CityUniversity
of Seattle

From Technical Expert to Project Manager: Punishment or Salvation?

By

Andreas Panagiotopoulos

A THESIS REPORT
Presented to the Project Management Program in the
School of Management of
City University of Seattle
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE OF PROJECT MANAGEMENT

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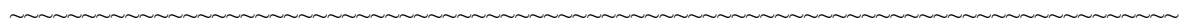
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This Master's Thesis is dedicated to my brotherly friend Konstantinos, for his kindness to support me in all aspects, without which this course of study in Project Management could never have been completed.

Athens
June, 2010

Acknowledgments

Biography

Andreas Panagiotopoulos[1], Marine Engineer

Almost two decades career as a marine engineer is roughly equally divided in two major sectors.

A) Shipbuilding - Maritime Sector. Fields of activities are Internal Combustion Engines, Steam-Gas Turbines, Boilers & Aux. Equipments, Diesel-Steam Power Generators, Propulsion Systems, Water-Fuel Feed Systems, Pumps, Evaporators, Piping-Tubing, Water Generators, Filters, Centrifuges, Heat Exchangers, Refrigeration, Air Conditioning (Heating-Cooling), Automation & PLC systems, Electronics Science, and Engine Room Management.

B) Industrial Sector. Fields of activities are Liquid Food Industries, from reception of product, processing and treatment up to packaging and distribution.

In both sectors, I have been lucky enough to get expertise ranging from "on site management" of the project, up to "start up" and "commissioning" the plant, involved always by using cutting- edge technology.

In my current position, I serve as a Shop Manager (Line Manager) of the Mechanical Outfitting Workshop in one of the biggest shipyards in the area of the eastern Mediterranean Sea. By leading a team sometimes up to 80 people (subcontractor's technicians included), we are responsible for the Mechanical Outfitting of New Building for Navy Ships, Submarines and the repair – modification of existing ships for the Hellenic Navy.

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Title: From Technical Expert to Project Manager: Punishment or Salvation?

Abstract

The questioning nature of this Thesis title "punishment or salvation" is directed towards two stakeholders. One stakeholder is the organization and the other one is the individual who has to become Project Manager. Actually a Technical Expert in his field of expertise is managing technical things as a primary responsibility and does at the same time managerial things as a secondary responsibility. By being promoted to Project Manager he has to reverse the sequence. A Technical Expert very often suffers from bad management during his carrier. All this knowledge from what went or was decided wrong and his actions to overcome the situation is a stable base that will help him act as a successful manager. A Technical Expert has the key to success because he can match his leadership style to the current situation in a similar way he matches his technical competence to new era's demands and complex technical issues. Organizations, should invest in Technical Experts as a serious asset and capital of their business. This Thesis will try to convince organizations that an efficient period of serious training in Project Management principles can open an internal pool of skillful Project Managers and save a lot of money by minimizing the trial and error method they usually follow, when they hire Project Managers from outside the organization.

Keywords: Technical Expert, Commissioning Engineer, Project Management Training, Organization, Project Manager.

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Table of Contents

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List of Figures

List of Tables

Chapter 1 -Introduction

1.1 Nature of study

My intent is to research the current status in organizations, regarding the promotion of people to project management, based on a "clear career path for Project Managers".

The fact that the field is still green in a lot of companies and their traditional habit to promote Technical Experts in managerial positions without considering relevant management training is going to be highlighted within the context of this study.

1.2 Assessment of Needs

The stakeholders for this Thesis are top level management and Technical Experts. Top level management should realize that it is for the organizational benefit to encourage and promote Technical Experts, provided that a serious training course will precede their promotion. Technical Experts should accept that their expertise is a powerful tool for their new position but only one good tool. The toolbox of a Project Manager includes a lot of new tools which have been unknown till now to Technical Experts.

1.3 Purpose of the study

The purpose of this Thesis is to study the frame in which transition from Technical Expert to Project Manager can be applied. What must organizations do to establish effective transition from one position to the other? Is there any specific psychological profile of Technical Experts and how this could influence performance and career development? Are there any personal issues that must be handled at each development level?

Management and leadership; Project Managers must understand each item and provide consistency against generating change and how planning, scheduling and

budgeting affect their new role. How do "organizing" and "staffing" transform into allocating people and resources? How can he control and solve problems working together with networking and inspiring? How do people move through change and which are the transition phases?

What are the techniques for motivating others and how do these generate greater power and responsibility for the project and the Project Manager? Is there any difference between empowerment and mission? What are the critical components of an empowerment process and in what way we can keep empowerment from turning into entitlement? Which are the ways to keep the Project Manager and project team in the same track?

1.4 Significance to the workplace

In shipyards the construction of a ship is charged to what is called a "shop". Shipbuilding, Machinery Outfitting, Pipe shop, light or heavy Plate shop and Electrical shop are the major players for a major project to become successful. According to a preset order, the above shops split all the subtasks, into relevant work orders and thereafter into smaller teams.

The leader of every team is called "sub foreman" and in reality he has the role of a small Project Manager without any official training in managerial techniques but with loads of Technical Expertise and a lot of stress!

I hope this Thesis can be the base for a change in the organizations' point of view and adequate training will be available to my colleagues regarding the meaning of project management. That way I expect to make their life a little bit easier and increase productivity together with team spirit.

If these sub foremen (acting as Project Managers) accept their uniform and learn how to wear the Project Managers' clothes as well, then they will realize more easily how their delays influence other shops activities and projects time schedule. They should report as

soon as possible any arising problem to a higher level and last but not least, learn how to

handle their team in more productive way.

1.5 Relation to the Program of Study

My work is based on PM 501, which is an introduction to several managerial

concepts and techniques used in project management, PM 502, which is dealing with

leadership principles for Project Managers, PM 503, a fundamental course for the

importance of project communication management, and PM 506 with reference to

managing projects with people and teams is evident from several modules of project

management theory. All Authors include in their books descriptions regarding the Project

Manager profession. In this Thesis greater focus will be paid to the Project Manager as a

personality and a professional.

1.6 Definition of Terms

1.6.1   Expertise

According to PMBOK a kind of definition can be the following statement:

"Expert judgment is often used to assess the inputs used to develop the

project charter. Such judgment and expertise is applied to any technical and

management details during this process. Such expertise is provided by any

group or individual with specialized knowledge or training, and is available

from many sources, including:

- Other units within the organization

- Consultants

- Stakeholders, including customers or sponsors

- Professional and technical associations

- Industry groups". (PMBOK, 2004, p.86).

1.6.2   Commissioning

This term as can be found in internet dictionaries is a "Process by which an equipment, facility, or plant (which is installed, or is complete or near completion) is tested to verify if it functions according to its design objectives or specifications". ("Commissioning," 2010).

1.6.3   Project Manager

This is the sort official explanation in PMBOK's glossary section: "Project Manager (PM). The person assigned by the performing organization to achieve the project objectives". (PMBOK, 2004, p.369).

Chapter 2 – Problem Statement

2.1 Problem Statement

The challenges are:

- To prove that there are sectors, where a Technical Expert, is the most appropriate person to become a Project Manager. The shipbuilding industry is an example where complex projects like submarines or other military type ships are in production.
- It is common "habit" for organizations to upgrade Technical Experts into a Project Manager role. For the same reason, which I will try in this Thesis to investigate, organizations take for granted, that the Technical Expert wants to change position or he is qualified and experienced in the new role.

2.2 Rationale

In the shipbuilding industry, the production process is based on a unique language and terminology. Steel construction, machinery installation, piping, cabling, power station, propulsion plants are all scheduled and executed according to ships systems priorities and needs. The Project Manager should know more or less the Ship's Engine Room / Ships operation in order to understand and control the project progress.

All organizations should have an active Project Manager Selection process. The giving of information to potential candidates about the theory of project management itself and its professional dimension should be the first step in that process.

A second step that organizations should initiate is the development/creation of a training 'school' for Project Managers. There the ex-Technical Expert will learn all the fundamental theory for project management.

A third step should be the application of an "on the job training" method. Ex-Technical Experts can start working autonomously and much more quickly by taking guidelines from an experienced Project Manager

2.3 Hypothesis/Objectives

This Thesis assumes that organizations do not fear to promote Technical Experts to Project Managers. On the contrary, they have to encourage Technical Experts for this job rotation and additionally organizations should provide adequate training and help Technical Experts to adopt well the whole "Project Management Body of Knowledge".

Preliminary Review of the Literature

My review of the literature will include mainly journal articles as well as articles from magazines. I will try to use trustworthy databases and Internet sites with references to project management, organizational strategies and Project Manager Tactics, in order to better support my Thesis.

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The review of the literature will be divided in three major sections.

1. How important is the experience of the Technical Expert and his point of view (personal filter) as an individual.

2. Organizations' point of view.

3. Training.

What follows is a nice story in a few words (Heerkens, 2002, p.2).

Brad, the most technically capable person in the group received a phone call from his boss asking him, for a face to face, meeting after lunch. In this meeting, after a nice compliment like "Brad, you are one of the best engineers I have" he has been assigned as the Project Manager for project Apex.

Brad left from this meeting keep asking himself what he knows about project management and how suddenly he has his own project to deliver!

The above story is one more case of what it is called informally "accidental Project Manager". Very often organizational necessities place a person in this job because usually he is the most technically knowledgeable engineer. So the individual in such a case should start to ask himself if this is what he really wants to do. In other words as soon as he manages to do a reasonably good job leading his first project then he will be asked to do the same "again and again and again." That means a new career path.

Chapter 3 – Review Of Literature

3.1 Overview

The research in literature regarding the definition of the term 'Technical Expert' leads to several conclusions. Technical Expert is a very general term and depends on the searching area; we can find a lot of explanations or interpretations. For our study, in the electromechanical sector, a very common term instead of Technical Expert is the term Commissioning Engineer. Modern engineers are successful, if they manage to combine their acquired expertise with the soft skills necessary to cope with the challenges of global markets and networks.

What is Project Management? There are two similar but not identical approaches.

European understanding: Project Management is the entirety of leadership, organization, techniques and processes for the realization of a project. Leadership is the steering of different single activities in a project to meet the overall target.

USA understanding: "Project Management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements".

In the next fig.1 there are all major stakeholders affecting what we describe as "project".
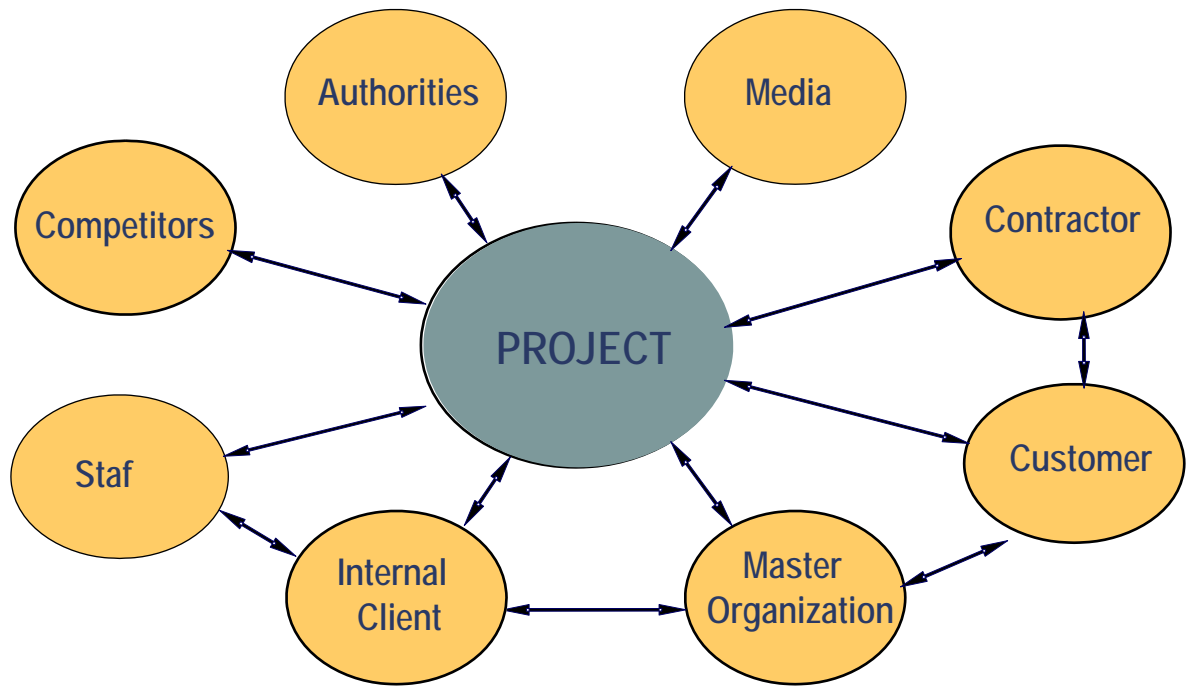
Fig.1 Project as a complex Social System.

3.2 Findings in Literature Review

For the term Technical Expert or even worse for the term Commissioning Engineer in project management related books, it has been difficult to find detailed definitions or explanations. Even the "big monster", the web, can confuse someone instead of helping him/her clear out who does what and in which order. Are there any boundaries between Technical Expert - Commissioning Engineer   and Project Manager? Is it possible to be the same person depending on the project?

Here you are what the Author has been able to collect through internet research. In appendix A the reader can find a real life statement for Commissioning Engineer requirements as it was asked by a multinational company and has been retrieved from the Authors' personal archive.

3.2.1 The Technical Expert – Commissioning Engineer.

How much easy can it be to get answers on the definition of the role that a Technical Expert or Commissioning Engineer holds? The Author assures the readers that it is not an easy task. After searching in several sources, I managed to highlight these two terms as following:

> "An expert is someone widely recognized as a reliable source of knowledge, technique, or skill whose judgment is accorded authority and status by the public or their peers. The expert differs from the specialist in that a specialist has to be able to solve a problem and an expert has to know its solution. The opposite of an expert is generally known as a layperson, while someone who occupies a middle grade of understanding is generally known as a technician and often employed to assist experts. A person may well be an expert in one field and a layperson in many other fields. The concepts of experts and expertise are debated within the field of epistemology under the general heading of expert knowledge. In contrast, the opposite of a specialist would be a generalist, somebody with expertise in many fields". ("Expert," 2010).

3.2.2 What is Commissioning?

The Author has already stated that Commissioning Engineer is also a Technical Expert .

One of the best attempts to explain the meaning of commissioning can be found in the internet site of Plant Operations Division from The University of Michigan. The Author is using this site as main source in his effort to analyze the term of commissioning and Commissioning Engineer.

"Commissioning is Defined as a systematic quality oriented process that begins at project inception. Commissioning verifies that the design meets the needs and functions of the facility, verifies that the project performs as designed and intended, and prepares the customer to effectively and efficiently maintain the facility for its service life. The commissioning process includes specific tasks that must be done in a specific order". Commissioning is a necessity that adds value and it is applicable to any type of project. A Project variation can range in size from installation of a small air conditioning system up to a huge production line or even a factory.

Why do Commissioning? The answer is to make sure you got what you asked for. To help project management and contractors determine when the project is completed".

A Commissioning Engineer should actively get involved during the new project development phase providing information in facility status and operation. Also in document design and review proactively should offer support to the design process. Commissioning Engineer should keep in mind the life cycle cost as a factor to evaluate alternative solutions. In real life every project is a prototype. Commissioning Engineer never does the same thing twice exactly in the same way and never will.

How an Engineer do Commission a project? Answer: Step by step. Fundamentally Commission Engineer has as a priority the documentation by keeping up to date records of the progress, how decisions were made, and how systems were performed. All above information will be used by end user to operate the project.

In fig.2 reader can found two major groups of actions in the field of Commissioning Engineer activities.

Commissioning Engineer Actions

During the construction process

- Enforcing and developing specifications
- Review submittals
- Review Shop drawings of major equipment
- Check installation for proper parts
- Create a Commissioning Manual
- Monitor the installation of DDC controls
- Hold Commissioning Progress Meetings
- Witness Functional Testing
- Evaluate test data and determine acceptance
- Through Building Automation systems (BAS), Trend operational data and verify seasonal function is optimal.
- Write Commissioning Reports to identify successes, failures and incomplete and non conforming items.

During the operation process

- Making sure it works when the job is done.
- Coordinate owner training
- Review and archive As-Built Drawings
- Initiate Preventative Maintenance Tasks.
- Review Operation & Maintenance manuals.
- Support shops in resolving problems or correcting project defects at project cost.
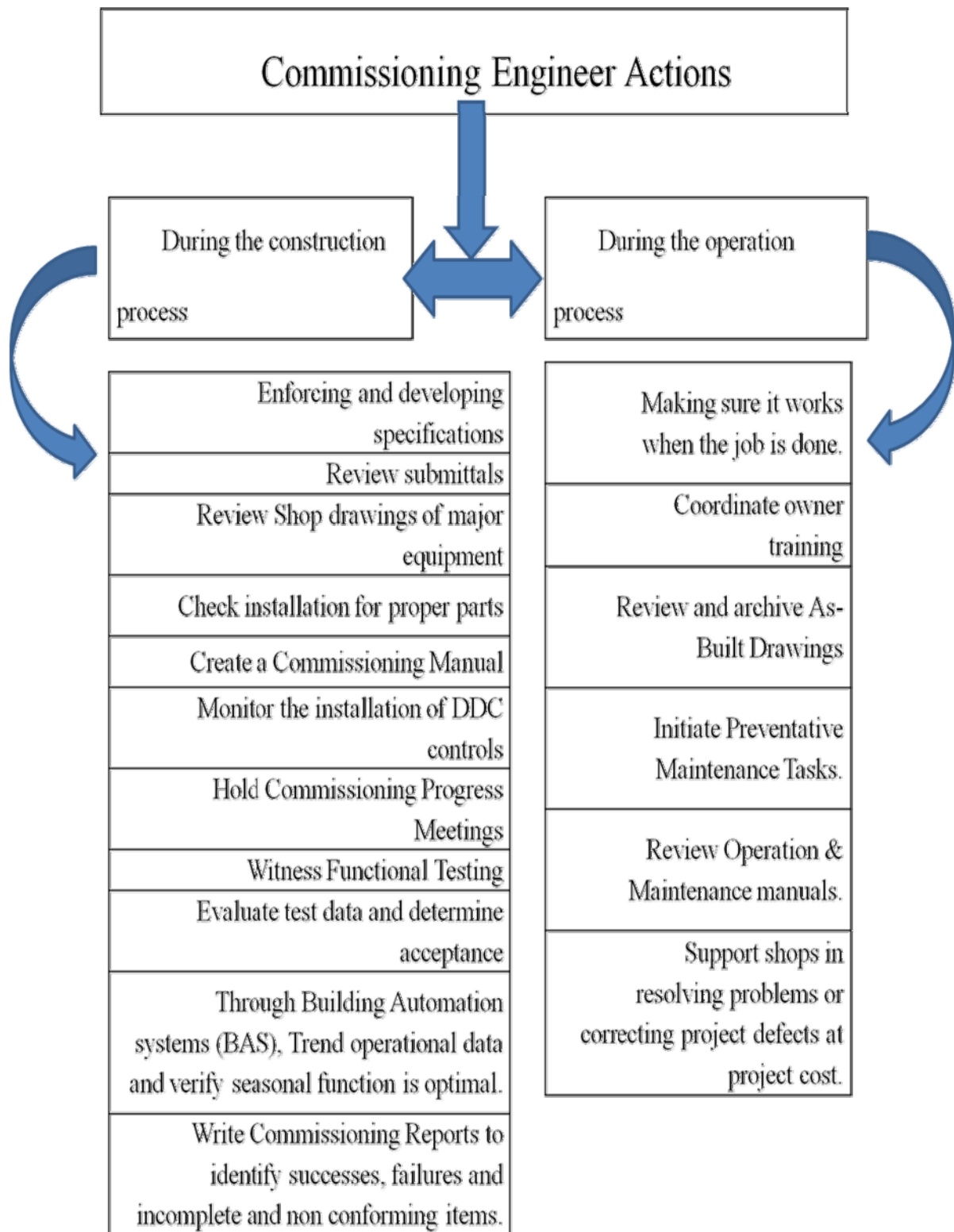
Fig.2 Commissioning Engineer Actions

In the next three short paragraphs the essence of the term Commissioning can be found.

With Commissioning we win some. "Success usually goes unnoticed. We do our job and review the design and make sure our comments are implemented through the completion of the project. It can take numerous phone calls, meetings and emails to get our point across. Most people have no idea what the impact of commissioning is until they realize how seamless the project was and how seldom there were warranty issues or call backs that needed to be addressed after the project is complete. Typically, projects can drag on for years and never get complete. Commissioning tends to speed the construction process along which also effects meeting the project budget".

With Commissioning we lose some. "Our intention is not to be able to tell someone they are wrong after an element of the project fails. Our intent is to evolve as a team and learn from the collective mistakes of each project".

With Commissioning we never give up. "Practice makes perfect (Maybe). We keep learning on every project and the process is getting clearer and more transparent as time goes on. We write our commissioning reports to record our lessons learned so we don't make the same mistake twice". ("Plant Operations," 2010)

3.2.3 Job Description for Commissioning Engineer

The following job description for Commissioning Engineer is representative of this position and it is retrieved from job related internet sites.

"Responsibilities:

• Initial formulating/implementation of all pre-commissioning and commissioning plans to liaising with and supervising the contractors/suppliers, workers and staff in handling all activities including procedure write-up and documentation submission.

• As part of a multi-discipline team, assist with delivery of commissioning procedures, completion and commissioning check sheets, handover procedures and certification management and punch list procedures, for Oil and Gas industries.

• Supervise, commissioning of project systems, assist with compilation, sign-off and handover of certification packs to platform operations team.

• Provide the project team with an accurate assessment of the commissioning requirements and status to ensure subsequent decisions are well founded.

• Ensure necessary reviews are undertaken and identified actions completed.

• Ensure all commissioning related works for the facilities are in accordance with project specifications and making sure they are maintained in order to safeguard technical integrity.

• Participate in technical reviews for QA/QC and engineering works.

• Ensure all necessary permits, licenses and other compliance requirements are in place prior to commencement of any commissioning activities.

• Endorse discipline specific formal Handover documents from contractors/suppliers at pre-commissioning completion stage confirming their acceptability.

Qualifications and Experience:

• 5 years experience in executing pre-commissioning and commissioning activities for Oil and Gas, marine projects.

• Good technical, communication and supervisory skills.

• Proactive approach to decision making.

• Organizational ability in a multi-interface/technically demanding

environment

knowledge and understanding of PFD (Process Flow Diagrams) and PID

(Process & Instrumentation Diagrams) is required.

• An eye for effective and efficient Commissioning Engineering practices.

• Degree/ Diploma in Electrical Engineering or equivalent.

• ASAP start date". ("Commissioning – Engineer," 2010)

3.2.4 The Project Manager

Dr. Kerzner, one of the Project Management Gurus says that:

"Being a Project Manager is similar to the decathlete and in the business of

projects, the field is very competitive. Similar to a decathlon there are events (nine

knowledge areas) in the Project Management Body of Knowledge. The decathletes in

project management are the companies that are controlling costs, schedule and quality on a

project level. The project-driven companies must find ways to learn "best practices" in a

competitive world and apply these lessons to their processes, systems, and tools. This

method of continuous improvement through measuring and comparing is referred to as
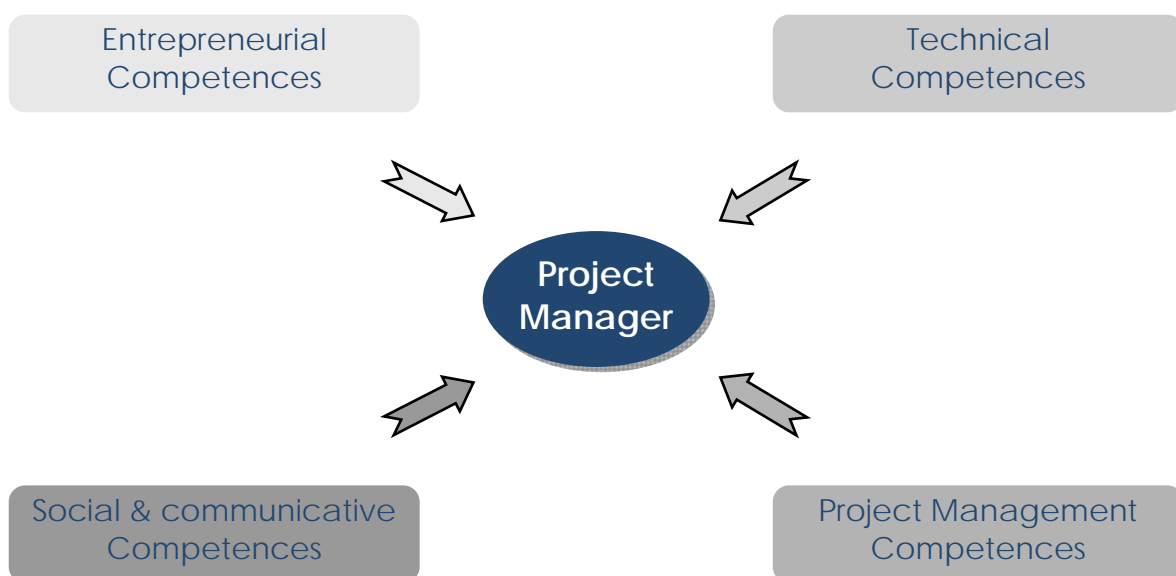
benchmarking". (Kerzner, 2001, p.ix)

Fig.3 Project Manager

Defining the Project Manager's role.

"The Project Manager is responsible for coordinating and integrating activities across multiple, functional lines. The integration activities performed by the Project Manager include:

- Integrating the activities necessary to develop a project plan

- Integrating the activities necessary to execute the plan

- Integrating the activities necessary to make changes to the plan

These integrative responsibilities are shown in Figure 1–3 where the Project Manager must convert the inputs (i.e., resources) into outputs of products, services, and ultimately profits.

In order to do this, the Project Manager needs strong communicative and interpersonal skills, must become familiar with the operations of each line organization, and must have knowledge of the technology being used.

To be effective as a Project Manager, an individual must have management as well as technical skills. Because engineers often consider their careers limited in the functional disciplines, they look toward project management and project engineering as career path opportunities. But becoming a manager entails learning about psychology, human behaviour, organizational behaviour, interpersonal relations, and communications. MBA programs have come to the rescue of individuals desiring the background to be effective Project Managers". (Kerzner, 2006).

According to Dr's Kerzner statement about being a decathlon sportsman, that means a Project manager, in fig. 4 there are a few tables with relevant competences.
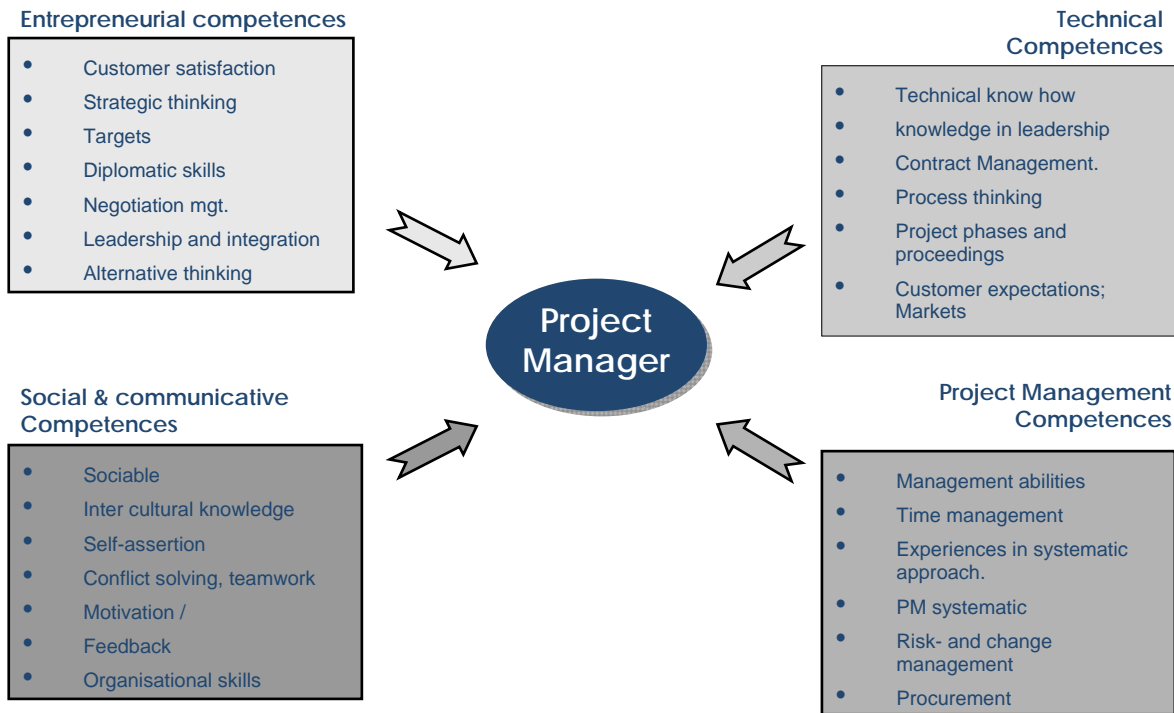
Entrepreneurial competences

- Customer satisfaction
- Strategic thinking
- Targets
- Diplomatic skills
- Negotiation mgt.
- Leadership and integration
- Alternative thinking

Technical Competences

- Technical know how
- knowledge in leadership
- Contract Management.
- Process thinking
- Project phases and proceedings
- Customer expectations; Markets

Project Manager

Social & communicative Competences

- Sociable
- Inter cultural knowledge
- Self-assertion
- Conflict solving, teamwork
- Motivation /
- Feedback
- Organisational skills

Project Management Competences

- Management abilities
- Time management
- Experiences in systematic approach.
- PM systematic
- Risk- and change management
- Procurement

Fig.4 Project Manager Competences

3.2.5 Organization as a Training Provider

Considering the huge growth of American companies the last three decades of the previous century, it is not hard to understand how much more delayed the application of the philosophy of Project Management by the rest of the world is. Kerzner (2001) also states that:

"For more than 40 years, American companies have been using the principles of project management to get work accomplished. Yet, for more than 30 of these years, very few attempts were made to recognize project management as a core competency for the company. There were three reasons for this resistance to project management. First, project management was viewed as simply a scheduling tool for the workers. Second, since this scheduling tool was thought to belong at the worker level, executives saw no reason to look more closely at project management, and thus failed to

recognize the true benefits it could bring. Third, executives were fearful that

project management, if viewed as a core competency, would require them to

decentralize authority, to delegate decision-making to the Project Managers,

and thus to diminish the executives' power and authority base". (Kerzner,

2001, p.1)

Training and Coaching.

Is learning more than just following a training course? If we want to reach the highest

level of learning, then we should urge people to start practicing what they have learned.

We should emphasize on learning by practice and increasing this way the effectiveness of

the training courses. Again Kerzner (2001) gives us great help with the following:

"Training and Education

Given the fact that most companies use the same basic tools as part of their

methodology, what then makes one company better than another? The

answer lies in the execution of the methodology. Training and education can

accelerate not only the project management maturity process but also the
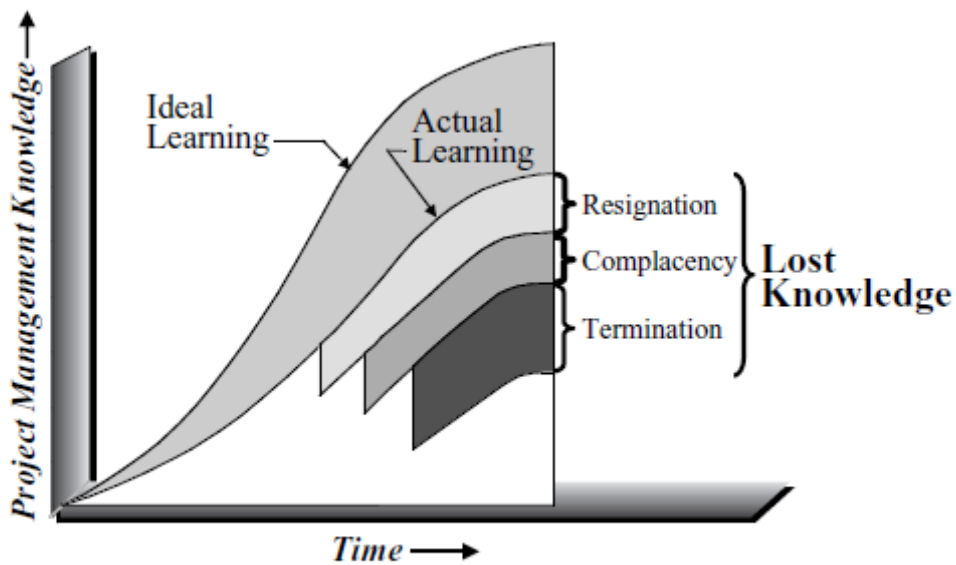
ability to execute the methodology.

Actual learning takes place in three areas, as shown in Figure 5 on-the job

experience, education, and knowledge transfer. Ideal project management

knowledge would be obtained by allowing each employee to be educated on

the results of the company's lessons learned studies including risk

management, benchmarking, and continuous improvement efforts.

Unfortunately, this is rarely done and the ideal learning is hardly ever

reached. To make matters worse, actual learning is less than most people

believe because of lost knowledge. This lost knowledge is shown in Figure

6 and will occur even in companies that maintain low employee turnover

ratios". (Kerzner, 2001, p.157)
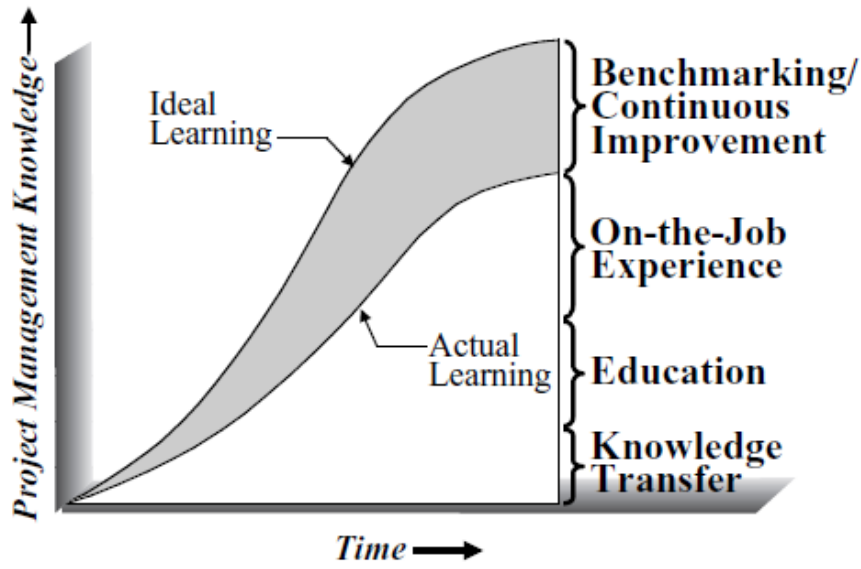
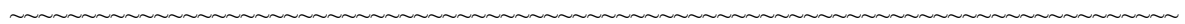~~~~~~

Copyright © 2001 Kerzner, H.

Fig.5 Project Management Learning Curve Schema 1.

Copyright © 2001 Kerzner, H.

Fig.6 Project Management Learning Curve Schema 2.

3.4 Summary/Conclusions

We know that Project Management is the planning, organisation, control and coordination of all aspects of a project. A Project Manager is the only person responsible to reach this goal. There are two sides in Project Management. One has a "hard side", like different budgeting and planning methods and the other is the "soft side". Soft side deals with matters like creating support, motivating people, challenging and facilitating members of the project team and management of expectation of the client, user and participant.

The search for sources can be endless, especially for the role of Project Manager. Technical Expert acting in a project as Commissioning Engineer should match the range of his activities with those of a Project Manager.

Conclusion: The boundaries between someone who acts as a Commissioning Engineer and someone who acts as a Technical Expert are very narrow and actually in electromechanical construction sector they are more or less the same. Based on this similarity between Technical Expert and Commissioning Engineer its time to explore the main Thesis statement that organizations should prefer the Technical Expert to promote for Project Manager.

Chapter 4 – Methodologies and Procedures

4.1 Overview

The methodology of research is going to have a qualitative approach. This is because I agree with the argument that reality is not easily divided into discrete, measurable variables.

> "Rather than sample a large number of people with the intent of making
>
> generalizations, qualitative researchers tend to select a few participants who

can best shed light on the phenomenon under investigation. Both verbal data (interview comments, documents, field notes) and nonverbal data (drawings, photographs, videotapes) may be collected". (Leedy & Omrod, 2005, p. 96).

The methodology of research will include two questionnaires and several personal interviews. Target group for the questionnaires are about 50 technicians and 10 middle and high level managers.

In the first questionnaire, I will collect opinions from technical personnel, regarding to the ideal Project Manager for them and their preference or not for a Technical Expert for this position.

The Second questionnaire will be addressed to middle / senior managers of the Shipyard where I am working now and they will be asked for their estimation/opinion on whether it is preferable or not for a Technical Expert to become a Project Manager.

The pool of middle / senior managers will be asked about their experience until now from their collaboration with Project Managers and if they prefer ex – technical people to be apprenticed as Project Managers.

I will also discuss their opinion about the education in project management provided by the organizations. Does specialised education exist and, if yes, how well organised is it?

After the completion of all the above, the assembled data will be evaluated and I will try to provide an answer. I hope also that somebody who is going to study this Thesis can draw his own conclusions from the presented analysis.

(Please see also sample questionnaires. Appendix A.).

4.2 Interviews

Target groups for the interviews were a team of technicians aged from 35 up to 55 years old and in managerial level the range was from 33 up to 43 years old.

4.2.1 Technical Staff

The questionnaire which can be found in Appendix C has been prepared with focus on Project Managers. There are 29 questions with sub questions in each one. The tricky part was to prepare questions covering all main aspects of Project Management Theory as technicians realize through the prism of Project Manager. In the table 3, after data processing, there is a concentrated chart with average answers expressed in percentage for every question. An attempt for interpretation and analysis of the results will follow in the Chapter5 of this Thesis.

4.2.2 Middle / Senior Managers

Interviews for middle / senior managers have been based on 6 questions which can be found in Appendix B. The Author's intent was to discuss with managers who are close to the production department and everyday business and their friction with technical experts and project managers is high. All the above people are close to production but they don't belong to it. The Author believes that their point of view is clearer because they cooperate with production people in such an extent which allows them to draw the clearest opinion for the above subject.

As previously mentioned a detailed analysis will follow in Chapter 5 of this Thesis.

4.3 Total Quality Management (TQM) and Technical Expert

Definition: "Quality is the outcome of the sum of all of the features and characteristics of a program, process, or service that impact their ability to meet or surpass the needs and requirements of a customer. Quality is a

measure of excellence; quality defines desirable characteristics of a product,

a process, or a service.

Quality refers also to the character traits of an individual. One of the

qualities of a leader is his or her ability to share the mission and vision in

such a way that people want to follow and accomplish the goals".

("Quality," 2010)

4.3.1 Introduction to Quality

Quality. Can this term be defined? Actually no. There is no kind of a global definition for quality. For some people is "performance to standards", for others quality is to "meet the customer's needs" and "satisfying the customer".

What quality means for a Manufacturing versus a Service Organization? For a Manufacturing Organization quality is mainly translated to conformity which can be explained as the degree of agreement between product characteristics and set point standards. In the same range are also the terms performance, reliability, features, durability and serviceability. Of course the importance of the above terms is relative, depending exclusively on each customer and what priorities he sets for the manufacturing of the product.

In the opposite side lies the product of Service organizations. In the Manufacturing organization the product is something that you can see or touch. In the Service Organization the final product is not possible to see or touch but only to get experience from it. Good examples of the above can be the health care delivery or vacations in a resort and knowledge provided in a university. So, concerning the Service organization, quality includes terms like staff's friendly mood, attitude on resolving complaints and atmosphere, waiting time and consistency.

4.3.2 Main concept of Total Quality Management (TQM)

It is not more than a couple of decades ago when an evolution started regarding the concept of "quality". With the aid of the so called 'Quality Gurus" all organizations have realized that the quality of a product depends on all of the functions and divisions and not only on the production process. Finally effect was the cost of poor quality which the organization has to share with the entire body of organization.

Since we mentioned the term "Quality Guru" in the following table, there is a short reference to major philosophers and their contribution to what we call today Total Quality Management (TQM).

Quality Guru	Main Contribution
Walter A. Shewhart	–Contributed to understanding of process variability. –Developed concept of statistical control charts.
W. Edwards Deming	–Stressed management's responsibility for quality. –Developed "14 Points" to guide companies in quality improvement.
Joseph M. Juran	–Defined quality as "fitness for use." –Developed concept of cost of quality.
Armand V. Feigenbaum	–Introduced concept of total quality control.
Philip B. Crosby	–Coined phrase "quality is free." –Introduced concept of zero defects.
Kaoru Ishikawa	–Developed cause-and-effect diagrams. –Identified concept of "internal customer."
Genichi Taguchi	–Focused on product design quality. –Developed Taguchi loss function.

Table 1. Quality Gurus and their Contribution

4.3.3 TQM-Technical Expert and Project Manager

Since, now the reader has an idea or recalls experiences on Quality issues, let us see, according to the Author's view, how Quality can be connected with this Thesis' main topic. A major aspect of Total Quality Management is what we can find as "Quality Function Deployment" (QFD) in Quality Terminology.

Quality Function Deployment is the main tool we use when we want to achieve to build quality into a product and to be sure that our product design reaches the customer's expectations.

In every day language we are speaking for a product using words like "attractive, strong, safe, etc. But do these words have the same meaning for our customer? What can be strong for us may be weak for our customer. In order to match our needs and use a common language and to translate customers' every day speaking into specific technical requirements, we need a tool like "Quality Function Deployment" (QFD). It is also a useful tool for increasing communication levels between departments like marketing, operations and engineering.

QFD make us able to get a visible picture of the relationships among several variables involved during the phase of the product designing and how requirements can vary between technical aspects and customer will. QFD initiated with the identification of important customer requirements such as:

- Customer Requirements

- Competitive Evaluation

- Product Characteristics

- Relationship Matrix

- Trade off Matrix

- Setting Targets

All above and maybe more should be added in a table known as the house of Quality. By using grades and proper combinations this tool helps us to translate customer's language in specific product characteristics. An example of this tool can be found in Table 2.
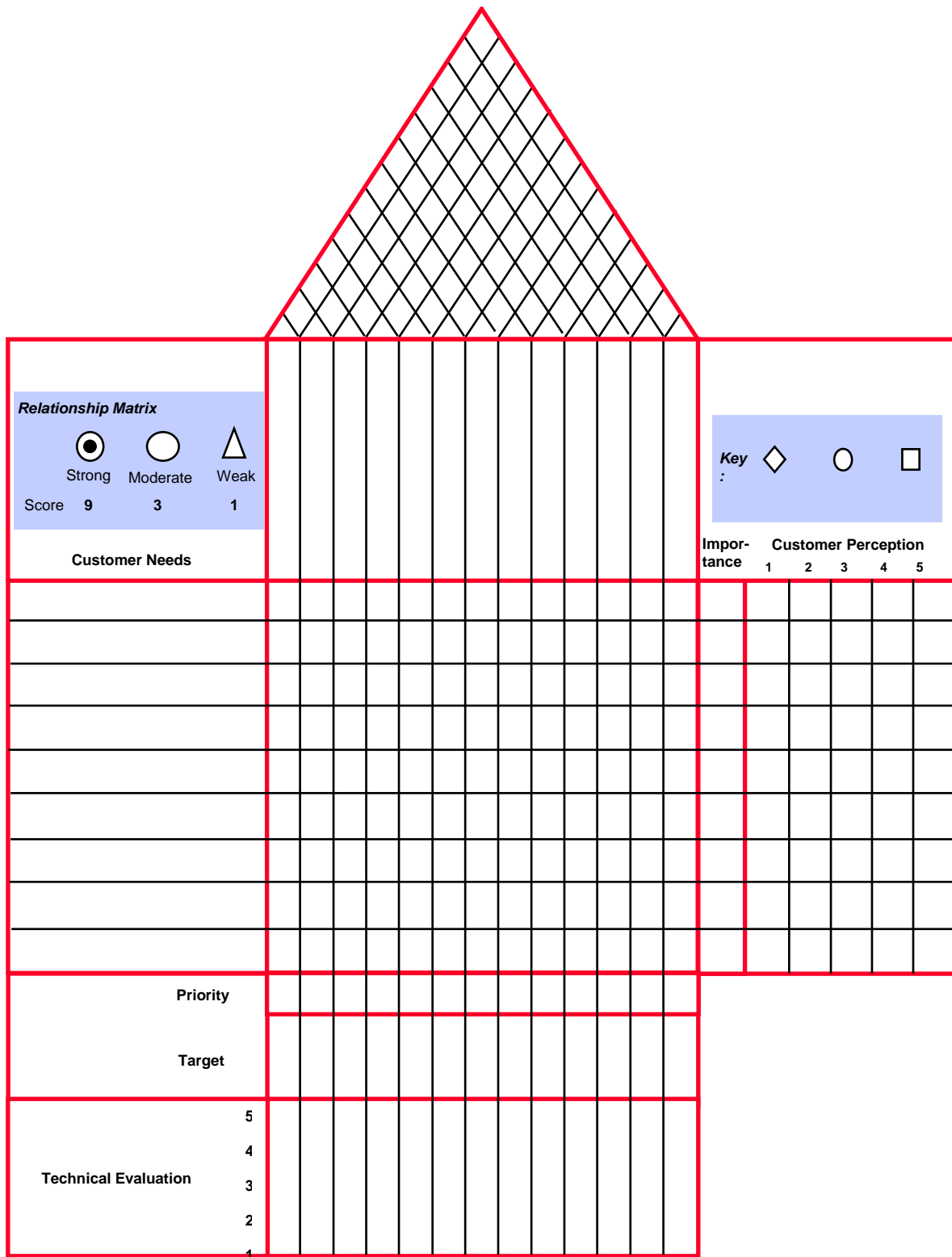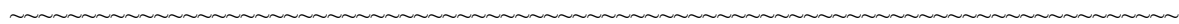
Relationship Matrix

◉	○	△
Strong	Moderate	Weak
Score 9	3	1

Customer Needs

Key: ◇ ○ ☐

Impor-tance	Customer Perception
	1 2 3 4 5

Priority

Target

Technical Evaluation 5 4 3 2 1

Table 2. House of Quality

The Technical Expert and in our case the Commissioning Engineer can be the key person regarding all quality issues related with the project. This is possible because the last person to deliver the project in an operational mode is the Commissioning Engineer.

During the delivery phase of the project he has to be familiar with the customer's terminology in order to train more effectively customer's operators, technical – maintenance staff etc.

Commissioning Engineer also acts as the overlap and interpretation chain between similar divisions of customer organization and home organization. At home normally they all speak the same language. This does not mean that all customers speak similar languages. Some times the communication problem is huge. From the nature of his job a Commissioning Engineer should be a quick learner of foreign (customers') languages. Commissioning Engineers experience from several customers help him to translate customer requirements in relevant technical specifications easy to be read from homes organization staff.

Chapter 5 – Results

5.1 Introduction

"Effective project management on today's projects, where the emphasis is often on the rapid completion of the project, is not something that is learned entirely in the classroom or by reading a book. But having the right training and the right tools makes a big difference" (Howes, 2001, p.xv).

5.2 Results from Literature Review

"In the past, traditional organization people became specialists in their jobs and became very good at what they did. This allowed them to become somewhat complacent about what they did. As long as they were continually asked to do things that were familiar and within their area of expertise they were successful. With people working this way, companies became this way as well. They were very good at what they did as long as

they could keep on doing it over and over again with little change.

Companies like these were not easily changed when market demands and

new technology entered their business areas." (Newell, 2002, p.9)

"Unfortunately, in many organizations, promotions to leadership positions

aren't made on identifiable future leadership potential but rather on past

technical performance. Don't misunderstand. I'm well aware of the need for

high standards when it comes to Technical Expertise and of the fact that it's

often a challenge to find a person who is both technology savvy and people

savvy. But, just because it's difficult doesn't mean it's impossible. Just

because the technical part of our work is considered the hard side and the

people part of our work is referred to as the soft side, doesn't mean that the

hard-side stuff is more important. In fact, one could argue (and many have)

that leadership is all about soft-side stuff.

Any omission of the soft-side issues in a new leader's response to this

question should raise a red flag that requires your attention. People can't

know what they don't know, and a person who's been named a leader may

not realize the new scope of their responsibilities. You may need to mentor

this person closely as they begin their journey as a leader" (Clarke-Epstein,

2002, p. 119)

"While project management is practiced as a sophisticated profession in

some companies, it is still, unfortunately, misunderstood in others. Even

where project management is practiced professionally, the theory behind it

is often misunderstood, causing it to be practiced mechanically, rather than

artistically. Modern Project Managers need sound management skills, as

they always have. But the current generation of Project Managers requires theoretical and technical skills that were virtually unknown not long ago and that are continually growing more complex.

A significant percentage of Project Managers currently use technical tools in much the same way that professional investors use technical tools. Both of these professions have well-known performance measures that are used day in and day out to assist in making decisions regarding how to employ their resources. Just as two different investors using the same technical tools can get radically different results, two different Project Managers on similar projects, utilizing the same measures of performance, may get radically different results." (Howes, 2001, p.xiii).

5.3 Results from Interviews

5.3.1 Organizations point of view.

What do they expect from Project Manager by choosing an ex-Technical Expert for this position? How they should prepare themselves for acting as an educational institute?

"Project management is industry – independent Project Managers are not" says Verzuh (2008). So, organizations by using project management methods can create more efficient projects of every size and improve their products in quality. But "this industry independence has been a major factor in the development of project management as a discipline, but that independence doesn't extend to the people practicing the discipline" (Verzuh, 2008, pp.17-18).

One great example of application of the above statement is the consulting firms. Consulting firms can work effectively in all industries bringing to the table during initial

meetings not all the answers but all the correct questions. They act like the port Captains. When a ship approaches a new harbor the ship's captain, from a few miles away, stops the ship and invites aboard a port captain who is familiar with the specific harbor. He can advise and guide but the decision maker is the ship's captain. Accordingly consulting firms can act as advisors but the Project Manager is the Captain and his project team / crew possess the technical skills / knowledge of the ship and do the appropriate decision demanded every time by the specific project.

According to Bucero:

"Companies have a great opportunity to seed the field of project management in organizations, defining a "clear career path for Project Managers" and offering training sessions to individual contributors to help them on decision making about their professional careers. It is very difficult to convince people to do a good job as Project Manager if they don't see that the organization recognizes the profession internally" (Bucero, 2007, pp.1-4).

5.3.2 Technicians point of view

Before we proceed with Technicians questionnaire analysis the reader should keep a short notice regarding the general economic situation during the research period.

In this unfavorable environment the Author is trying to get answers from simple technicians, concerning not only their opinion for their Project Manager but also their feeling for Project Management itself.

The general view (of the technicians) regarding the low average (table 3) could be attributed to the general economic crisis.

The Author attempts as much as possible to highlight general Project Management topics like;

- Organizational learning

- Teamwork

- Communication

- Leadership

- Risk Management

- Creativity

- Work Schedule

- Performance Management

- Customer Focus

- Quality

with the implementation of the above principles by Technician's Project Manager.

The curve shows that the Project Manager gets high grades for his teamwork, communication, leadership, attitude to risk and experimentation and for his workflow and quality implementation.

Low grades in organizational learning, creativity implementation, performance management and external customer focus can be explained with the following analysis.

Technicians not familiar with Project Management terminology and not relatively trained can understand better Project management attitudes as those can be demonstrated by their Project Manager who is in close vicinity to them.

Also for most technicians the Project Manager is the guru who knows how to lead and pushes forward the everyday work. Generally, the Project Manager/Technical Expert for them, shows a good teamwork spirit, can explain and communicate, in technicians every day common language, all work related aspects and the highest grade in leadership means that Project Manager / Technical Expert gets big acceptance for his leadership skills.

Technicians Questionnaire Chart

	Technicians sense for Project Managers attitude	Grade
1	Quality implementation from your Project Manager	3,1
2	External Customer Focus implementation from your Project Manager	1,3
3	Performance Management	1,3
4	Work Flow implementation from your Project Manager	3,4
5	Creativity implementation from your Project Manager	2,9
6	Attitude to Risk and Experimentation implemented from your Project Manager	4,4
7	Leadership implemented from your Project Manager	6,1
8	Communication implementation from your Project Manager	5,4
9	Teamwork implementation from your Project Manager	3,9
10	Organizational Learning	2,4
	average	**3,5**

Table 3. Technicians Questionnaire Chart

5.3.3 Middle /Senior Managers point of view

From the interviews conducted with Middle / Senior managers a common belief is that a tight relationship between the Technical Expertise and the Project Management is a must for above average development or productivity in projects.

The above managers have been suffering in their everyday working life from lack of communication since very often they face misinterpretation by several key staff when time comes to use project management tools and terminology.

Chris said regarding this Thesis' main items: "I certainly believe that the outcome of this Thesis, could improve our organization status since many times in the past, the experience has demonstrated that there is a lack of communication between Technical Experts and projects managers, due to the fact that many Project Managers miss the Technical Expertise and vice versa, many Technical Experts miss the managerial skills required for such complicated naval projects. Therefore by encouraging Technical Experts for this job rotation and giving them adequate training, someone could blend "Project Management Body of knowledge" with Technical Expertise also. A key factor for successful projects".

Regarding the need for training Kostas says: "My Company is based upon line management. Project management will help my company to handle better more projects in shorter completion times and with better efficiency. This will be done by assigning properly educated and trained personnel to specific projects".

Georgia believes that: "According to my opinion, a Project Manager in the shipbuilding industry, and not only, must have Technical Expertise. One role of project management is to address problems to other parties, i.e. costumers, material providers, design providers, expertise providers, etc. Taking into account my experience at the Industrial Engineering Dept, all the problems that were addressed to our Project Management were technical related problems. A Project Manager who is appointed to

manage these problems must, first of all, understand the problem; address it with the right way, as well as to be able to understand the provided solution, or the arisen questions by the other party. Therefore, I consider Technical Expertise to be essential for a Project Manager".

All people that have been interviewed have an average of more than five years in managerial positions.

A very important issue for all of them is also the term 'team spirit'.

According to Chris: "I would say that as a consequence of the nature of the content of my every day work, the term "team spirit" is one of the most essential issues. That is because the performance of each individual member of the team directly affects the outcome of the entire team and therefore the outcome of the following teams in production sequence. Consequently the functioning of the whole company, in terms of productivity, depends on the "team spirit", as it is fundamental for each employee to realize the fact, that large scale shipbuilding works can only be accomplished by teamwork".

All of them agreed and they are in the same frequency regarding the importance of the core of the project management principles: Time – Cost – Quality.

Chapter 6 – Discussion, Conclusions, Recommendations

6.1 Discussion

The case study which follows comes from the Author's personal experience. For obvious reasons names have been replaced. This case study aims to focus on the wrong project management practices adopted by several organizations and the necessity of training.

6.1.1 The Case Study / Background

N.E.S. which initials stand for North Europe Shipyard exists more than 100 years in the shipbuilding industry. In the beginning of the new century, in order to get a huge but complicated contract for several new buildings, N.E.S. agreed to buy South Europe Shipyard (S.E.S.) with the obligation to share the construction of new buildings with S.E.S.

S.E.S.moved from public sector to private, without having a stable Board of Directors (BoD) for several years, with inexperienced management from several origin, even from Labor Union (!). For the last decade at the least, S.E.S has been working for the Navy, building a limited number of ships and supporting country's Navy ships in repair and modification works.

S.E.S. is the largest shipyard in the area of the eastern Mediterranean. It is famous worldwide for its outstanding experience in building and repairing naval and commercial ships. Founded over fifty years ago, S.E.S.is now part of the N.E.S Group, and has moved into the cutting edge technology taking the responsibility of constructions which are among the most advanced globally.

The Shipyard's privileged geographical position, its remarkable facilities and its staff's rich technical experience combined with N.E.S know-how has opened a new chapter in S.E.S' history and promoted its competitiveness to an even higher level.

6.1.2 Description of the project

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Being private and subsidiary of N.E.S since 2002, the shipyard underwent an extensive restructuring and became able of fully exploiting the positive results and comparative advantages that came up from this process.

Regaining competitiveness has meant a heavy investment in state-of-the-art technology and infrastructure, and N.E.S has consistently assisted and supported this great endeavor by all means. Emphasis has also been placed on product and service development. This is translated into ongoing restructuring, modernization, cost efficiency and most important of all, investment in people. N.E.S. strongly believes that the personnel are the cornerstone of the company and therefore invests in training programs and constant improvement of industrial know-how.

A common target and project for both shipyards was the building of four new ships of military type as well as the major modification of an old one, a project designed for the country's Navy again. The building of a prototype ship has started in North Europe's shipyard. New hired personnel from S.E.S. attended but not actively participated in the construction of the ship as an O.J.T. (on the job training) staff.

6.1.3 Project Progress

N.E.S. headquarters have taken the decision to create a mirror image of their division in the S.E.S. An advisory team from N.E.S. has established an office in S.E.S. in order to support the progress of the project. S.E.S. needs to work in two directions in parallel. One direction is to establish the new production facilities needed for the project and another one to keep on the construction of new buildings.

The above situation generated a lot of stress to all staff. Rumors and discussions here and there blamed S.E.S. for slow progress compared to N.E.S. performance for the same project. Project starts to slow down after first ship main construction phase. Milestones start to slip week by week and month by month. On top of that technical problems and therefore procurement delays appear. Communication problems arise and an unofficial war

between the two shipyards industrial engineering departments starts with non conformity papers to travel through emails and faxes between N.E.S. and S.E.S.

6.1.4 Project Problems

Unfortunately the local advisor team seemed to work as a barrier and not a pusher for the project progress. By providing confusing information and not advice regarding best practice, by delaying answers to technical issues and by breaking down possible technical solutions originated from local technical staff, the advisory team acted as a mislead team. Actual man-hour (man force and workload) estimations proved totally wrong and the initiation of the second ship's outfitting was delayed dramatically. Risk assessment was an unknown phrase and a hasty decision for subcontracting and outsourcing has been done. Team spirit was never promoted. Software support of the project and I.T. specialist dedicated to support the application were not applied from the beginning of the project but at a later stage. The author here feels the need to mention this strange event. A mega project (judging from the total budget of this project) was launched without any care for software support. Thanks to the Outfitting Production Manager, who created an in-house application from scratch, it was possible for the project to gain some kind of control and traceability. At a later stage and when the fist ship was almost finished, the I.T. department adapted and converted the Outfitting Production Managers unofficial application. The funny thing here is that after a couple of years N.E.S. show big interesting to adopt this application for their production also. Obviously there have been some serious communication and cooperation issues among different divisions but most notably across the organizational/ project hierarchy (top, middle, lower management).

6.1.5 Main Source of the Problem

Due to the lack of training and the different language, the mother company did some efforts to train people but not to the proper extend and not the right people. A basic reason for the variety of the problems mentioned above has been the inadequate training (quantity,

quality, not the right people) which was further incurred due to the different languages between the two companies.

Another source of the problems was lack of communication. There was never established a communication charter between North and South resulting in a permanent misunderstanding by both sides. No usage of the company's intranet has slowed down the progress of the project.

A policy for low budget salaries even in key positions has as a result the project to suffer from lack of experienced engineers in critical points for project progress.

Establishment of organizational culture through training was weak even if a small attempt with one training season has been done but only for intercultural behavior between North and South.

6.1.6 Conclusion

Organizations very often underestimate the importance of training. Project Management principles and theory can be applied in any aspect of organizations life and in every direction from small projects in technicians level up to big projects in managerial level.

Scheduled training courses running all over the year should be available and not only for new entries. Already trained people should be able to participate again in order to solve questions they may have or share gained experience.

Ad hoc knowledge does not exist. Organizations suffer from "Babel phenomenon" in language between employees. Organization culture needs the training effort and courses as grass need earth to grow up.

6.2 Recommendations

The above described case study is a good source for digging inside Project Management theory. What went wrong? What can be improved? What are the lessons learned. Organizations should initiate an internal process to collect information from all participants in this huge training effort and develop new procedure for similar future situations.

6.2.1 Training preparation

An organization that needs to train such a huge amount of people abroad should face this fact as a real project. Project Team, stakeholders, all necessary inputs should be gathered and then trained according to Project Management theory in order to obtain/ an adequately qualified staff.

6.2.2 On The Job Training "abroad"

The way that the OJT has been performed was totally wrong. Much more preparatory work should be taken before the initiation of this specific phase of the project. A schedule between responsible people from N.E.S. shipyard, which was the trainer and responsible people from S.E.S. which was the trainee should be agreed. In major milestones S.E.S. staff should have its own part of the real project and, with some tolerance by N.E.S., to give results in e.g. machinery installation or part of pipe network etc.

6.2.3 On The Job Training "inland"

A correctly established, planned and executed project should foresee to keep on the OJT as a separate phase inland. All the staff which has already fulfilled the abroad OJT phase now should step over to inland OJT phase. Key personnel in S.E.S. with relevant key personnel in N.E.S. should now continue their job and improve all weak points from abroad phase.

In that way continuity will exist in major works critical for accomplishing major milestones. Trained people in the same work abroad will now be protagonist inland and the

masters from N.E.S. will stay one step behind acting only as advisors and as quality assurance team. This is also a major step towards achieving closer human relations, better team spirit, no invisible fences between North and South and smoother plus faster project progress for the rest series of ships.

6.2.4 OJT as a pool for future Project managers.

Finally, a training period of such duration provides the organizations with the great opportunity of exploring promising project managers among "Technical Experts" with obvious leadership skills. It is a great opportunity for organizations' internal investigation process to figure out potential project managers among "Technical Experts" with obvious leadership skills.

6.3 Conclusions

Expectations.

My expectations from this Thesis are two.

First, I hope that I will succeed to get a holistic view and approach to the Technical Expert who will be an "accidental Project Manager" as soon as he change position to that of Project Manager. I hope that my work will be a serious aid and source with information and psychological support to the Technical Expert. This transition from one role to the other hides a lot of internal conflicts and I hope my study has tried to identify, analyze and smooth those.

Second, I hope that the proposal for the organizations, including the one I am employed, to invest in Technical Experts as a serious asset and capital of their business. With this thesis I hope to convince organizations that a short period of their staff's serious training in Project Management principles can create an internal pool of skillful Project Managers and save them a lot of money, by minimizing the cost of the "trial and error" method they usually follow, hiring Project Managers from outside the organization.

Training.

What is the best way to produce effective Project Managers? How should training be specialized for the benefit of organization and Technical Expert when his position changes to Project Manager?

There is also an interesting article from Jacky Sherman with the title: "How to choose the best course to improve your leadership skills" (Sherman, 2009). There you can find several mandatory questions like:

Does it recognize (sic) my current skills and those needed for my job?

Does it start at the right point for me?

How does it seek to motivate me?

Does it focus clearly on my work & personal goals?

Will it help me apply my learning to the real world I work in?

Will I get the support I need?

Will my new ways of thinking and working fit into the culture of my organization (sic)?

What will I get as a reward for all this extra effort?

According to Kerzner (2001) an organization can measure both quantitatively and qualitatively an investment in project management education and training. Quantitatively the organization will realize in general what we call best practices implementation, which means optimization of product life cycle. Quantitatively, I think that more or less, optimization is again the term that can be used for what has to do mainly in interpersonal relations between project management stakeholders.

> A question normally asked by executives is, "How do we know if we are in Level 3 of the project management maturity model (the PMMM)?" The answer is by the number of conflicts coming up to the senior levels of management for resolution. By Level 3, executives have realized that the speed by which the benefits can be achieved can be accelerated through proper training and education. Therefore, the training and education in Level 3 does not consist merely of a few random courses. Instead, as discussed in the advancement criteria for completing Level 2 and moving up to Level 3, the company develops a project management curriculum. This will encompass a "core competency model" for the basic and advanced skills that a Project Manager should possess. Training is conducted to support the core competency skills (Kerzner, 2001, pp.82-84).

Finally, the Author quotes the ten golden principles as those has been compiled from PMI and wishes all organizations to include those in their everyday business life. According to PMI an Organization who can adapt Project Management can gain:

1. Your workforce will understand processes and terminology.

2. Your workforce will be more disciplined.

3. Your workforce will know what to look for before they start a project.

4. Your workforce will value team work.

5. Your clients will have increased confidence because your project team uses baseline of terminology and practices.

6. Your clients will have increased confidence because your credentialed project team has an ethical code.

7. Your clients will have increased confidence because your project team has knowledge of the most up-to-date global practices.

8. You will have repeatable processes and improved project results.

9. You will retain employees by investing in their professional development.

10. You will help grow the profession of project management.

Last conclusion: Technical Expert should be a preferable choice as a Project Manager for organizations provided that companies want to select appropriate training courses, for their Project Managers.

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Appendix A

Tasks, Skills & Training Needs

<u>Commissioning Engineer</u>

Is responsible to the Site Manager for starting-up and testing of Tetra Pak's process delivery as well as the education of the end customer's operators within the given time and cost frames. He is also responsible for Tetra Pak's contracted undertakings to be carried out towards the customer.

Task

<u>Preparation phase:</u>

To participate in the preparation at home, comprising among other things the following:

- thorough contract review with time schedule and manning
- schedule review of technical documentation
- technical solutions in the project
- how the site work with the customer shall be handled
- administration and time schedule follow-up
- communication
- site reporting
- documentation and reporting of the site work
- Have his/her role in the project defined by the Project
- Responsible with regard to responsibilities and authorization.
- Be informed about what is valid on site regarding the practical conditions and the social aspects
- Study all correspondence with the customer during the contract writing and projecting phase
- Review the Plant Completion Procedure in full

<u>Field phase</u>

- To act as Tetra Pak's official representative if he is alone on site
- To carry out the Plant Completion Procedure in accordance with contract and plan agreed on
- To plan the work and work out, follow up and revise work plans in consultation with the Site Manager and customer

- To document the events on site in a diary and protocols (as official representative) and make sure they are signed regularly by the customer
- To report to the Site Manager about detail plans, progress, problems, feedback, possible claims, etc
- To participate in customer meetings if requested by the Site Manager
- To carry through necessary changes after agreement with the customer, Site Manager and home organization in order to meet the contractual conditions
- To alone or in co-operation with other experts test equipment and functions as well as make necessary adjustments.
- During start-up to instruct and educate the operators of the customer within the frames of the undertaking.
- To assist the customer with follow-up of the time schedule and give advice about how possible deviations are to be compensated for
- To carry out and evaluate bacteriological tests, analyses, etc
- To fill out and have the time report signed by the customer every week
- To update the documentation which is to be updated to "as built documentation"

Reporting

- Give practical advice as to how equipment should be marked and packed
- Continue his training on the products of the company
- Participate in feedback meetings where experiences from the field are accounted for

Work in the home organization

It is important that the experiences which the field staff has gained are used and brought back to the home organization.

Therefore, whenever possible, the field staff shall participate in the home organization's work between the different missions, e g:

- Pre-project work
- Contract preview
- Project planning
- Development of site routines
- Plant Completion Procedure

- Make inspections of equipment, spare parts, tools, etc. which are to be shipped
- Give advice and instructions of how the reassembles should be carried out and inspect these in the workshop
- Give views on the tool concept
- Give practical advice as to how equipment should be marked and packed
- Continue his training on the products of the company

Attitude

Excellent technical / technological / process control / operation knowledge of processing modules / lines / plants.

Experienced, proactive, communicative and co-operative, cost conscious, reliable, panic resistant, logical fault finding capability, teaching and explanation technique.

Experience

Mechanical Engineer. More than five years experience in maintenance, repair, service, commissioning and / or operation of processing modules, lines or plants, or power / ship engines, completed with defined training and coaching programs for processing plants.

Skill

Operation of Equipment, Components, Key Components as well as Modules

Commissioning and Performance Testing Standards, Procedures, Test Equipment incl. International Standards and Test Procedures Functional description and operation of most common process control systems.

- Evaluation and recording of test results
- Choice and use of instrumentation
- Project Progress and Time Management
- Project Planning in co-ordination with customer production schedule
- Technical Sales Product / Service scope of supply
- Updating of Installed Base Data Base
- Reporting of Business Opportunities
- Understanding of hygienic process installation
- Training of customers and TP's Staff
- Application Programs; Office, Project, Project Management

Training

The underlined training programmes below, link to Tetra Pak Training Centre. You will need the program Acrobat Reader to be able to view the information.

Technical and / or Food Technological degree from technical high school, adequate additional education and / or working experience

SMA 3 (Service Maintenance Administration)

Dairy Processing, Basic

Beverage technology

HACCP

Components and modules

Heat Exchanger; Service/ Commissioning

HSS-Separators; Service/ Commissioning

Tetra Alex; Service/ Commissioning

Flow Equipment; Service/ Commissioning

Tetra Therm; Service / Commissioning

TA Flex; Service / Commissioning

TA Drink; Service / Commissioning

Tetra Alcip; Service / Commissioning

Tetra Alfast; Service / Commissioning

Basic Instrumentation

Dox5 / OP45

Dox10 / OP45

Aseptic Processing (Lab) Basic

Train the Trainer

Project Engineering

Site Administration Routines

Standard Laboratory Testing Methods

Process Functional Description

Regulation and Control

Frequency Control

Weighing and Load Cell Application

PC / Mac Application Courses

Sales Management System

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Appendix B

<u>Interview Questionnaire</u>

Thesis main items

The Case

Very often organizational necessities place a person in this job because usually he is the most technically knowledgeable engineer. So the individual in such a case should start to ask himself if this is what he really wants to do. In other words as soon as he manages to do a reasonably good job leading his first project then he will be asked to do the same "again and again and again."

The Principle

"Project management is industry – independent – Project Managers are not" says Verzuh (2008). So, organizations by using project management methods can create more efficient projects of every size and improve their products in quality. But "this industry independence has been a major factor in the development of project management as a discipline, but that independence doesn't extend to the people practicing the discipline" (Verzuh, 2008, pp.17-18).

The Conclusion

This Thesis expects to show that organizations should not fear to promote Technical Experts to Project Managers. Instead they have to encourage Technical Experts for this job rotation and accordingly organizations should give adequate training and help Technical Experts to adopt well the whole "Project Management Body of knowledge".

1. How many years you are working as a manager / senior manager in shipbuilding industry?
2. How much important is the term 'term spirit' in your every day work?
3. Are Time, Cost and Quality critical factors for measuring success in your projects?
4. In your opinion do you need more criteria or parameters to help you succeed in your project?

5. By giving an estimated percentage, (0% - 100%) how important are the success criteria that follow:
   • *End user satisfaction*
   • *Customer satisfaction*
   • *Core team / technical staff satisfaction*

6. If you take into consideration this Thesis main items, regarding Technical Expertise and project management, do you believe that could improve your organizations status and how?

Thank you very much for your participation.
Andreas Panagiotopoulos.

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Appendix C

ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ ΠΛΗΡΟΦΟΡΙΑΚΟΥ ΧΑΡΑΚΤΗΡΑ / INFORMATIVE QUESTIONNAIRE

ΟΔΗΓΙΕΣ ΣΥΜΠΛΗΡΩΣΗΣ ΕΡΩΤΗΜΑΤΟΛΟΓΙΟΥ / INSTRUCTIONS FOR QUESTIONNAIRE FILLING

1. Παρακαλώ, απαντήστε τις ερωτήσεις, σύμφωνα με την κλίμακα που ακολουθεί. Πρώτα αξιολογήστε κάθε ερώτηση με σεβασμό στο πως εκλαμβάνεται την τρέχουσα κατάσταση, συμπληρώνοντας σε ποιο βαθμό συμφωνείται με την δήλωση της κάθε ερώτησης. Στην συνέχεια, σας ζητείται να αξιολογήσετε την σπουδαιότητα αυτών των ερωτήσεων, βλέποντας τες από την δικιά σας δέσμευση και προσωπική ευχαρίστηση. Αν δεν γνωρίζεται πως να απαντήσετε και αν αισθάνεστε ότι η ερώτηση δεν έχει εφαρμογή σε εσάς, παρακαλώ προχωρήστε στην επόμενη ερώτηση. / Please answer the questions according to the following scales. First you will evaluate each question with respect to how you perceive the current situation by filling in with which degree you agree with the statement. Then you are asked to rank the importance of these questions seen from the perspective of your own commitment and personal satisfaction. If you don't know how to answer or if you feel that the question doesn't apply to you, please proceed to next question.

2. Παρακαλώ συμπληρώστε ως εξής ●...όχι έτσι.... ⊗Please fill in the circles like this: ...●t like this: ⊗

3. Επιλέξτε μία απάντηση. / Choose only one alternative.

4. Χρησιμοποιήστε στυλό. / Use a ballpoint pen.

5. Με τον όρο Διαχειριστής του Έργου νοείται ο επόμενος υπεύθυνος μιας εργασίας ανάλογα με την θέση του εργαζόμενου.

		Ισχυρά Διαφωνώ / Strongly Disagree	Διαφωνώ / Dis-agree	Μερικώς Συμφωνώ / Partly agree	Συμφωνώ / Agree	Ισχυρά Συμφωνώ / Strongly agree	Δεν έχει εφαρμογή/ Not applicable
		1	2	3	4	5	6
A	Εφαρμογή Ποιότητας από τον Διαχειριστή του Έργου. / Quality implementation from your Project Manager						
1	Η Διοίκηση της Εταιρείας υποστηρίζει ενεργά την Ποιότητα. / The company Management actively supports Quality.	○	○	○	○	○	○
2	Η Πολιτική Ποιότητας είναι γνωστή σε όλους τους υπαλλήλους. / The Quality Policy is well communicated to all employees.	○	○	○	○	○	○
3	Η ποιότητα με βοηθά στην αποτελεσματική εκτέλεση της εργασίας μου. / Quality helps me in performing my work effectively.	○	○	○	○	○	○
4	Τα προϊόντα και οι υπηρεσίες της εταιρείας μας συναντούν τις προσδοκίες των πελατών μας. / Our company's Products and Services meet the customer's expectations.	○	○	○	○	○	○
B	Υπάρχει επιδίωξη από τον Διαχειριστή του έργου για εστίαση στον Πελάτη; / External Customer Focus Implementation from your Project Manager						
5	Υπάρχει ανοιχτός διάλογος για αλλαγές και βελτιώσεις μεταξύ της εταιρείας μας και των εξωτερικών πελατών; / There is an open dialogue about changes and improvements between our company and its external customers.	○	○	○	○	○	○
6	Καταλαβαίνω πώς η εργασία μου επιδρά στην ικανοποίηση του εξωτερικού πελάτη./ I understand how my job affects external customer satisfaction	○	○	○	○	○	○
C	Διαχείριση Επίδοσης / Performance Management						
7	Η αξιολόγηση της δουλειάς μου είναι ξεκάθαρη, ανοιχτή και σε απευθείας επαφή με μένα. / The evaluation of my work performance is made clearly, openly and in direct contact with me.	○	○	○	○	○	○
8	Στο τμήμα μου / έργο μου δεχόμαστε καθαρή και γρήγορη πληροφόρηση για την ολοκλήρωση των αποτελεσμάτων μας και των στόχων μας. /In my department/project we receive clear and quick feedback about our fulfillment of results and goals.	○	○	○	○	○	○
D	Υλοποίηση της ροής της δουλειάς από τον Διαχειριστή του Έργου./ Work Flow Implementation from your Project Manager						
9	Εντός του τμήματός/έργου μου αισθάνομαι ότι... / Within my department/project I feel that...						
	a) κάνουμε τα σωστά πράγματα στον χώρο εργασίας μας... / ...we are doing the right things at our workplace.	○	○	○	○	○	○
	b) τα κάνουμε στον χρόνο που μας δόθηκε... / ...we are doing them within time given.	○	○	○	○	○	○
	c) παραδίδουμε την σωστή ποιότητα... / ...we are delivering the right quality.	○	○	○	○	○	○
	d) τα κάνουμε στο σωστό κόστος... / ...we are doing them at the right cost.	○	○	○	○	○	○
E	Δημιουργική Υλοποίηση από τον Διαχειριστή του έργου. / Creativity Implementation from your Project Manager						
10	Έχω πολλές ευκαιρίες να εφαρμόσω στην πράξη τις δικές μου ξεκάθαρα ιδέες για την βελτίωση της δουλειάς μου. / I have plenty of opportunities to put into practice my own original ideas for improving my work.	○	○	○	○	○	○
11	Στο τμήμα μου/έργο μου συστηματικά εργαζόμαστε στην γέννηση νέων ιδεών για αλλαγές και βελτιώσεις. / In my department/project we systematically work to generate new ideas for changes and improvements.	○	○	○	○	○	○
12	Νέες εισηγήσεις πάνω σε αλλαγές και βελτιώσεις είναι θετικά αποδεκτές εντός του τμήματος μου/έργου μου. / New proposals about changes and improvements are positively received within our department/project.	○	○	○	○	○	○

	ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ ΠΛΗΡΟΦΟΡΙΑΚΟΥ ΧΑΡΑΚΤΗΡΑ / INFORMATIVE QUESTIONNAIRE						
13	Έχουμε ανθρώπους στον οργανισμό μας με δυναμικό να γεννούν δημιουργικές, μη εφαρμόσιμες προηγουμένως λύσεις. / We have people in our organization with capacity to generate creative, previously not practiced solutions.	○	○	○	○	○	○
F	Συμπεριφορά στο Ρίσκο και τον Πειραματισμό υλοποιούμενο από τον Διαχειριστή Έργου. / Attitude to Risk and Experimentation implemented from your Project Manager						
14	Οι άνθρωποι στο τμήμα έργο μου είναι ανεκτικοί όταν έρχεται η ώρα να επιτρέψουν στους συνεργάτες τους να κάνουν λάθη. / People in my department/project are tolerant when it comes to allowing co-workers to make mistakes.	○	○	○	○	○	○
15	Στο τμήμα / έργο μου μαθαίνουμε ο ένας από τις εμπειρίες του άλλου από επιτυχημένα/αποτυχημένα έργα και πειραματισμούς. / In my department/project we learn from each others experiences from successful/unsuccessful experiments and projects.	○	○	○	○	○	○
16	Στο τμήμα/έργο μου υποστηρίζουμε καινοτόμες ιδέες για αλλαγές/βελτιώσεις στον χώρο εργασίας μας. / In my department/project we support radical ideas for changes/improvements at our work place.	○	○	○	○	○	○
17	Στο τμήμα/έργο μου υποστηρίζουμε ιδέες για "μικρές" βελτιώσεις στον χώρο εργασίας μας. / In my department/project we support ideas about "small" improvements at our work place.	○	○	○	○	○	○
18	Όταν έρχεται η ώρα να εφαρμόσουμε ιδέες στην πράξη έχουμε αρκετά δυνάμεις στην διάθεση μας. / When it comes to putting ideas into practice, there are enough resources at disposal.	○	○	○	○	○	○
19	Η Διοίκηση της Εταιρείας έχει την δυνατότητα να ελκύει ανθρώπους με επιχειρηματικό πνεύμα και δημιουργικές ιδέες. / The company Management has the ability to attract people with entrepreneurial spirit and creative ideas.	○	○	○	○	○	○
G	Υλοποίηση αρχηγικής ικανότητας από τον Διαχειριστή του Έργου. / Leadership implemented from your Project Manager						
20	Στο τμήμα/έργο μου η δουλειά μεταβιβάζεται εκεί που πρέπει. / In my department/project the work is delegated appropriately.	○	○	○	○	○	○
21	Το τμήμα/έργο μου δεν επηρεάζεται από κεντρική καθοδήγηση. / My department/project is not affected by centralized steering (micro-management).	○	○	○	○	○	○
22	Ο προϊστάμενος μου επιδεικνύει αρχηγική ικανότητα που διακρίνεται για... / My manager demonstrates leadership distinguished by...	○	○	○	○	○	○
	a)δυνατή προσαρμογή προς τους στόχους... / ...strong orientation towards goals.	○	○	○	○	○	○
	b)από δυνατότητα να πείθει και να παρακινεί τους συνεργάτες του... / ...an ability to commit and motivate co-workers.	○	○	○	○	○	○
	c)υπόσχεση και υποστήριξη για αλλαγές και βελτιώσεις... / ...commitment and support for changes and improvements.	○	○	○	○	○	○
	d)αναζωογόνηση των ιδιαιτεροτήτων εντός της ομάδας (παράδειγμα: κουλτούρα, ηλικία, γένος)... / ...stimulation of differences within the team (for ex. culture, age, gender).	○	○	○	○	○	○
	e)απόδοση ίσων ευκαιριών σε όλους τους εργαζόμενους ανεξάρτητα από την θέση τους/...giving equal opportunity to all employees regardless of position.	○	○	○	○	○	○
H	Υλοποίηση της Επικοινωνίας από τον Διαχειριστή του Έργου. / Communication implementation from your Project Manager						
23	Υπάρχει κατάλληλη επικοινωνία... / There is appropriate communication...						
	a)μεταξύ διαφορετικών τμημάτων εντός του οργανισμού. / ...between different companies within the group.	○	○	○	○	○	○
	b)μεταξύ διαφορετικών έργων μέσα στην εταιρεία μας. / ...between different departments/projects in our company.	○	○	○	○	○	○
	c)μεταξύ των συναδέλφων μου εντός του τμήματός μου / έργου μου. / ...between co-workers within my own department/project.	○	○	○	○	○	○
	d)μεταξύ προϊσταμένων και εργαζομένων εντός του τμήματος-έργου/ ...between managers and employees within my own department/project.	○	○	○	○	○	○
24	Η εσωτερική επικοινωνία στην εταιρεία μου είναι ικανοποιητική σχετικά με... ? The internal communication in our company is satisfactory regarding...	○	○	○	○	○	○
	a)μεγάλες αλλαγές στην εταιρεία μου... / ...major changes in the organization.	○	○	○	○	○	○
	b)με θέματα σχετικά με την επιχείρηση... / ...relevant business matters.	○	○	○	○	○	○
	c)καθημερινά θέματα (επισκέπτες, ώρες εργασίας κπλ)... / ..."daily matters" (visitors, working hours etc.)	○	○	○	○	○	○
I	Υλοποίηση Ομαδικής Εργασίας από τον Διαχειριστή έργου. / Teamwork implementation from your Project Manager						
25	Το πνεύμα ομαδικής εργασίας που αντιλαμβάνομαι στο τμήμα / έργο μου είναι ικανοποιητικό. / The team spirit that I experience in my department/project is satisfactory.	○	○	○	○	○	○

	ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ ΠΛΗΡΟΦΟΡΙΑΚΟΥ ΧΑΡΑΚΤΗΡΑ / INFORMATIVE QUESTIONNAIRE						
26	Λαμβάνω την συνεργασία που χρειάζομαι για να κάνω την εργασία μου αποτελεσματικά από τους συναδέλφους... / I get the co-operation that I need to do my job effectively from employees...	○	○	○	○	○	○
	a)στο τμήμα/έργο μου... / ...in my department/project.	○	○	○	○	○	○
	b)από άλλα τμήματα/ έργα... / ...in other departments/projects.	○	○	○	○	○	○
	c)από άλλα τμήματα εντός της εταιρείας... / ...in other companies within group.	○	○	○	○	○	○
J	Εταιρική Μάθηση. / Organizational Learning						
27	Μπορώ να επηρεάσω τον προγραμματισμό της δουλειάς μου. / I can influence the planning of my own work.	○	○	○	○	○	○
28	Έχω μεγάλες δυνατότητες για προσωπική βελτίωση στην δουλειά μου. / I have great opportunities for personal development at work.	○	○	○	○	○	○
29	Έχω ευκαιρίες να προχωρήσω σε πιο σοβαρά καθήκοντα (όχι μόνο προς τα πάνω στην σκάλα της ιεραρχίας, αλλά και σε καθήκοντα που μπορούν να μου είναι προσωπικά ευχάριστα. / I have opportunities to advance to more important tasks (not just up the ladder, but to tasks that would be more personally satisfying).	○	○	○	○	○	○

ΑΛΛΑ ΣΧΟΛΙΑ / OTHER COMMENTS
Στο χώρο που δίνεται στις παρακάτω γραμμές, παρακαλούμε γράψτε ότι συμπληρωματικά σχόλια έχετε για την εργασία σας και γενικώς για την ικανοποίησή σας στην εταιρεία.

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