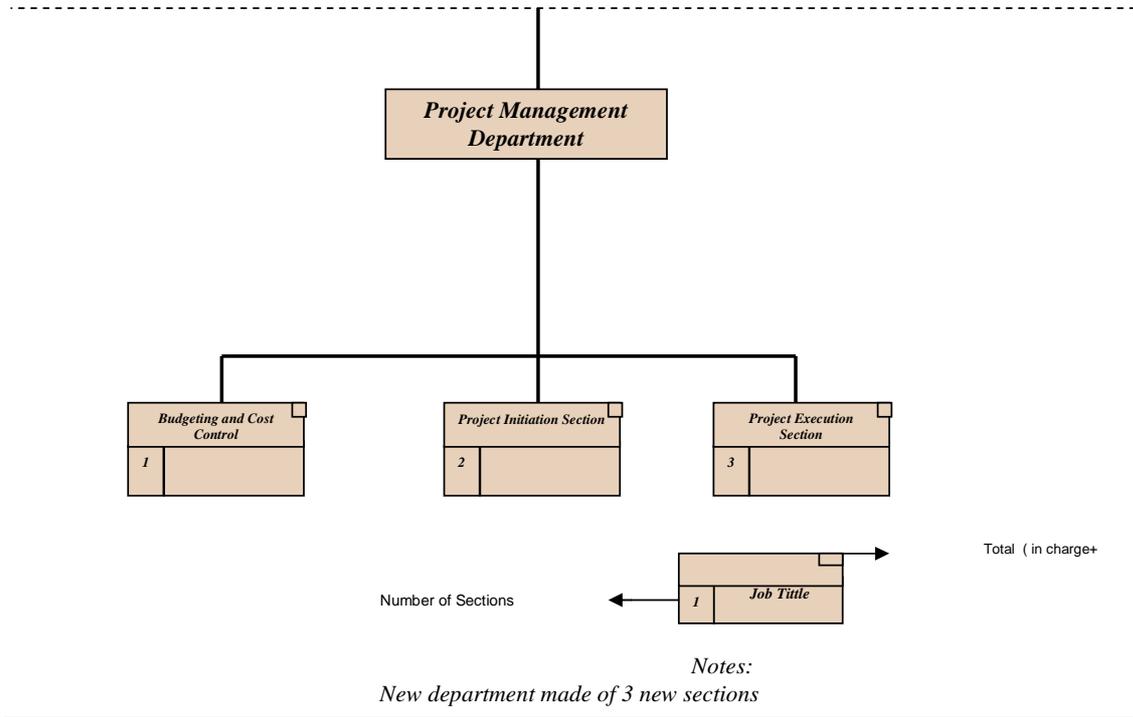
Figure #6 Operating A Division New Organizational Structure

APPENDIX D

Interview Results with Engineers
directly involved in projects

(SF1) **Time to approve a project**: The process of approving a project and how flexible it is in the view of interviewees

Q) **What supports/helps the process of approving a project in our organization?**

Division Manager (DM) - Projects are justified and planned ahead of time so that they can start as soon as approved.

Engineering Support Section Head (ESS)- to approve a project, it is screened at every stage of its progress (i.e. initiating, planning, implementation, close-out).

Senior Development Engineer (SDE)- Availability of systems and procedure. There is fixed duration for approving process.

Q) **What hinders/reduces the process of approving a project in our organization?**

DM- Time it takes to approve due to Delegation of Authority.

ESS. There is nothing that hiders this process.

SDE- Approving authority is not fully aware of complete project scope/background.

Q) **What is required to be changed in our organization to achieve above success factor?**

DM- To further delegate approving authority discipline-wise.

ESS- Approving authority should be delegated according to project size.

SDE- There shall be permanent team to endorse projects so decisions making is faster.

(SF2) **Project complexity**: In terms of its scope and quality requirement.

Q) **What measures are undertaken in the current organization that overcomes projects complexity in terms of its scope and quality requirements?**

DM- No measures are taken.

ESS- Every unit is required to submit there comments on the technical requirements of projects.

SDE- Teams are formed for scope preparation for urgent jobs such as Bid Evaluation team.

Q) **What hinders/reduces that chance of having less complex projects in relation to current organizational structure?**

DM- The organization itself

ESS- Interpretation of Scope of Work

SDE- The organizational structure itself. View of two discipline engineers may differ on certain scope requirement.

Q) **What is required to be changed in our organization to achieve above success factor?**

DM- Availability of manpower.

ESS- To have dedicated team for project development.

SDE- A project team to be assigned on a project from initiation to close-out stage-Example is Pre Start up Safety Review requirement which delays project completion.

(SF3) **Project Size**: the project size that the organization is capable to handle

Q) **What supports/helps project execution in our organization irrespective of its size?**

DM- Nothing helps

ESS- dealing with multiple smaller sized projects.

SDE- work method flow that is fixed for approving a project irrespective of size.

Q) **What hinders project execution of different sizes in our organization?**

DM- Overloading manpower with bigger sized projects

ESS- inflexibility in the organizational structure

SDE- Red-tapism – Time taking to complete a project because of the organizational structure itself.

Q) **What is required to be changed in our organization to be capable of handling projects of various sizes?**

DM- To have dedicated organization to execute project separate from the existing structure.

ESS- Engage Project Management Consultant to manage big projects.

SDE- Project organizational structure to be defined based on project size (i.e monetary size, Multidiscipline nature.)

(SF4) **Project Importance**: in order to view the project performers' opinion about how they perceive the importance of projects to their positions in the organization because they may get assigned to perform projects to satisfy others in the organization.

Q) How does staff view importance of projects in relation to their job requirements in the current organization and what helps them to take responsibility of carrying out projects?

DM- nothing helping

ESS- people are proud of carrying out projects by adding value to the organization.

SDE- Those having better PM skills feel that projects are more important to them where project requirements are same according to established procedure.

Q) What obstacles do staff faces that reduce achieving this success factor in our organization?

DM- Style of management

ESS- Lack of delegation

SDE- There is no link between job function and requirements to manage projects as all Company staff are required to know procedure for executing projects.

Q) How does the organizational structure need to be changed to ensure that above success factor is achieved?

DM- Organizational Change

ESS- To have separate unit to manage projects.

SDE- a full time team must be established to take over project responsibility who can take sole decisions about project issues.

(SF5) **Satisfy Customer needs**: Are they satisfying customer needs?

Q) **What factors enable staff to help in satisfying customer demands (operations as end user) by performing projects in our organization?**

DM- having dedicated project coordinators having interest in projects

ESS- the team approach and customer support

SDE- availability of documentation for training maintenance and operational staff before projects are handed over.

Q) **What hinders/reduces customer satisfaction in executed projects in our organization?**

DM- Time and Budget

ESS- Financial delegation is limiting

SDE- customers feel that certain groups can do better than others that overload a certain group with more projects.

Q) **What is required to be changed in the organizational structure to achieve customer satisfaction?**

DM- To get involved in projects from start to end.

ESS- at budgeting stage project executors and customers should work closely.

SDE- to have clear definition of project nature so that right organization is assigned with the project.

(SF6) **Dependency (within units)**: How dependent the project performing unit on each other.

Q) **What helps project performing units within the department to use resources to execute projects?**

DM- having close proximity of staff within same unit and authority by manager on staff.

ESS- having staff with good experience, knowledge and easy to find resources.

SDE- People taking advantage of better organizational structure using resources to speed up projects.

Q) **What obstacles are faced by project performing units within the department to execute projects?**

DM- overlooking requirements

ESS- To balance between project needs and day to day plant works requirement.

SDE- different people in same unit having different responses to project requirements

Q) **What is required to be changed in the organization to make use of department staff in executing projects?**

DM- to have dedicated team for projects

ESS- Get commitments from units within same department to get valuable inputs.

SDE- Identify project team based on their PM skills/knowledge to execute projects.

(SF7) **Dependency (between units)**: How units depend on each other to perform projects

Q) **What helps project performing units in using other department resources to execute projects?**

DM- getting all information about projects and proper communication between units

ESS- Expertise possessed in other units

SDE- Project teams are formed for multi-discipline projects

Q) **What obstacles are faced by project performing units to obtain resources from different departments to execute projects?**

DM- miscommunication in some instances

ESS- properties of each unit

SDE- Loyalty should be shifted with the team assigned- shift priorities.

Q) **What is required to be changed in the organization to make use of other departments' staff in executing projects?**

DM- establish dedicated and permanent project team

ESS- Harmonized team approach. Have experienced resources.

SDE- Establishment of confidence. Give authority to project team.

(SF8) **Implementation Time**: How much time it takes to complete a project?

Q) **What supports/helps project execution to be completed within specified time frame in our organization?**

DM- Reliable and accurate information and available support.

ESS- Urgency of requirements help completing works time which is an advantage

SDE- Use of system and procedure to get right business process

Q) **What hinders completion of projects within specified deadlines in our organization?**

DM- Gaps in SOW- shortage of information. Late requirements

ESS- Accuracy and availability of documentation. Staff not seriously reviewing documents contributing to variations.

SDE- Red-tapism. Unfreezing of SOW and not honoring Scope of Work. Nice to have culture

Q) **What is required to be changed in our organization to enable projects to complete within agreed deadlines?**

DM- involvement of staff from project start- sustainability of project people all the way up to the end.

ESS- Training staff in project management. Have a mechanism to monitor project cost and completion trend.

SDE- Frequent auditing of systems and procedures. Firming up SOW

(SF9) **Reporting Functionality**: Effectiveness and completeness of the reporting functionality within the organization

Q) **What supports/helps project executers report project progress effectively?**

DM- appropriate team leaders reporting to Division Manger

ESS- Proper contacts with project supervisors and daily reporting

SDE- Open door policy. Otherwise every aspect of reporting is negative

Q) **What hinders project executers from reporting project progress?**

DM- No commitment from other members of the team

ESS- conflicts in reporting

SDE- Poor reporting of progress. No timely response.

Q) **What is required to be changed in our organization effectively report project progress?**

DM- to organize dedicated project team

ESS- Change reporting style to descriptive reporting with emphasis on real project issues.

SDE- Setting up system for reporting such as Area of Concern and unique reporting.

(SF10) **Organizational Change Management**: to see to what extent a change in the organization would affect the project performance

Q) What helps to overcome a change in the project organization (shortage of staff) on effective performance of your projects?

DM- There is no solution to this problem

ESS- There is no flexibility in the organization

SDE- People accept to take over when a colleague on leave and flexibility in some areas of work

Q) What is the extent of effect which may hinder project performance when a change is made on your project organization?

DM- There is an affect but not major. To have alternate manpower.

ESS- Slowing down project progress

SDE- No redundancy in some areas. Conflict of interest among staff.

Q) What is required to be changed in our organization to effectively manage Organizational Change?

DM- Increase dependency on system rather than individuals.

ESS- In some instances, coverage by discipline engineers can be a solution

SDE- Honoring of decisions of others irrespective of decisions made. Can not have reverse decisions.

(SF11) **Scope management**: How good the project scope is managed.

Q) **What helps project executers manage project scope effectively?**

DM- Review of SOW at initial stage by every discipline though ineffective

ESS- Consistency of SOW- well structured SOW

SDE- Firm and quality of SOW- Departments give required information

Q) **What hinders project executers from managing project scope effectively?**

DM- Staff involvement in review scope of work is incomplete

ESS- Different interpretation of project clauses. Missed requirements duration clarification stage.

SDE- Incorrect basis of design. Incomplete information. People unable to read specifications/drawings and understanding of requirements.

Q) **What is required to be changed in our organization to effectively manage Project Scope?**

DM- Appointing dedicated team from A-Z to manage and follow up and participate in SOW.

ESS- Training staff on how to write SOW and what is essential. Staff should be aware of project/scope requirements

SDE- Enhance quality of team managing projects

(SF12) **Project Team Composition**: Adequacy of selected project team to monitor project progress

Q) **How project team composition is supported to ensure adequacy of team to monitor project progress?**

DM- Team has relevant experience and come from variety of disciplines.

ESS- Teams in self-units and multi-cross-departmental teams are formed to run projects.

SDE- availability and awareness of procedures that govern team formation

Q) **What are the obstacles faced by management to selection of right project team composition?**

DM- day to day activities- people in operation do not give priority to projects

ESS- Priorities and business goals

SDE- Poor knowledge of systems and procedures. Do not care attitude and resistance to accept systems and procedures

Q) **What is required to be changed in our organization to select the right project team?**

 DM- Management to co-operate and realize that these projects will finally have be operable. It depends on the size of the organization. The bigger the organization, a dedicated team can be established to run projects.

ESS- to change cultural attitude towards projects

SDE- Familiarization of line management with delegation, procedures and systems.

(SF13) **End user participation**: Is level of end user participation helpful to successfully complete a project?

Q) **What helps in the organization to ensure the participation of end user in project execution?**

DM- Policy is not helping much and is damaging project progress

ESS- end user feels the benefit of being involved form early stage

SDE- Clear instructions for end users to participate in project teams

Q) **What hiders end user participation in Project execution?**

DM- Late stage interaction

ESS- late stage involvement

SDE- unawareness of SOW- Feeling unnecessary to participate in projects and negative attitude about projects.

Q) What **is required to be changed in our organization to ensure end user participation during project execution?**

DM- dedicated team to participate in projects from initiation stage

ESS- establish a policy to ensure end user participation

SDE- PM training and familiarization with company systems and procedures.

(SF14) **Training needs**: the quality of training requirements for staff responsible for performing projects

Q) **Is quality of training helping staff responsible for projects to effectively manage projects?**

DM- Training is determined to be part of SOW so required staff get required training

ESS- Not helping

SDE- Yes, training helps project staff

Q) **What hinders staff from getting the right training to manage projects?**

DM- Time constraint for people to attend training.

ESS- Lack of what is to be trained upon.

SDE- No Project management culture for those involved in Project Management so that they get right training needs.

Q) **What is required to be changed in our organization to ensure that training needs are assessed and offered for project staff?**

DM- ensure flexibility in on going operation to give every staff a training chance and get more manpower to give training opportunity to all staff.

ESS- Refresher courses to be determined by project focal points and decide resources

SDE- All should have to undergo training irrespective of discipline/department.

(SF15) **Overall Project Success**: How important it is for the performing unit that the project is ended successfully according to the targeted time, budget and quality?.

Q) **What measures are taken to help the organization successfully complete a project accordingly to the established targets?**

DM- No tangible measures. What is required is to have project culture- team building.

ESS- act on time to get approvals from management

SDE- Firm SOW in some cases. Right budget estimates and realistic schedules.

Q) **What hiders the organization to successfully complete a project accordingly to the established targets?**

DM- Clarity of SOW – Participation by End user.

ESS- early disassociation from projects

SDE- Poor planning and integration. Unforeseen shutdowns requirements to carry out project tie-ins

Q) **What is required to be changed in our organization to ensure overall success of projects?**

DM- have dedicated team who should be composed of multi-discipline resources.

ESS- Specialization in project management

SDE- Should establish project teams for project endorsement and to ensure that projects are planned in the five year plans.

APPENDIX E

Interview Results with Engineers less
involved in projects

(SF1) **Time to approve a project**: The process of approving a project and how flexible it is in the view of interviewees

Q) **What supports/helps the process of approving a project in our organization?**

Process Engineering Section Head (PESH) – Clear understanding of works and needs

Inspection Engineer (IE) – Scope of work is circulated and comments are incorporated

Inspection Engineer (IE) – Clarity of job requirements

Q) **What hinders/reduces the process of approving a project in our organization?**

PESH- approvals from others

IE- delegation of authority

IE- scope of work sometimes written by non experienced people

Q) **What is required to be changed in our organization to achieve above success factor?**

PESH- clear requirements from other departments for project

IE- to spare staff from each section to handle projects

IE- to involve people in their expert areas to manage projects

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(SF2) **Project complexity**: In terms of its scope and quality requirement.

Q) What measures are undertaken in the current organization that overcomes projects complexity in terms of its scope and quality requirements?

PESH- recruiting staff for specific jobs on urgent basis

IE- engaging specialists/ outside parties to study plant problems

IE- particular manpower required for a project are pre-defined

Q) What hinders/reduces that chance of having less complex projects in relation to current organizational structure?

PESH- tasks related to other departments

IE- some procedures are not standardized and Quality requirements differ from project to project

IE- poor decision making in some areas of a particular project

Q) What is required to be changed in our organization to achieve above success factor?

PESH- In each department/section, staff can be dedicated to projects works.

IE- to appoint a specialist team to standardize project quality requirements

IE- flexibility in the organizational structure. People should work with each other

(SF3) **Project Size**: the project size that the organization is capable to handle

Q) **What supports/helps project execution in our organization irrespective of its size?**

PESH- Company system and procedure

IE- system and procedure

IE- management support. Staff empowerment

Q) **What hinders project execution of different sizes in our organization?**

PESH- Manpower availability

IE- same staff handling different projects

IE- quantum of job. Individuals assigned to multiple projects

Q) **What is required to be changed in our organization to be capable of handling projects of various sizes?**

PESH- outsourcing manpower

IE- manpower flexibility

IE- dedicated project team

(SF4) **Project Importance**:

Q) **How does staff view importance of projects in relation to their job requirements in the current organization and what helps them to take responsibility of carrying out projects?**

PESH- if project related to their jobs, they are taken seriously

IE- staff viewing projects as important in fulfilling company objectives

IE- people can think of the benefits the organization would get to perform projects

Q) **What obstacles do staff faces that reduce achieving this success factor in our organization?**

PESH- Staff may give projects less priority if not related to their discipline.

IE- no proper support

IE- Poor decision making and lack of group cooperation

Q) **How does the organizational structure need to be changed to ensure that above success factor is achieved?**

PESH- Group multi-disciplinary staff under one organization to perform projects

IE- staff should be aware of the importance of the projects

IE- project performance should be trended and analyzed as assigned to individuals

(SF5) **Satisfy Customer needs**:

Q) What factors enable staff to help in satisfying customer demands (operations as end user) by performing projects in our organization?

PESH- end users are satisfied from the outcome of some projects

IE- clear cut objectives agreed with the customers

IE- successful commissioning of projects

Q) What hinders/reduces customer satisfaction in executed projects in our organization?

PESH- Lack of knowledge about project objectives/benefits

IE- No involvement of customers in project requirements

IE- understanding customers requirements

Q) What is required to be changed in the organizational structure to achieve customer satisfaction?

PESH- to involve end users in important projects.

IE- enhance interaction level with the customers in existing structure

IE- dedicate a team to manage projects

(SF6) **Dependency (within units)**: How dependent the project performing unit on each other.

Q) **What helps project performing units within the department to use resources to execute projects?**

PESH- eases of communication

IE- availability of information to write adequate Scope of Work

IE- received cooperation from staff within the department

Q) **What obstacles are faced by project performing units within the department to execute projects?**

PESH- No obstacles envisaged-

IE- No problems faced- Ability to resolve problems on engineer to engineer level and simple work procedure

IE- Non availability of required personnel especially during leave season

Q) **What is required to be changed in the organization to make use of department staff in executing projects?**

PESH- enhance communication to a better level

IE- dedicate staff for projects

IE- Train department staff to take care of projects during their colleagues' absence

(SF7) **Dependency (between units)**: How units depend on each other to perform projects

Q) **What helps project performing units in using other department resources to execute projects?**

PESH- good relationships. Procedure for how to evaluate bids.

IE- well established official communication system

IE- cooperation among department staff

Q) **What obstacles are faced by project performing units to obtain resources from different departments to execute projects?**

PESH- delay in getting feed back

IE- understanding project requirements

IE- Not getting answers on time

Q) **What is required to be changed in the organization to make use of other departments' staff in executing projects?**

PESH- dedicate staff from various departments to projects

IE- we need focal points with proper authorities

IE- group people from other departments under one single unit

(SF8) **Implementation Time**: How much time it takes to complete a project?

Q) What supports/helps project execution to be completed within specified time frame in our organization?

PESH- staff cooperation

IE- flexibility in approving overtime for staff who are required to overstay for project works

IE- In-time contribution from other sections to project correspondence

Q) What hinders completion of projects within specified deadlines in our organization?

PESH- project activities are not under one authority and split among departments

IE- unfreezed Scope of Work- new requirements pop up as project progress

IE- difference in project views and direction

Q) What is required to be changed in our organization to enable projects to complete within agreed deadlines?

PESH- being independent leading to lengthy systems and procedures

IE- enhance project culture and people should be aware of cost implication to time delay

IE- flexibility in the organization structure to get projects completed on time

(SF9) **Reporting Functionality**: Effectiveness and completeness of the reporting functionality within the organization

Q) **What supports/helps project executers report project progress effectively?**

PESH- availability of systems and procedure

IE- morning meetings- elaborated communication system

IE- project progress and area of concern is given proper attention

Q) **What hinders project executers from reporting project progress?**

PESH- miscommunication in reporting project progress

IE- quality of reporting- bad things is unreported

IE- people egos- no corporation leading to delay in getting good project progress

Q) **What is required to be changed in our organization effectively report project progress?**

PESH- Reporting system should be changed

IE- Critical reporting issues should be made clear- organizational change

IE- relation between boss and subordinates should be good.

(SF10) **Organizational Change Management**: to see to what extent a change in the organization would affect the project performance

Q) **What helps to overcome a change in the project organization (shortage of staff) on effective performance of your projects?**

PESH- by assigning works on engineers as main project holder and alternate

IE- More than one engineer on a single project

IE- work distribution is made evenly

Q) **What is the extent of effect which may hinder project performance when a change is made on your project organization?**

PESH- No hindrance when one engineer is unavailable

IE- Overload, quality of works is jeopardized

IE- staff resisting taking others jobs

Q) **What is required to be changed in our organization to effectively manage Organizational Change?**

PESH- equal flow of information to all staff

IE- dedicate staff to do project management

IE- every staff member should be knowing what others are doing

(SF11) **Scope management**: How good the project scope is managed.

Q) **What helps project executers manage project scope effectively?**

PESH- Clarity and adequate feed back

IE- Others are engaged in Scope management

IE- clear project scope/definition

Q) **What hinders project executers from managing project scope effectively?**

PESH- No corporation from others

IE- Vague Scope of Work

IE- the opposite- No clear project scope/definition

Q) **What is required to be changed in our organization to effectively manage Project Scope?**

PESH- Team dedication to scope preparation

IE- One sole project to manage Scope

IE- Cooperation from all people

(SF12) **Project Team Composition**: Adequacy of selected project team to monitor project progress

Q) **How project team composition is supported to ensure adequacy of team to monitor project progress?**

PESH- Same discipline engineers having different experiences

IE- Multi-discipline experience

IE- Same team is maintained till project completion

Q) **What are the obstacles faced by management to selection of right project team composition?**

PESH- non availability of competent team

IE- non availability of certain experienced discipline

IE- Not getting the right people to manage projects

Q) **What is required to be changed in our organization to select the right project team?**

 PESH- Improve/ training of people

IE- Single person be involved in one team

IE- dedicate a project team

(SF13) **End user participation**: Is level of end user participation helpful to successfully complete a project?

Q) **What helps in the organization to ensure the participation of end user in project execution?**

PESH- end user knowledge/ experience

IE- Company System require end user participation in project works

IE- involving end user before project commissioning

Q) **What hiders end user participation in Project execution?**

PESH- incompetence of some end users

IE- Non availability of end user when required to clarify some issues

IE- Not getting sufficient people

Q) What **is required to be changed in our organization to ensure end user participation during project execution?**

PESH- Involve project end user in all project stages

IE- project team dedication

IE- ensure right person participating in project execution

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(SF14) **Training needs**: the quality of training requirements for staff responsible for performing projects

Q) **Is quality of training helping staff responsible for projects to effectively manage projects?**

PESH- Yes, again system and procedure require training for all staff

IE- training requirements are met

IE- Yes

Q) **What hinders staff from getting the right training to manage projects?**

PESH- There is trainers who evaluate our training requirements

IE- Unclear about what to be trained upon.

IE- Not given the right training on managing projects

Q) **What is required to be changed in our organization to ensure that training needs are assessed and offered for project staff?**

PESH- Human resources department to develop clear Career Development programs for staff working for projects

IE- Training requirements should be defined by experienced people

IE- Staff to get assessed for the right/ proper training

(SF15) **Overall Project Success**: How important it is for the performing unit that the project is ended successfully according to the targeted time, budget and quality?.

Q) **What measures are taken to help the organization successfully complete a project accordingly to the established targets?**

PESH- Projects are divided and assigned to the right sections/ departments

IE- Management support

IE- Management Support

Q) **What hiders the organization to successfully complete a project accordingly to the established targets?**

PESH- Under-employment/ insufficient staff to carry out assigned projects

IE- lengthy delegation of authority

IE- Non availability of key staff sometimes

Q) **What is required to be changed in our organization to ensure overall success of projects?**

PESH- Same as explained above. We should have a dedicated project management team

IE- Corporation from the right staff in the organization

IE- Establish a small group to handle projects