

**An-Najah National University**  
**Faculty of Graduate Studies**

**Project Management**  
**for Construction Projects**

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## **Project Management for Construction Projects**

**By**

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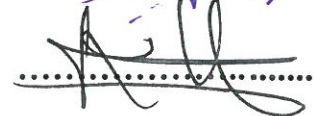
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## إهداء

إلى كل من كان جزءاً من بصماتي...  
إلى من اضاء بصيص الأمل في طرقات حياتي  
ومن زرع بذور الحب والأمل والأمنيات...  
إلى من وهبني أحلى معاني الحب والبسات  
وزرع على شفاهي بسمة....  
ونشر أحلى أنواع الحب في حياتي....  
إلى روح والديّ ترفل في سماء الجنات  
إلى شريك العمر وشريك الضحكات والآهات...  
إلى أزهار عمري ونسمة العطر في نفحاتي...  
إلى من أعطتني السر والسبب للحياة.....  
وعلمتني كل معاني الأمومة والبراءة....  
إلى ملاكي ... صغيرتي ... نور حياتي

هداية

## إقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

## Project Management for Construction Projects

### أدارة المشاريع الإنشائية

أقر بأن ما اشتملت عليه هذه الرسالة إنما هي نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيثما ورد، وإن هذه الرسالة ككل، أو أي جزء منها لم يقدم من قبل لنيل درجة أو لقب علمي أو بحثي لدى أية مؤسسة تعليمية أو بحثية أخرى.

#### DECLARATION

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's name: ..... اسم الطالب:

Signature: ..... التوقيع:

Date: ..... التاريخ:

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**List of Abbreviations**

ANERA	American Near East Refugee Aid
CBP	Center for Business Practices
CHF	Cooperative Housing Foundation
CPM	Critical Path Method
FIDIC	International Federation of Consulting Engineers
GDP	Gross Domestic Product
NGOs	Non Government Organizations
PCBS	Palestinian Central Bureau of Statistics
PCU	Palestinian Contractors Union
PECDAR	Palestinian Economic Council for Development & Reconstruction
PERT	Program Evaluation and Review Technique
PM	Project Management
PMI	Project Management Institutional
PNA	Palestinian National Authority
PMPOK	Project Management Body of knowledge
PRINCE	Projects in Controlled Environments
UNDP	United Nations Development Program
NIDO	United Nations Industrial Development Organization
UNRWA	United Nations Relief and Works Agency
USAID	United States Agency for International Development

**Project Management  
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**Abstract**

The objective of this research is to study the project management of construction projects in Palestine. Construction sector is considered as a vital sector in today's economy, due to the development in construction which is taking place in the world in general and the West Bank. The construction sector has a great importance not only to the economical and social life, but also to the needs and inspiration of the local culture. This study stressed on many aspects on the subject of project management in terms of problems and impediments, and suggested solutions through this research, in order to motivate and develop the management of the projects. The researcher used mainly qualitative method and partly quantitative method to complete the research work in the study. The researcher met with a number of specialists in this area and conducted 36 interviews with project managers in different parts of the West Bank, with three categories of the companies in the Palestinian Union of Contractors category in both its first, second and third categories in the structural area.

After examining the text of the interviews within a set of questions that were posed to project managers in construction companies, the analysis showed that there are several factors and many problems faced by the management of construction projects in the West Bank. The most important problems were the poor planning, poor project management and poor

communication between all parties to reach optimal solutions, in addition to gaps and points that are clarified in the context of the search.

The researcher developed a framework to arrange and organize the management of construction projects, to be an effective tool to help project managers in setting priorities and show places of success and failure. Moreover, it shows the management process as an important part of the success of any engineering project by several factors. First by understanding the main objectives and goals of the project and try to apply these goals clearly on the ground, and second by developing coherent system through which the project will be implemented within clear basis. Then the exploitation of each project will be documented and used in future work. Furthermore, the researcher tried to clarify success factors in construction projects to achieve better results for engineering companies and to meet the needs of the local community projects through good quality and best value to the engineering projects and to the Palestinian society.

# Chapter One

## Introduction

### 1.1 Over view:

The future of Palestine is what Palestinians are building today, and the Palestinian goals along with other means and resources will allow the nation to determine the future of the country. Palestine has suffered greatly in recent decades as a result of occupation, closure and lack of resources. That and other issues have caused stagnation in many aspects of civilization and progress for the Palestinian society.

Despite this, commercial and residential construction work in Palestine is increasing rapidly to meet the growing needs of the population and to keep up with global development. For Palestine to progress in terms of construction, project construction must be studied carefully and prepared well in order to get the best results, and to help in moving in the right direction to establish the future goals.

Benjamin Franklin said “*The difference between failure and success is the difference between doing something almost right and doing something right*”. So failure does not only mean doing things wrong, but even doing things almost right, this idea will lead to recognize the best way to implement project management in construction projects and to open new era in thinking that will give value to construction industry. These conditions led the researcher to study how project are managed in West Bank, and what are the major elements and problems affecting the construction industry, and also urged the researcher to suggest a framework that copes with the development and the growing concerns regarding the

construction industry within West Bank compared to other developing countries, in order to help managers to plan and implement construction projects in a proper way that will lead to better results and less risks, and to achieve success with good quality.

### **1.2 Research Questions:**

The current situation in West Bank needs to initiate an improved construction management framework accompanied with appropriate laws, control and pricing system with efficient designs and appropriate construction material, in order to help project managers to lead their companies to success, and to make a difference in a highly competitive environment.

To achieve that, these questions should be answered:

- How are projects managed in the West Bank?
- What are the main factors causing failures in construction projects in the West Bank?
- Is there any system applied for project management in West Bank?
- Is there any methodology for managing projects in large scale enterprises in the Palestine?
- How is project success measured?

These questions and others will be answered in this thesis, in order to improve project management performance in the construction industry in West Bank.



### **1.3 Aims and Objectives of the Research:**

The primary aim of this thesis is:

- To initiate a useful framework with a knowledge based that will help project managers lead their companies to be successful and make a difference in a highly competitive environment.

The objectives of the research are:

- To examine the Palestinian construction industry and define the nature and performance of management in the industry, and its contribution to the overall economy and social life.
- To highlight the needs and identify the problems and the barriers that currently exists in construction projects in the West Bank.
- To use the results of this study to assist the public and private sectors in applying project management to improve the quality of their work and avoid problems.
- To highlight the success factors in managing projects, especially in the West Bank, and try to improve it by using a system that organizes work in engineering companies.

### **1.4 Methodology:**

This study started by examining the project management system, and identified the existing issues in construction industry, in order to answer the research questions by reviewing the existing system to adopt the following:

1. Extensive literature review, using books, articles web sites and e-journals to produce and evaluate competency models.

2. Study the role of project management in the West Bank through contracting companies by:
  - a. Analyze roles and uses of the methodology and processes in managing projects.
  - b. Design interview questions that will help the researcher in understanding the managing process in construction projects.
  - c. Conduct a pilot study with people who are pioneers in project management field, and take feedback about the questions and their point of view
  - d. Make the necessary changes in the questions according to the information taken from the pilot study.
  - e. Gather data through semi-structured interviews.
3. Project managers were interviewed to identify the basic technical competencies they think are important for high performance in project management, and to learn more of their own experience in this field.
4. Conduct thematic analysis of the data collected.
5. Develop a generic framework based on the results from theory, literature view and practice, and then test the model through discussing it with practitioners.
6. Develop conclusions and recommendations.

### **1.5 The Constraints and Challenges:**

There are many constraints in the construction field, which will be discussed in depth later. According to the researcher's study, these constrains include:

- The funding of the projects.
- The dependence on funding and implementation of aid from donor countries.
- Access issues related to trust.
- Environment, culture issues.
- Weak infrastructure.
- Lack of management and data especially in the Palestinian sectors such as municipalities and ministries.
- Security issues related to political and economic instability in Palestine and associated political factors.
- Laws and procedures imposed by the Israeli occupation.

## **1.6 Summary of chapters:**

This dissertation consists of seven main chapters as follows:

- Chapter One: Introduction. This chapter represented an overview of the main objectives of the research, statement of problems, aims and objectives of the study.
- Chapter Two: Literature review. This chapter presented an overview of construction project management, and highlighted the knowledge, tasks and techniques that are needed to understand the basic philosophy and principles of Project Management.
- Chapter three: Methodology. This chapter shows the methodology used in this research in order to achieve the required objectives.
- Chapter Four: Construction industry in developing countries. In this chapter Jordan, Yemen and Palestine were studied to show how construction and project management are being developed, and the

characteristics of this sector and the difficulties and problems each country faces with suggestions to solve them.

- Chapter Five: Results and analysis. A survey in to local contracting companies was conducted to obtain data and provide insight into current situation, the outcome of this survey and the deep interviews were discussed and analyzed in this chapter.
- Chapter Six: Framework development, a set of policies and procedures were identified to draw a road map for a frame work of project management in construction to be developed.
- Chapter Seven: this chapter summarized the problems in managing projects and role of each of the stakeholders. A set of conclusions and recommendations were developed to achieve sustainability in the construction industry.
- Appendix.

### **1-7 Conclusion:**

In this research:

- Project management in the West Bank will be covered as a topic, by studying how projects are managed and developed
- Similar cases in other developing countries similar to Palestine (Jordan and Yemen) are compared.
- After collecting data concerning how projects are managed, this data is analyzed and studied, with the help of the literature review and the results and analysis of the interviews with project managers
- A framework is designed to help managers organize their work and improve the quality of managing construction projects in West Bank.

## **Chapter Two**

### **Literature Review**

#### **2.1 Introduction:**

Construction is a vital sector contributing significantly to the economics of all countries. The construction industry must be dynamic to be able to respond to the changes that the world is constantly facing, as well as the social, economic, and technological challenges affecting all industries. The opportunities and problems in construction are different from those of the last century. The demands of clients, companies and employees differ from time to time, and thus the vision of the construction industry is always developing; to keep up, management must change too. This research will address the growing need to develop project management in Palestine, which in turn will help in shaping the goals of the future.

Any construction organization must have a strategic plan and vision that lead the way to achieving its goals. The key to achieving that lays in successful management, by identifying needs and goals the company wants to achieve. To do that, project management must be planned on many levels, such as implementing, organizing, delegating, decision making and performing. The survival and the progress of any company depend upon how well project management is implemented and how experienced the company is in this field.

#### **2.2 Importance of Project Management:**

Project management is designed to control the main important elements that provide practical information for achieving project objectives

in an efficient way. Walker defined project management as “*The use of resources in the company on a certain activity within time, cost and performance. A fourth key factor is good customer relations*” (1). Walker added customer relations as a fourth important factor with time cost and performance.

But still we need to know the main drivers for project success, which are the most important elements for companies to make a difference in this highly competitive environment. However, in Palestine there are particular success factors that must be studied; Palestine has unique attributes that make it different from other places, and this research will focus on those, and will highlight the failure signs in managing construction projects in West Bank.

The construction sector is a vital part of industry and in the gross income; for example in terms of value output, the construction industry is the largest single production activity in the U. S. economy, accounting for almost 10 percent of the gross national product (2).

Over the years and despite the setbacks and difficulties, the Palestinian economy was able to stand up and struggle for survival. The construction sector is a critical sector in the Palestinian economy, providing one of the most important sources of income for Palestinian families. Construction created jobs for at least 24 percent of the Palestinian labor force, and contributed 10 percent of the total GDP between 1972- 1990; in 1993 the percentage increased to 14percent percent, and in other studies it exceeded 20 percent of the national income, although it declined again after 2000 when the second uprising began. Nowadays the construction sector is

growing again, and remains a very important of the Palestinian economy. Project management is more important than ever, as the key indicator of how projects are conceived, designed and built. (3)

In order to understand project management we first need to define what a project is? And what does it consist of?

### **2.3 Understanding Project & Management:**

In order to understand project management, we need to understand both project and management first.

*“A project is a temporary endeavor undertaken to create a unique product, service or result”* (4).

A project is temporary and that means it has a definite beginning and a definite end. In other words the time is limited but does not necessarily mean a short time; the duration of a project depends on project type. Unique means that each project is different, and each has some distinguishing features. Even if the project has repetitive elements it's still unique because it has a different owner, design location and facilities. A project must be progressively developed, which means continuous and steady work and growth (5).

As for management, the universally accepted definition includes *“The Art of getting things done through people”* (6). The definition of management is the basic knowledge in defining PM, management needs team working with the skills needed to achieve a certain goal; this is the core issue of successful management in all topics.

## 2.4 Definition of Project Management:

Kerzner defined PM as “*Project management is the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives. Furthermore, project management utilizes the systems approach to management by having functional personnel (the vertical hierarchy assigned to a specific project (The horizontal hierarchy))*” (5). Figure 2-1 shows that project management is designed to control the key elements that provide practical information for achieving project objectives in an efficient way; it means using the company resources on a certain activity within time, cost and performance constraints. A fourth key is good customer relations (5).



**Figure 2.1: Over view of project management (5)**

Kerzner highlighted the main keys in project management as time and cost with an accepted level of performance.

There are many definitions to project management , but the Project Management Body of Knowledge defined PM as “*the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder’s needs and expectations from a project*” (7). Each definition will vary according to the goals and needs of the organization.



Sometimes project management is confused with strategic management, because both must include mission, vision and goals. The difference is that project management is unique within a limited time; this requires developing new methodology and a mechanism to ensure achieving goals. On the other hand, strategic management has more shared decision making and an unlimited time schedule that involves brainstorming through all levels of the organization(8).

The researcher believes that every one of the previous definition adds value to Project Management in its own way ,all of them inspired the researcher to define PM as “ *project management as an art, a charisma and professional experience that provide all the means of succeeding, within all the limitation and the resources provided to achieve a certain goal*”.

Construction project management does not differ much from project management in general; Walker defined it as “*The planning. Co-ordination and control of a project from conception to completion on behalf of a client requiring the identification of the client’s objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources, integrating, monitoring and controlling the contributors to the project and their output, and evaluating and selecting alternatives in pursuit of the client’s satisfaction with the project outcome*” (1).

Construction project management has the same main objects as project management which are cost, time and performance, but in construction PM its cost, time and quality as Walker mentioned, which did not change fundamentally but may be took a wider range in referring to people and the importance of working through others, also in construction

project management client satisfaction is one important key to project success as well as the objectives and goals of the company itself.

## **2. 5 History of project management:**

As we have seen in ancient civilizations, building great monuments had great importance, such as the great projects of the Romans, and the Egyptian pyramids. , Those complex works needed sophisticated and effective management. This shows that that the science of project management was known long ago and was practiced in different ways. It also shows that effective management and construction techniques can produce excellent and long-lasting results. However, in those eras, little attention was paid to those people who finished this work, or to how long it took from the standpoint of time, effort and budget.

In the late 19th century, because of the rising complexities of the construction business, management principles began to evolve more effectively. Big projects involved thousands of workers, huge quantities of materials, machinery and equipment. We began from that time to see project management implemented by engineers and architects themselves. Later, techniques were applied to even more complicated projects (9).

In the 1950s, Taylor's work was considered the basic element of modern project management, and included the work breakdown structure and resource allocation. Work breakdown structure (WBS) is "*A deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables.*" (7).

This approach arranged tasks to produce the result of maximum output with minimum input. Many people criticized this approach, as it seemed to regard people as machines rather than human beings. Although Taylor was considered as pragmatic in his field, he analyzed the various aspects of work patterns and behavior. His study confirmed that alternate work methods could result in a considerable increase in productivity and a reduction in labor and material costs. Others like Weber, who was from the same school of thought, was concerned with describing bureaucratic structure (9).

At the same time two other important methods were developed: the “Critical Path Method” (CPM) by DuPont Corporation and Remington Rand Corporation, and “Program Evaluation and Review Technique” (PERT) by B. A. Hamilton (U.S. Navy). This approach developed the principles of management which concentrated on the pyramid structure. This method emphasizes delegation, and encouraging delegating authority downwards from the head of the pyramid to the line of staff, but still with formalization and specialization. These approaches were considered as the classical approaches in management and were called “organizations without people”, as described by Bennis. The classical approaches were seen as rigid and inflexible because they concentrated on the internal characteristics of the organization rather than the external influences, and did not take into consideration the social and environmental side of the work (10).

As a result of these many studies the behavior school appeared between 1930s and the 1970s. Many psychologists devoted their studies to the behavior of supervisors and subordinates in an organization. Considering values and motivations, in 1960 McGregors concentrated on

the social approach and came up with “Theory X” and “Theory Y”, both describing the behavior of people in organizations.

Theory X emphasized that individuals dislike work, and preferred to be directed and not responsible; as a result of that employees must be controlled, threatened or punished so they can achieve the organization goals .

Theory Y. on the other hand, stated that not all individuals dislike their work. This relates to the type of individual and claims that threats are not the only way of encouraging employees to achieve organization goals and objects; working on self-satisfaction may be more effective in producing better results (5).

Still, the behavioral approach does not take into account environmental factors in a specific manner but treats them in general. Considering the organization as a closed system, there is still a big gap and many approaches between the classical and the behavioral approaches. Later additional fields were developed, such as marketing approaches, industrial psychology and human relations, fields that went on to become the backbone of business management.

In 1967 the International Project Management Association (IPMA) was established in Europe as a federation of several national project management associations (11).

The project management Institute (PMI), found in the U.S. in 1969, publishes the PMPOK Guide, (A guide to the Project Management Body of

Knowledge) (4), which describes the most common project management practices and gives certification in PM field (1).

## **2. 6 Construction as a vital sector:**

The construction sector is a vital part of industry and the gross income of any country. For example in terms of value output, the construction industry is the largest single production activity in the U S. economy, accounting for almost 10 percent of the gross national product (1).

Construction projects require skilled management, as they are complicated and face many challenges and constraints, such as cost, time regulations, materials and environmental rules or customs. In construction projects several activities happen and take place at the same time, but still are connected and integrated. Therefore we need thorough and effective communications and cooperation to manage and control these activities.

Project management is vital when the project faces internal or external changes, and when we need to make alternative solutions or implement contingency plans. This is especially true in Palestine, which suffers from a considerable instability; project managers face many challenges and must always be creative and flexible in order to deal with difficult and sometimes unforeseen circumstances.

Today organizations are competing with each other to produce high quality output with the minimum budget and be delivered at the right time; the most appropriate way to achieve this is using project management. Effective project management is perhaps the single most important factor

that determines the success of local projects. Successful project management required integration of many disparate activities, teams, inputs and outputs with a single goal in mind - to deliver products that meet the defined quality criteria, on time and within the agreed budget.

Using project management in organization helped in many ways, such as reducing costs, improving timing and focusing on results and quality, all through good cooperation across the organization.

For example, the Center for Business Practices (CBP) concluded in its “State of Project Management 2006” survey that implementing PM methodologies provides value to an organization, however, organizations should also ensure that common sense is applied to all methodologies that are implemented (12).

### **2. 7 Project Management Functions:**

Project management has developed a great deal in the last decades, but the main functions of the project and its life cycle are still the basics of project management.

Understanding project life cycle is crucial to effective project management, because without this understanding, it's very difficult to develop a plan that satisfies the needs of the project in any phase of its stages so that in each stage everything is studied carefully (5).

### **2. 8 Project life cycle:**

The project life cycle is “*The sequence of phases through which the project will evolve*” (13).

Project life cycles can have different names, but they all have the same fundamental structure. Sometimes there are different names for each stage or phase. Here the four phases of project life cycle will be studied, although some writers consider them more than four, but these are the most common phases that many projects go through. These phases are:

1. Initiation phase.
2. Planning phase.
3. Executing phase.
4. Closing phase.

Some writers in this subject consider controlling and monitoring as the fifth stage, but the researcher believes that controlling and monitoring the project is not a phase by itself, it's a procedure that must take part in all the life cycle of the project and not in a particular stage.

### **2.8.1 Initiation phase:**

In this stage, the client or funder identifies needs and describes all requirements and specifications, and the project team is established with the project chart. This phase is considered as the conceptualization stage, the basic creation of the project. This usually includes the feasibility study, the project description documents, and the identification of requirements.

In this stage, the team has important activities to do and prepare such as:

- Interviews and sessions with the client, funder or stakeholders, to identify the needs and the goals.

- Researching and planning to compile all the information needed for all phases of the project.
- Preparation of all relevant documents such as feasibility documents, project concept and project charts.
- Gathering and carefully studying all the standards, regulations and rules needed to complete the project (14).

At this stage, the project still may suffer some problems such as:

- Frustration due to the delay of starting the project.
- Lack of commitments by the funder or stakeholders.
- Creating the perfect team with the right people, a difficult and important part of this stage.
- Differing points of view among the manager, stakeholders, funder or clients; if not resolved, conflicting views can destroy a project before it begins.
- A lack of clarity in visualizing the project's end goal, a highly important creative step.

Formulating questions by the organization's senior managers and answering their questions will help to form a smoothly-functioning team and clear the path to achieve the project's goals (8).



### **2.8.2 Planning phase:**

The planning phase is the most important and challenging stage in the project. , If the project is planned well from the beginning, this will help in avoiding many problems and confusion later. This stage comprises:

- Studying and creating business requirements.
- Studying details of the project, such as cost, schedule and starting and finishing dates of the various activities.
- Planning the resources needed and making them available.
- Identifying the type of work needed, using work breakdown structure.

The reason why we make work breakdown structure is to help organize the scope of the project accurately, by using the hierarchical structure which lets us break the project down into smaller pieces in each level. Work break down structure also helps in allocating resources, assigning responsibilities and controlling and monitoring the project.

WBS is used in planning because it helps the project manager to monitor achievements, risks, costs and time, to make sure the project stays on track (15).

Managers and planners should create a comprehensive diagram of the project plan, which will be like a road map of the whole project.

The project plan is the map that shows project activities and tasks that must be delivered in a certain time, while acknowledging the resources

needed and the milestones; it tells the project manager through all phases whether he is on track, or indicates that some changes took place along the way.

Also if the project is large several plans should be prepared, outlining resources, finances, quality, and communications plan. Critically, a risk plan should be prepared to rescue the project if necessary (5).

### **2.8.3 Execution phase:**

The third phase is also called the execution or operation phase. Here, the real body of the project is built and prepared to be handed to the client. It can consume much energy because it is long and full of details. In this phase we need to use many processes such as:-

#### **2.8.3.1 Time management:**

Time management means to stipulate the time needed for the team to finish any activity. This will help the manager see which activities have been done, how long they took, and when they started and finished. Time management also will help by comparing the time planned for such activity and the time actually spent implementing it (5).

#### **2.8.3.2 Cost management:**

Cost management is a process required to organize expenses within the project. It helps keep the project on track by constantly examining the expenses and keeping all the records needed to compare it to the actual planned budget. This process ensures that the manager stays updated about all expenses (16).

**2.8.3.3 Quality management:**

This process is needed in this stage to make sure that what is produced by the team is exactly what had been agreed upon with the client or customer. Quality management is needed not only in this phase but throughout the project. At this point it is important to ensure that expectation of our work is what was planned from the beginning (7).

**2.8.3.4 Change management:**

Change management is a process that helps in managing all the changes that are needed in the project. Through effective change management, any changes can be recorded reviewed, approved and studied carefully. This can help managers track changes and control the effects before the project is adversely affected, and can make sure that required changes are made easily and benefit the project.

**2.8.3.5 Risk management:**

Risk process is the procedure needed to recognize and control risks in advance of problems. Risk management helps quantify the risk and identify potential impact on the project and identify the actions needed to minimize risk and prevent adverse consequences.

Risk management is needed through all the phases of the project; vigilant management will help remove the uncertainties(4) .

**2.8.3.6 Software Management:**

The development and use of software, such as Microsoft Project (MS Project) and Primavera, has helped greatly in automating many of the static

calculations in complex projects, because templates for most charts, diagrams and reports are easily available through such software, after entering the data the user can easily create different types of project management planning and monitoring tools such as GANTT charts, PERT charts and CPM charts. Software can also be used to create the WBS forms, and can help the user create accurate records and reports such as schedules, budgets and time-line changes, all of which are helpful in monitoring a project (8).

#### **2.8.4 Closing phase:**

The closing phase is the last stage in a project's life cycle. In this stage the project is finalized and closed; this process needs many procedures such as:

- Handling and delivering the project to the owner or client.
- Delivering all the necessary documents to the customer, with complete information needed by the client.
- Releasing staff and equipment used in the project, with full reports for the stakeholders.
- Identifying all the activities and tasks that should be stopped, and the ones that need to continue, and for how long, after the closure of the project.
- Terminating all the contracts with suppliers and identifying whether the project was within scope, budget, and achieved its goal and objectives.

- Identifying lessons learned from the project, by documenting all the levels of success, failure and achievements, so as to make use of it in future projects(17) .

## **2.9 Summary & Conclusion:**

- Project management is the science and the art of planning, organizing, and managing resources to bring the best achievement of specific project goals and objectives. Project management is a long procedure needing the involvement of many persons and an efficient plan; without these, a project can end in chaos.
- The construction industry through the past years has suffered from criticism, as it always adopt the conservative way in work, and lack innovation, new ideas, and creative methods in implementing the construction projects are needed to be implemented in the new ways of technology.
- The start point and the end point of each phase of the project life cycle is crucial, as they are the key project decision point, between the various phases are decision points, at which an explicit decision is made concerning whether the next phase should be undertaken, and whether the previous stage is finalized in a proper way as planned from the beginning.

## **Chapter Three**

### **Methodology**

#### **3.1 Introduction:**

This chapter shows an overview of the methodological approach the researcher used for studying project management in West Bank, through studying the current situation in contracting companies, and through studying project management in similar countries; this is empowered by the literature review which will help the researcher in selecting the way to conduct the analysis. This thesis also provides a wide view of the interviews, the targeted population, the samples used and the analysis and evaluation of the survey followed by the framework designed that will help in organizing the management of construction projects, and the conclusions of the interviews and of this study.

#### **3.2 Research methodology diagram**

To summarize the methodology description Figure 3.1 shows the diagram of the methodology used in this research:

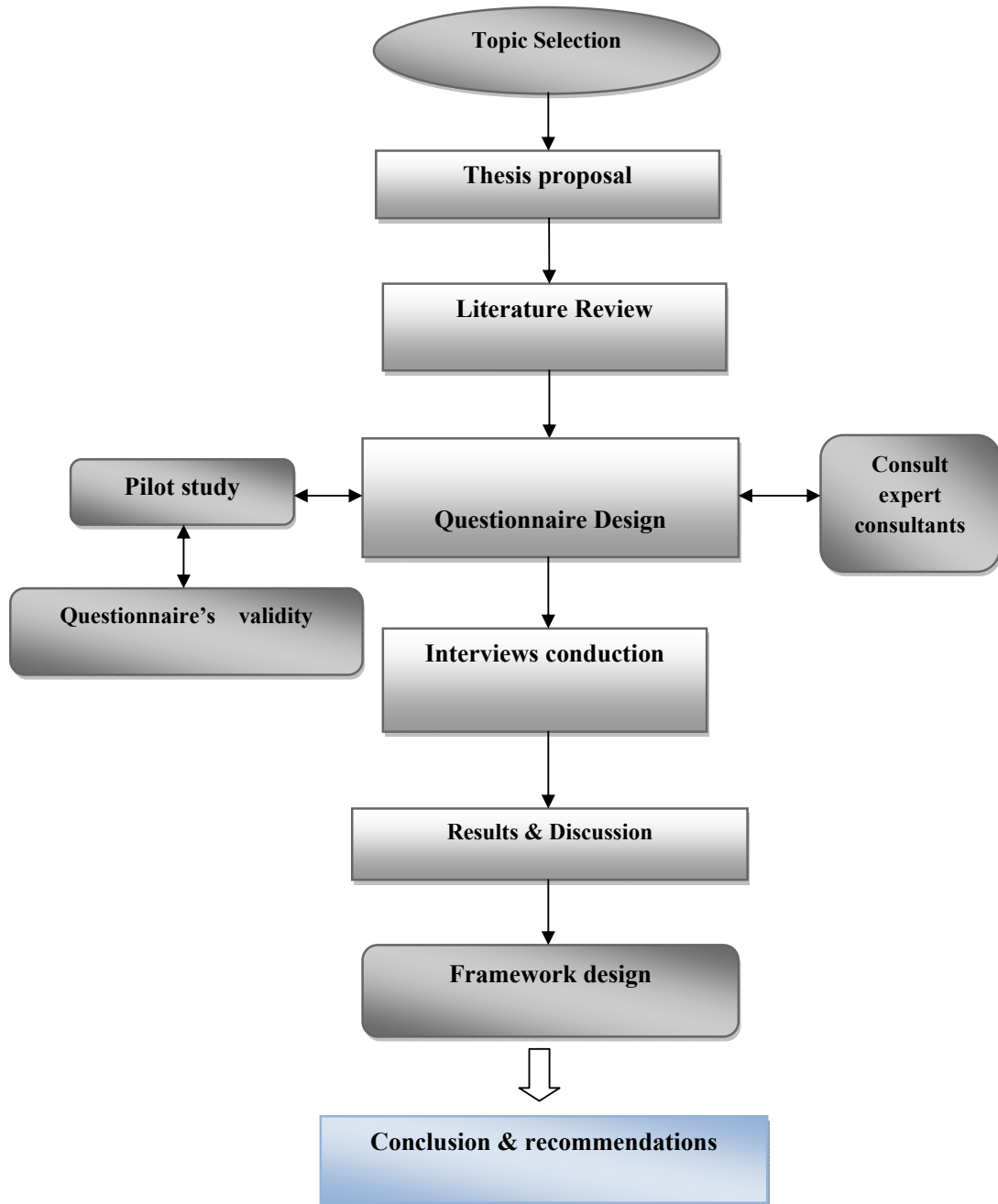


Figure 3.1: Summary of methodology used in this research

### **3.3 Methodology outline:**

This research was conducted in three major stages:

#### **3.3.1 First Stage:**

Includes a comprehensive literature review, which supports the survey methodology, identified the research problem, and identified aims and goals. In this phase the following activities are included:

- Creation of a clear description of the problem.
- Identification of the problem.
- Extraction of information from main areas with data about the problem, such as books, journals, articles and reports.
- Formulation of questions that will be used in the interviews, based on the information collected from literature review.
- Development of the research methodology.
- Study of problems in other countries with similar conditions in order to make comparison.

#### **3.3.2 Second Stage:**

This stage included data collection, using interviews with contractors working in construction projects through West Bank. Taking into account that existing data on construction management in West Bank is very limited, a great deal of the research will be built according to the field investigation and local survey.

This phase includes the following activities:

- Clear identification of Palestine as the core study.



- Collection of data.
- Identification of local barriers and constraints of the survey.
- A pilot study, posing a question to key people experienced in construction management in Palestine to obtain their opinions.
- Making modifications according to the pilot study.
- For the survey of the Palestinian contracting companies, here are some themes used in the interviews:
  - planning
  - Pricing
  - Motivation
  - Basis of employments
  - Using Software

### **3.3.3 Third Stage:**

In this phase analysis is made (thematic analysis) using data from the interviews, knowledge from literature review and the information about Palestine and the construction work in West Bank. This phase will include the following activities:

- Extensive analysis of the information and data available.
- Conclusion and recommendations from the analysis.
- A framework is designed.
- Recommendation to try to solve some of the problems.
- Suggestions for further studies.

### 3.4 Research Approach:

Selecting a research method is a critical important decision the researcher needs to study the approaches to know which of them will satisfy the objectives of the study, and will fit with the information available and with the information needed. There are many approaches in research methods, such as the quantitative and qualitative methods, and the deductive and inductive method and both are related with each other.

Induction thinking is usually described as “moving from the specific to the general” which means going from observation to pattern the tentative and ends with theory. While deduction is “beginning with general and ending with the specific “which is assumed to be the other way around, begins with theory going to the hypothesis then to observation and ending with conformation (18).

#### 3.4.1 Differences between quantitative and qualitative approaches:

Qualitative and quantitative research are two of the main schools in researches, both methods has benefits and disadvantages, however there are researches where one is more useful than the other, Table 3-1 summarizes the main differences in both methods (18).

**Table 3.1: Differences between quantitative & qualitative methods**

<b>Quantitative approach</b>	<b>Qualitative approach</b>
Deductive	Inductive
Quantify variation	Describe variation
Numerical value results	Textual results
Closed-ended questions	Open-ended questions
Seeks to confirm hypothesis	Seeks to explore Phenomena
Uses questionnaires, surveys and structural	Uses interviews and focus groups

<b>Quantitative approach</b>	<b>Qualitative approach</b>
Describes characteristics of a population	Describes individual experience to understand group norms
Inflexible and brief	Flexible and detailed
Used to measure and predict to achieve final actions	Used to uncover thought and provide basis for decisions
Determines most effective price and most desirable product	Identifies needs and generates ideas and develops hypothesis

### **3.4.2 Method used in the research:**

As the table showed, Quantitative method is used to predict and measure to achieve final course of action, while qualitative is used to understand thoughts, opinions and construct a basis for decision making, and for the purpose of this research the researcher used qualitative method mainly and quantitative method when needed to help more in completing the picture.

As the researcher is seeking answers to many questions, while using predefined set of procedures to answer them, so qualitative method is the most suitable method to be used in this research, as this method aims to understand the problem from the local population involved, in addition it helps in understanding the beliefs, opinions and relationships of individuals in the field using personal observation and in-depth interviews with some focus groups, and as a result of this the researcher describes the variations and explains the relationships to explore the phenomena needed in construction project management.

Also deductive thinking and quantitative method were used in this thesis to fill in the gaps, and to complete the work and give brighter image and full pictures of the result needed.

### **3.5 Interviews analysis:**

One of the qualitative methods which is used identify patterns is Thematic analysis, in this research thematic analysis was used to analyze the interviews conducted with project managers, here are the steps used to reach the final themes that emerged from the data itself:

- Data was collected from the interviews, project managers and from the researcher's notes and observations.
- The text collected was examined closely, and the related and similar categories were gathered together.
- At this stage themes were developed according to the categories gathered from data.
- Data was studied according to the themes developed, to re-examine the relations.
- Once the themes have been collected and the literature has been studied, the researcher formulated theme statements.

### **3.6 Research population and sample size:**

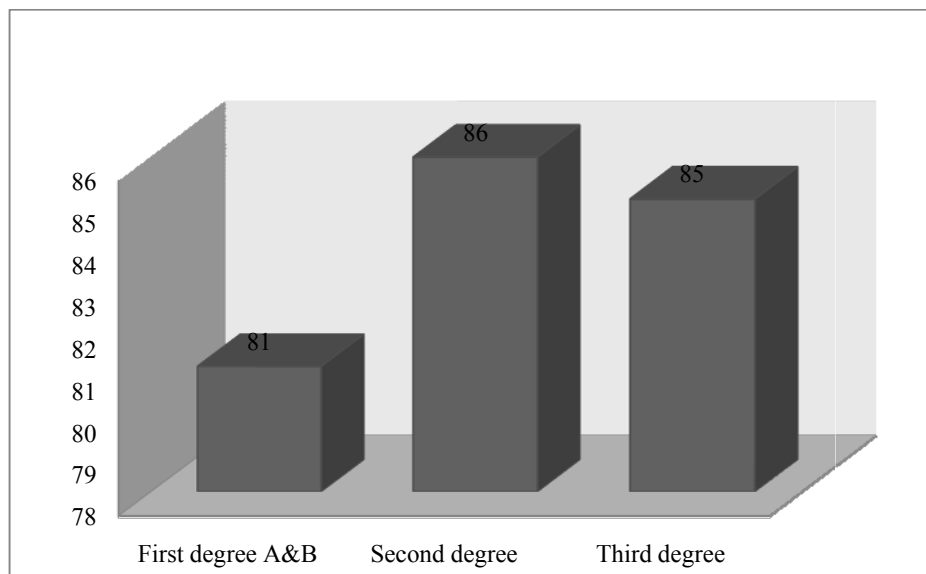
This research studies the construction work in the West Bank, specifically companies who are part of the Palestinian Contractors Union (PCU).

The PCU is the official, professional, economic and social entity that represents all contractors registered in the West Bank. At the time of

research there were 422 companies in the PCU including all types of contractors.

### 3.6.1 Types of contracting companies:

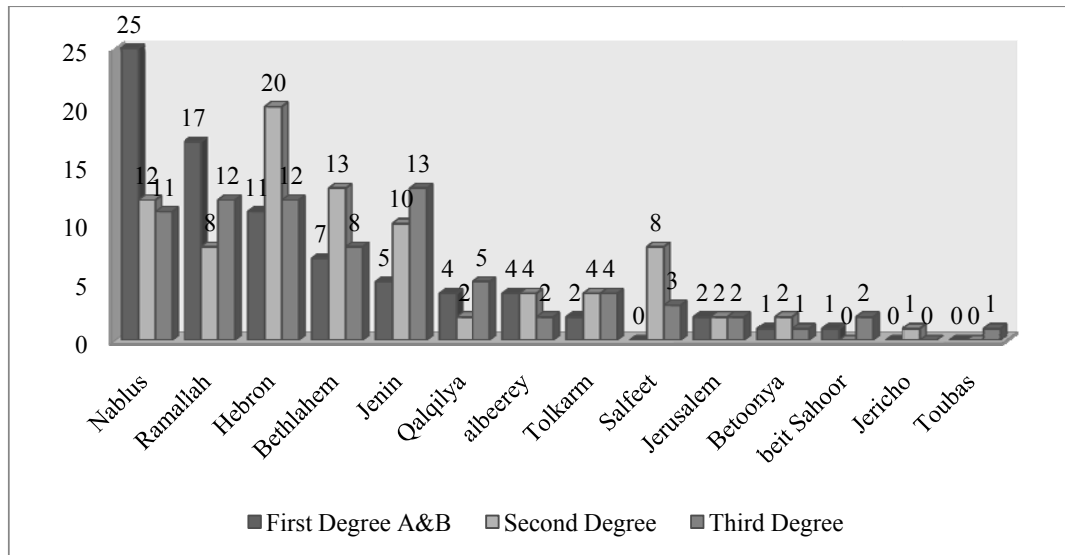
There are a total of 422 construction companies working in the WB. This number includes all kinds of companies, but this research is limited to studying the three main categories: A, B and C, which are 225 companies, that are involved in the construction sector with other sectors as roads electrical and other specialties, these companies are categorized as follows in Figure 3-2, the classification of these companies depends mainly upon elements such as capital, experience, history of achieved projects and many other qualifications (3).



**Figure 3.2: Categories of companies in this research**

### 3.6.2 Distribution of the companies in West Bank:

The companies are distributed through the cities of follows:



**Figure 3.3 : Distribution of companies in West Bank**

To study the performance of the construction companies in the West Bank, interviews were conducted randomly with project managers and contractors. The target contractors were identified from the companies registered with the PCU as first, second and third degree companies who are registered in the construction sector.

The researcher picked these three types of companies as they represent the biggest companies in the West Bank and they are allowed to participate in large projects according to their classification.

### 3.6.3 Classification of companies who participated in the interviews:

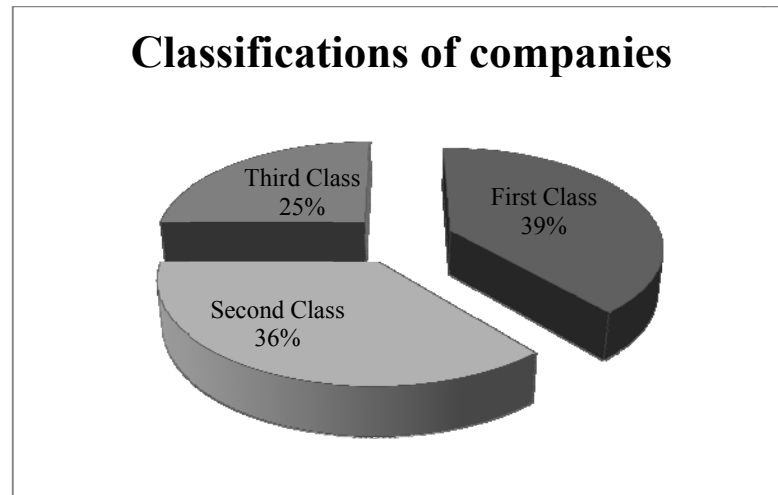
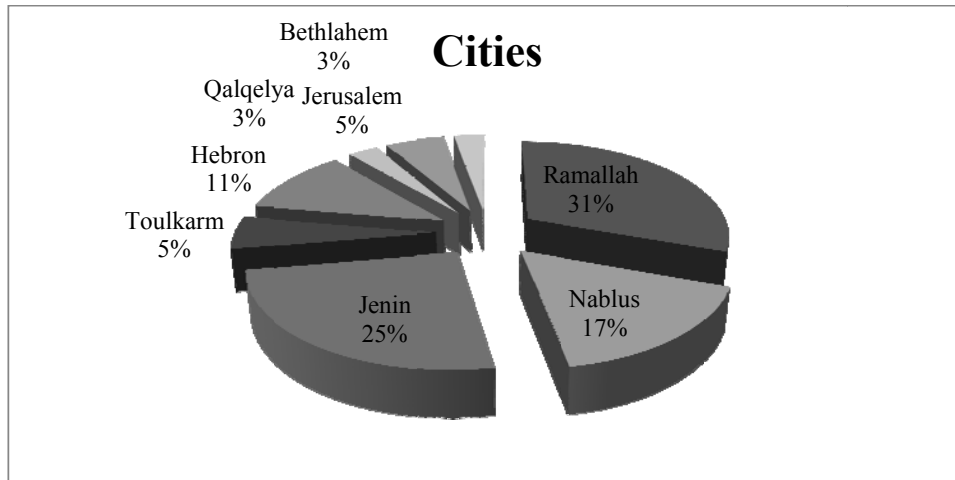


Figure 3.4: Classifications of companies

More than 70 attempts were made to do interviews with contractors; 36 meetings were conducted with various contractors in Ramallah, Nablus, Jenin, Tulkarm, Hebron, Qalqilya, Bethlehem and Jerusalem.

### 3.6.4 Location of sample companies:

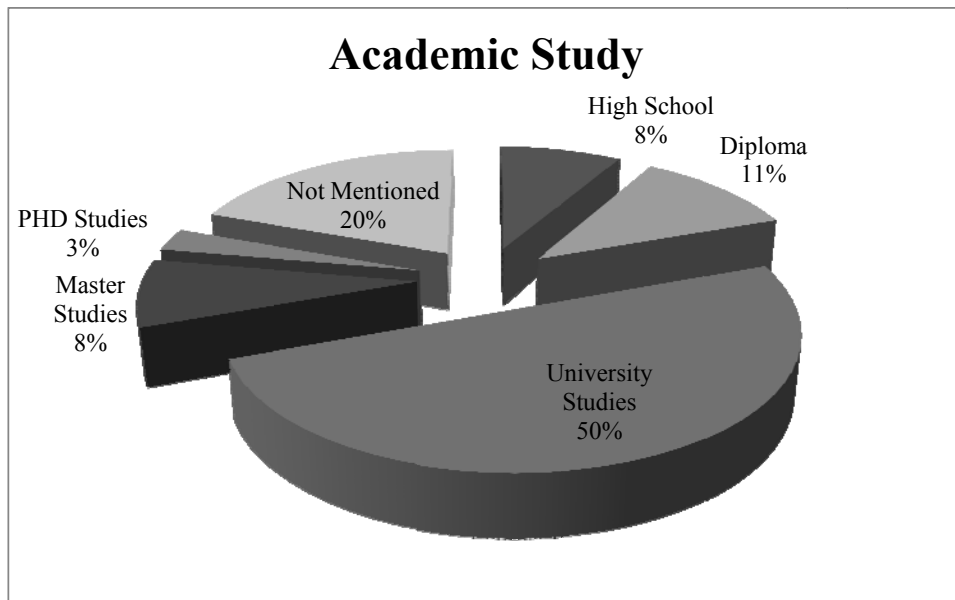
Location of companies who participated in the interviews as shown in Figure 3-5, the researcher concentrated the work mainly in Ramallah as it contains the biggest number of projects constructed in West Bank, and has the most important companies and the vital projects in West Bank, and then comes Nablus which is also one big city that has its importance in West Bank and has wide range of construction companies, also Jerusalem has an important part in the research regardless of the barriers made by the Israelis, and has its own problems regarding this closure, also most of the West Bank cities were part of this research as shown in figure 3-5:



**Figure 3.5 : Location of companies**

### 3.6.5 Academic study of the sample managers

The respondents had an average of between 10 and 20 years experience in the construction industry. Their formal engineering education ranged from high school to PHD. The next table shows the academic levels of the managers who participated in the interviews:



**Figure 3.6: Academic study of project managers**



**3.7 Conclusion:**

This research is a result of a study which adopted mainly the qualitative method and inductive theory that describes the variations and individual experience to identify the needs and the ideas through open-ended question in deep-constructed interviews which will result in constructing a framework that will provide a basis to manage construction project in West Bank and help in improving the quality of the work achieved by project managers in construction projects.

## Chapter Four

### Construction Industry in Developing Countries

#### 4.1 Introduction:

The construction industry is considered a main sector for generating economic growth in developing countries. It plays a main role in constructing physical facilities and in providing employment in different sectors.

The classification of “developed countries”, grouped by The World Bank according to GNP (Gross National Product) is as follows (19):

1. Low-income country, per capita \$975 or less.
2. Lower-middle income, per capita \$976 – \$3,855.
3. Upper-middle income, per capita \$3,865 - \$11,905.
4. High income, per capita \$11,906 or more.

Developing countries have many common characteristics. Although they may vary in climate, culture, religion and economic conditions, they have many things in common, such as:

- Dependence on agriculture and raw materials as their main sources of foreign income.
- Disparity of income: In developing countries a high level of inequity can be seen, that is, very rich people compared to the percentage of poor. This result in a dual economy grew that has the same rate of

consumption of the developed country but within the hands of a certain category in the population that has the wealth.

- The developing world usually suffers from a lack of infrastructure and basic services. Resources to improve and maintain existing infrastructure, and to modernize the construction sector are often lacking (20).
- The main characteristic of developed countries is the high population with the high population growth rate, combined with a high rate of unemployment affecting general living standards in the country. But developing countries have most dense populations in the world and the greatest number living in poverty.
- Most developing countries suffer from political instability, within government, or face internal political conflicts. These factors affect regional development, and make investors think twice before investing money in such places (20).

#### **4.2 The role of construction in developing countries:**

Construction is considered a key sector when measuring a country's economics because:

- ❖ Construction industry provides a significant contribution to GDP, between 7 -10 percent or more for all developing countries.
- ❖ This share of GDP is higher in developing countries than in developed countries, which makes the industry more powerful than in developed countries (19; 20) .

### **4.3 Major characteristics of the construction industry in developing countries:**

- In developing countries, human resources capacity, worker training and technological innovations, all critically needed in the construction industry, are underdeveloped.
- Developing countries have limited resources and low internal income, and must rely on external funding for infrastructure development and for big projects. This reliance complicates management because of insufficient funding.
- Fluctuating workloads in the industry.
- The dominance of the public sector as owners of most of the work. Most of the work goes through the governmental procedures that come from external funding stipulations (21).

Still there is a big advantage in the developing country as the researcher thinks , developing country is always full of hidden resources which is unused whether its human resources or natural resources, those undiscovered talents in developing countries can build and innovate a great history when they are used in a powerful right way.

### **4.4 Comparison of in three developing countries: Palestine, Jordan and Yemen:**

#### **4.4.1 Background:**

**Historical Palestine** is placed in the Middle East with Jordan to the east, Lebanon to the north, Egypt to the south and the Mediterranean Sea to

the west. Palestine has suffered greatly throughout history with different kinds of occupation.

The population in the Palestinian West Bank and Gaza is more than four million. The population growth rate is 3.9 percent per year. About 47 percent of the population is 14 years or younger (22).

**Yemen** is situated along the south-eastern corner of the Arabian island, its population is over 20 million with 531,870 square kilometers. Yemen was divided into two political systems for some time and reunited in 1990, and until this research was written it suffered many political problems and instability.

**Jordan** is called officially the Hashemite Kingdom of Jordan, Jordan, a Middle Eastern kingdom, is located between Saudi Arabia in the south and east, Syria and Iraq in the north, and occupied Palestine in the west. Jordan has an area of 89,213 square kilometers and a coastline of only 26 kilometers along the Gulf of Aqaba in the south (23).

Jordan is considered a modern nation, with a predominantly urbanized society. The Kingdom is classified as an emerging market with a free market economy by the CIA World Fact Book. Jordan has more free trade agreements than any other country in the region (24).

#### **4.4.2 Economy:**

**Palestine:** Palestinian GDP increased by 1.6 percent in the last period of 2009. Consequently, GDP per capita also increased, by 0.8 percent for the same period, amounting to \$354. For 2009, GDP per capita grew by 6.8 percent from the year 2008, causing the individual share to increase by 3.7

percent. The unemployment rate decreased from 25.8 percent to 24.8 percent between the 3rd and 4th quarters of 2009 only (25).

Over the past 30 years, the growth rate in the home construction sector was behind 3.9 percent. After the Oslo agreement in 2002 and the return of part of the Palestinian territory back to West Bank & Gaza, the demand for housing increased further. Home construction grew to 57 percent of total construction in West Bank & Gaza. Construction of office buildings also increased, for new companies which were established, and for the Palestinian Authority, which started renting buildings for its different ministries and agencies (25).

**Yemen** is considered one of the poorest countries in the Middle East, despite its natural resources like oil, gas and tourist attractions, with the location that gives the country so much as exposed to two important shores, still the country suffers from many problems such as economic mismanagement, high population growth, insufficient water supply, security problems and external debts. (26)

**Jordan**, a small country with limited natural resources, is currently exploring ways to expand its resources, but still depends on external sources for the majority of its requirements. Jordan is classified by the World Bank as "a lower middle income country" (27).

#### **4.4.3 Construction industry:**

##### **4.4.3.1 Construction industry in Palestine:**

Building and construction are from the major parts in the leading economic sectors in the West Bank and Gaza, especially residential

buildings. Palestinians prefer home ownership, individual homes with large spaces; living in apartment buildings is the least desirable. The average size of a Palestinian family in the WB/G is six persons. , over the past couple of years many construction projects have been started in the West Bank, such as Rehan neighbourhood in Ramallah, Jenan in Jenin and many others.

In Gaza, however, because of the scarcity of land and greater population density, the need for new homes is even more than in the West Bank. A lot of investments are expected to be made in building new houses, especially for Palestinians whose homes were demolished by the Israeli army. Gaza is one of the most densely populated tracts of land in the world: Approximately 1.5 million people live in an area of 360-square kilometers. The growth rate is 3.90 percent per year (24) .

The construction industry is led by the private sector. According to Palestinian Central Bureau of Statistics figures 348 companies work as contractors and employ 3,500 workers. But in the public sector, most projects are devoted to infrastructure and road works, which are financed by international donors, mostly USAID. Most of these projects focus on water supply, sewage disposal, road construction and job creation ventures(28) .

#### **4.4.3.2 Construction industry in Yemen:**

As in most developing countries, the construction industry in Yemen is growing but is not fully developed yet. Yemen suffers from many problems, obstacles and challenges in all sectors, such as construction. But the need for proper housing increased due to urban population growth, which in 1994 increased by 33 percent. The need to build adequate housing

for low income people is a major concern for the Government of Yemen (29).

Yemen has a unique method of construction and a special style of architecture that is admired. Until a few decades ago the traditional style of the buildings in Yemen was successfully maintained. Pressures developed the introduction of modern building methods. The revolution of modernization made it hard for the local construction industry to cope with fast growing methods of modern construction. Rapid growth resulted in a shortage of skilled labor and construction materials. Also, projects often were poorly designed and managed, and an absence of national building codes and standards added even more complications to the construction industry.

After the reunification of Yemen in 1990, economic and social conditions started to deteriorate; this brought even more confusion and difficulties in many sectors, including construction.

#### **4.4.3.3 Construction industry in Jordan:**

The construction industry in Jordan has been growing steadily since the 1970s. Its economy has been helped by flowing into the country from Jordanian workers in the Gulf and the Arab countries.

Jordan population is growing fast. The capital, Amman, has almost doubled in area over the last 30 years. Since 2009, the construction industry has expanded 2.8 percent as a whole. "It's a very good signal that we might see further growth in the first quarter of 2010 as this is the first pick-up in GDP growth since a year ago when Jordan began to feel the impact of the



global financial crisis,” said one manager who is the head of research at Capital Investments financial firm (30).

The residential market has witnessed an oversupply of luxury units in the capital Amman. Not only the residential market, but all kinds of construction work developed greatly in the last two years, for many reasons, including, declining oil prices in 2009, the political situation in Iraq and Palestine, the world economic crisis and the easy banking facilities that the Jordanian banks offer.

The construction sector in Jordan is one of the essential drivers of the national economy. It has the support of the government through a true partnership with the private sector with the Union Contractors, which includes more than 1,376 contractors; the Engineers Association, which includes about 83,000 engineers; and the Assembly of Investors in the housing sector, which includes about 1,300 the investors and consultancy offices, which has about 1,200 office consultative partners, who are all representing the ministry and members of the partnership with the private sector in the Ministry of Public Works and Housing . The construction industry provides jobs for more than 12 percent of Jordan’s work force, and produces nearly 20 percent of the local GDP. It supports more than 150 different careers, making construction a vital part of life in Jordan (31).

#### **4.4.4 Construction materials &Resources:**

##### **4.4.4.1 Palestine:**

Stone is the main building material in West Bank, because it is readily available, cheaper than wood and has a beautiful style when

finished. It is estimated that there are 297 quarries and 5,633 stone and marble cutting operations in the West Bank and Gaza. Also climatic conditions gives stones big advantages over wood, as the winter season is relatively short and mild to hot weather prevails throughout most of the year. All other materials are imported, including lumber to make doors, furniture and kitchens; steel; cement; aluminum;, glass. Heavy equipment and construction machinery is also imported.

Among other unique characteristics of life in Palestine, the construction industry stands out from other parts of the economy. Construction is heavily affected by economic cycles and political environment, which change frequently and dramatically in Palestine. The industry has a significantly high rate of business failure and suffers in other ways, such as corporate collapse and bankruptcy; such failures are common terms due to operating risks in sometimes uncertain conditions. All over the world, contractors compete fiercely in the marketplace, exposing themselves to risk of failure, as well as the prospect for success. Palestine is no exception (32).

The construction sector has been seriously affected from the first uprising in 1987 through the second intifada, which began in 2000. About 57,000 workers were employed (in mid-1999), according to the Central Bureau of Statistics. This reflects a strong benefit to the local economy, as it represents approximately 31.5 percent of new jobs generated in the private sector. These figures tell only part of the story of Palestine; they should be viewed in light of the occupation, which has greatly contributed to shaping Palestinian the social and economic life, and caused suffering and damage across most levels of society. The government of Israel has for many years

implemented a policy of siege, closure and isolation as a major political pressure tool in the occupied West Bank and Gaza. This policy has had an undeniably disastrous effect on all aspects of the Palestinian economy, especially the construction industry (33).

#### **4.4.4.2 Yemen:**

Yemen owns great reserves of many construction materials, such as glass, sand, granite, marble and gypsum, this reserve if used properly can help Yemen to achieve a state of self reliance, also Yemen has three huge cement plants, and also they can satisfy the needs of Yemen if used in a better way, but unfortunately Yemen imports many of these natural resources which are available in the country. Stone as basalt is available too but uses only for the wealth group in construction who can afford it, other ordinary building are made of clay bricks and timber, many other materials are imported but prepared in Yemen such as doors and windows (34).

#### **4.4.4.3 Jordan:**

Jordan has many resources used in construction industry, providing a major benefit to these sectors. Resources include ornamental stones and marble, cement, sand, gravel, crushed stone and other materials. Jordan also has a good reputation regionally when it comes to working with metal and producing metal structures for various construction purposes. Jordan is also well known for having a large available pool of skilled laborers and technicians. In addition, thousands of engineers distributed over many sectors are considered well qualified. And many training opportunities are available, such as work and study programs through the Specialized

Training Institute; these allow the industry to prepare human resources more efficiently. Jordan is a regional centre for such training (24).

Still, as with any country, Jordan and its construction industry face many problems and risks. In Jordan companies can be classified in five categories, according to the Ministry of Work and Contracting Association. These categories depend on budget, assets and employees, and give the company the qualifications to undertake the project which meets its needs (35).

#### **4.4.5 Challenges & problems in the three countries:**

##### **4.4.5.1 Palestine:**

There are many important factors affecting the Palestinian life economically and socially, as well as the major factor of the occupation. These include:

- 1- The gap created between legal authority and the executive was one of the reasons for a steady decline in the economic situation. This created an imbalance in administrative standards in terms of performance and compatibility between the authorities.
- 2- Disruption of the organizational and administrative structures of government institutions in all indicators. This is in addition to the absence of mechanisms for scientific recruitment policy and excessive study of the absorptive capacity of work requirements.
- 3- Lack of planning and priorities for economic and social work as an important factor in the development of strategies for early action.
- 4- Lack of understanding and awareness of Palestinian special policy in economics, which was adopted and depended entirely on the

Israeli economy in all aspects, leading to a lack of economic vision based on the relative reduction of this relationship to secure the future and maintain the gains achieved economically.

- 5- Corruption and bureaucracy as negative phenomena resulting from the wrong methods of work and lack of responsibility to the public interest.
- 6- Using foreign loans which are not consistent, in fact, with the programs and development.
- 7- The absence of any type of protection for Palestinian products with comparative advantage in terms of legal and regulatory matters. This led to the closure of many industrial enterprises such as sewing, food and stone factories, and which no doubt led to a significant decline in contributions to this sector's development (36).

The reasons mentioned above require serious and accurate view to developing mechanisms for future actions in order to maintain good future for our coming life.

#### **4.4.5.2 Yemen:**

Yemen suffered many difficulties in the construction field:

- One of the problems Yemen shared with all developed countries is the high cost of construction materials and the continuous rise in land prices. As a result, clients needing to reduce their expenses tended to cut corners by eliminating or minimizing the technical side of projects, for example by reducing the engineering staff in all stages of the project life cycle, either in the design stage, implementation or supervision, by reducing staff salaries, or not picking the right

experienced people, whose salary expectations would have been higher. These cost reductions all affect the quality of a project and lead to more difficulties, which in turn result in cost overruns and lack of discipline (34).

- Another cause of problems in Yemen's construction sector is the transition from traditional styles to modern buildings. New construction methods resulted in inadequate planning, as a result of unclear methods with new technology. Also, the urgent need for projects and the limited time to complete the work made it harder to plan projects.
- Fluctuations in currency exchange rates will affect the projects and increase the risk of all costs, such as unstable prices from suppliers. If materials are imported, fluctuating exchange rates add even more risk, thus raising the price of needed materials (8).
- Increasing profit margins to protect the contractors and investors, in order to cover any delays in payment.
- Inefficient and inexperienced management will add more problems to the planning of the projects. At the same time, low salaries for engineers and other staff will lead to lack of discipline and will cause expert technicians and engineers to emigrate from Yemen, thus causing a shortage of skilled human resources.
- Most tender documents and the contract conditions are vague or difficult to understand.
- There is a lack of coordination between the private and the public sectors.

Yemen requested assistance from the United Nations Industrial Development Organization (UNIDO) and from the World Bank in order to explore ways of developing the construction industry in Yemen. Some recommendations were put into practice and some improvement was achieved. But much remains to be done to improve the conditions in Yemen (29).

#### **4.4.5.3 Jordan:**

- The lack of experience and scientific knowledge is considered to be one of the major factors affecting the construction industry. This can include a lack of qualified people running a company, or managers who lack sufficient academic and administrative experience (35).
- Delays in payments are considered a very important risk, especially in second class companies, because financial troubles affect the progress of a project, and also affect the ability to meet tax payments. These factors can make companies reluctant to take part in big projects.
- The lack of supervision and monitoring by designers, and the lack of detailed tender drawings consume time and money and lead to lower profit for the contractors.
- Lack of accurate quantity tables decrease the profit of the contractor's company and consume time and labor to correct the quantities.
- The need to establish new legislation when working with the Ministry of Public Work and Contractor's Association and all parties that work in the construction industry. This is necessary to establish a new mechanism with new rules that will rearrange the work and protect all parties.

- More research should be conducted to provide data needed in the construction industry and to be provided to the contactors when necessary (35).
- The increasing share of foreign contractors in the construction market, construction in Jordan suffers from acquisition of foreign contractors , as their experience is much wider, and their financial resources is larger compared to the limited financial resources and technical resources available to local contractors, also the requirement of governments funding projects which states that local enterprises to enter foreign contractors in bids, they should work through foreign companies, as a result of that the main share of big project will go to these foreign (37).

#### **4.4.6 Recommendations to solve problems:**

##### **4.4.6.1 Yemen:**

The construction industry in Yemen must take many steps to solve its problems, as Sultan mentioned in his study (24). The industry should eliminate the execution of unsuccessful projects, stop wasting natural resources and ensure that new buildings and infrastructure will match the needs of the country in the future. To achieve this, the Yemen construction industry must ask itself and provide answers for many questions such as:

- “How to help a struggling construction industry to become economically sustainable ?
- Will sustainable construction reduce the relatively high cost?
- What techniques are most suitable for Yemen in particular?



- Is sustainable construction really a viable solution?
- What are the best methods of introducing and enforcing sustainable projects?
- Will sustainable construction projects that have environmental, architectural and technical restrictions be acceptable and affordable by the public and the contractors?
- Most important, what are the indicators can be implemented for monitoring construction development?" (34).

Here are some suggestions to solve the problems:

- Spread knowledge of the economic importance of the construction projects to the country among people working in the private and public sectors.
- Try to improve the standard and the specifications of the construction documents to be suitable for the Yemeni market and to encourage the use of local resources.
- To achieve the previous step, more work and research is needed in order to develop the local construction materials that should be stipulated in the technical drawings and in specifications.
- Training and education should be provided to all professional workers and engineers to follow the rapid changes in technology. Also, the performance of contractors should be improved.
- Construction costs should be minimized. To do that, contractual risk should be reduced and profit margins should be calculated carefully.

- Clarify the laws that deal with construction affairs and encourage the establishment of local standards and codes in order to make contractual documents clear and efficient (29).

#### **4.4.6.2 Jordan:**

In order to solve the problems some points must be addressed (38; 35):

- As most problems in Jordanian construction companies arise from financial issues and scheduled payments, the contractors must study carefully all issues concerning cash flow and payment in advance.
- The existence of a feasibility study for an acceptable outcome, taking into account the worst-case scenario (39).
- The existence of a clear financial plan that discusses the cost of the project and funding sources and program payment in full.
- Availability of resources and raw materials at a reasonable cost.
- The existence of markets for goods produced to be able to accommodate the project's production.
- Availability of equipment, machines, transportation and appropriate contracts at a reasonable cost.
- The contractor and the staff must be experienced and trustworthy as well as efficient in construction management.
- Availability of licenses and approval required for all the work done which is studied carefully, especially for the contracts.
- The availability to cover the exchange-rate risk and to take into account the possibility of delay in completion and the delay in payments and cash flow.

- Provide adequate capital for the project with a reflection on how to cope with increased costs.
- The existence of adequate insurance, taking safety matters into account (38).
- Study of risks and all its solutions, and consideration of safety as one of the evaluation criteria in all bidding (37).

#### 4.5 Summary

Table 4.1: gives a summary of the researcher's study about construction industry in the three countries Jordan, Yemen and Palestine:

**Table 4.1: Comparison between three countries**

No.	Problems facing PM.	Jordan	Yemen	Palestine
1-	Lack of P. M. experience		✓	✓
2-	Delay in payments in government projects	✓	✓	✓
3-	Lack of detailed drawings and accurate quantity tables		✓	✓
4-	More research needed to improve project management work	✓	✓	✓
5-	Increase of foreign contractors	✓	✓	
6-	High cost of construction	✓	✓	✓
7-	Adopting new and modern building designs	✓	✓	
8-	Problems in currency exchange	✓	✓	✓
9-	Shortage of skilled labor	✓	✓	✓
10-	Low salaries of engineers that will lead to loss of experienced people to other countries	✓	✓	✓
11-	No expansion of work outside the country	✓	✓	
12-	Specialty in work	✓	✓	

- 1- Project management experience is very important in the successes of projects. According to many published articles, Jordan has more experienced management than Yemen and Palestine, the experience is limited to certain companies. Still, project management is better implemented in Jordan.
- 2- Delays in payment remain a problem in all three countries.
- 3- Inaccurate detailed drawing is a big problem in Palestine and Yemen. The problem exists in Jordan, but to a lesser degree than in the other two countries.
- 4- Research and development need to improve in all the three countries in order to be compatible with the global economy.
- 5- Foreign contractors can hinder work. This is mostly true in Jordan and partly in Yemen. Palestine does not suffer from this problem because of Israel's policy of closure.
- 6- All three countries suffer from high costs, but the problem is greater in Palestine because of Israel's control of borders and restrictions on the movement of materials into the West Bank.
- 7- Palestine is gradually adopting new design methods, but tends to maintain the spirit and concept of traditional appearance. As a result, Palestine's construction industry does not deal so much with unfamiliar building materials or techniques that are not part of the local heritage. However, there are some buildings here and there that Palestinians consider odd or not part of the Palestinian traditional culture.
- 8- The three countries suffer from the currency-exchange fluctuations which affects the construction work.

- 9- All three countries suffer from the lack of skilled labor, as many professional workers leave to work in the Gulf countries, where salaries are higher. Palestine has plenty of professional workers, but they often seek work inside the Green Line for better wages. However, if working conditions and salaries are comparable in the West Bank, which is a better solution for Palestinian workers.
- 10- Palestine suffers severely from the low salaries for engineers and because of the lack of work. The exception is in Ramallah, which has a high concentration of projects. Many engineers seek to move to Ramallah, or to other countries, where they can earn better salaries. Thus, Palestine's construction industry suffers from a scarcity of qualified engineers.
- 11- Palestinian companies suffer from an inability to expand their work outside Palestine because of Israel's movement restrictions.
- 12- It would be better to have companies that specialize in certain types of construction, such as hospitals, clinics, factories or infrastructure. In Palestine this issue is mixed up, because many of the contracting companies work in many sectors. This restricts creativity and reduces experience in one major category.

#### **4.6 Conclusion:**

- For a project to be completed successfully, respecting the budget and implementations of deadlines, professional management of operations on site are all needed. The technical complexity, the importance of works realized on time, constraints related to resources, programming and control are also needed with thorough and detailed attention.

- The construction process is not a self-adjusting mechanism. It requires coordination and involvement of experts for the activities to be conducted according to the plans. Events that are unpredictable can occur. In such varying circumstances, cost and duration of the project are constantly changing, and can suddenly deteriorate. Effective management is not only desirable, but is mandatory in order to achieve a satisfactory final result.
- Overall, looking at the comparisons conducted by the researcher, Palestine's industry can be described to be in a better condition than Yemen's, but behind the achievements of the industry in Jordan, but as a growing country with all the obstacles, Palestine is on the right track if given the chance to develop, as it owns the resources and the will to become a better country.

## **Chapter Five**

### **Analysis and Results**

#### **5.1 Introduction:**

A survey was done in Palestine (West Bank) by interviewing project managers who are members of the Palestinian Contractors Union (PCU). The interviews were conducted in Nablus, Jenin, Qalqilya, Ramallah, Tulkarm, Bethlehem and Hebron with West Bank contractors who work in first, second and third degree companies, categories determined by the PCU.

Twenty-three questions were discussed, in which respondents could express themselves freely. Each question was analyzed and some answers were quoted precisely from the respondents in order to express their point of view. This is the main attraction of free-text analysis, to let respondents express themselves without constraints.

#### **5.2 Obstacles and barriers:**

The interview stage was difficult for many reasons:

- Lack of cooperation among contractors was a major symptom which was noticed clearly, and sparing time for such interview was not easy for them.
- Many of the contactors did not make the scheduled interview but delegated it to the company engineer. Others, although a minority, refused to be interviewed, or said they were not interested.

- Many contractors just gave simple answers to questions, rather than discussing broader issues of conditions in their companies. Sometimes they just gave me what they thought were the right answers. In some cases they declined to discuss topics, such as profits, bidding, costs and how contractors compete with one another.
- A lack of studies concerning project management in the West Bank made investigating this field harder than expected, as there are no local references to consult.

### **5.3 Results:**

Comparative and thematic analyses were used to analyze the data; the results were tabulated when possible according to the majority of the answers given. It should be mentioned that due to the nature of the answers (free-text comments) and the fact that the phrases and words used by respondents to describe the answers could be interpreted in more than one way there is some overlap between concepts, and still some answers were not that clear. However, all such notes will be mentioned with comments on every question.

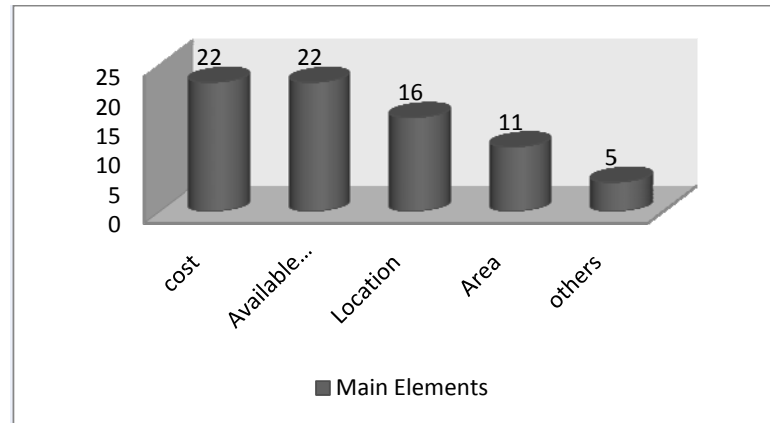
#### **5.3.1 Initiation phase:**

This is the preparation stage for a project. At this time, a company decides which elements should be considered before participating in a bid.

##### **5.3.1.1 Main elements to choose a bid:**

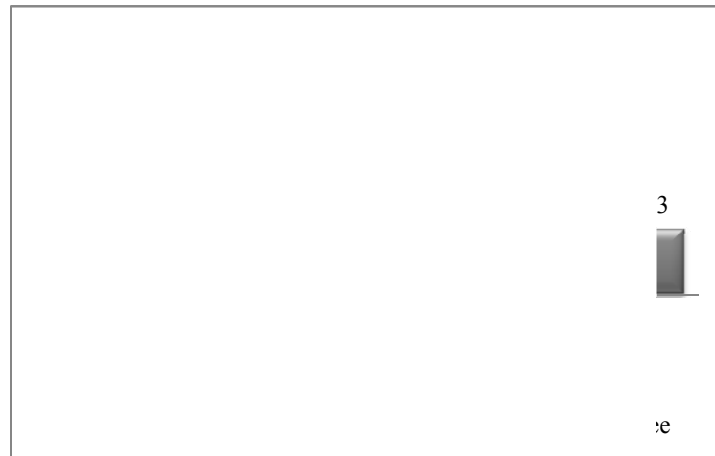
The following chart shows the results of the main elements chosen when picking a bid:





**Figure 5.1: Main elements to choose a bid**

As indicated, the most important factors in deciding to start a project are cost and profit. This factor made up 29 percent of contractors, taking into consideration the overlap between elements and when more than one element was picked. Overall, it indicates that West Bank contractors' decisions tend to be cost oriented.



**Figure 5.2: Main elements to choose the bid VS. the classification of the company**

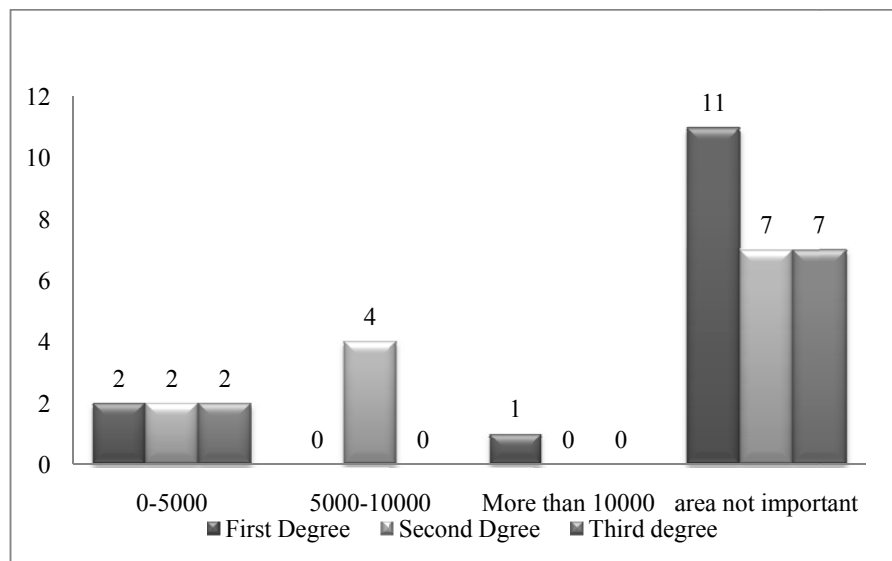
For first degree companies the most important consideration was the availability of resources. When resources were determined to be available, the next consideration related to corporate cash flow. Availability of

resources combined with cash-flow calculations are prime considerations for all Palestinian contractors.

### 5.3.1.2 Selecting the project:

Before selecting the bid, there are many considerations to have in mind. Local contractors were asked the following question in order to understand the main reasons for participating in a bid.

The majority, 69 percent, agreed that the area of the project is not important in selecting bids but cost is much more important than areas.



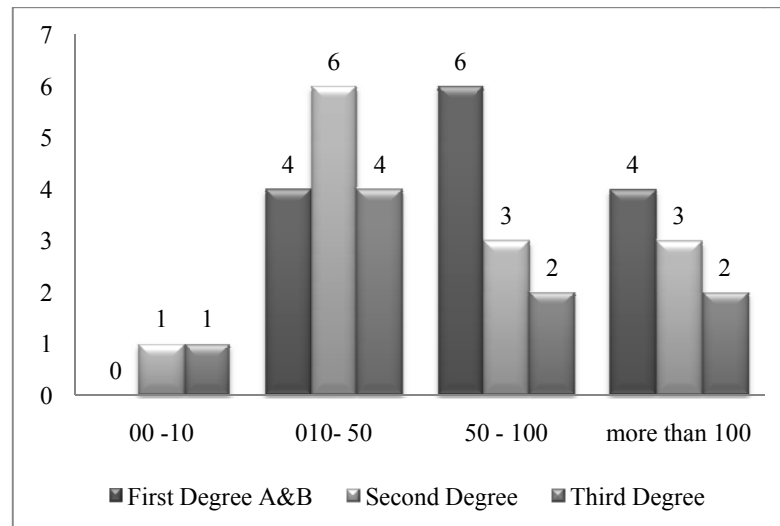
**Figure 5.3: Size of project achieved vs. project quantity**

For first, second and third degree PCU rated companies, when asked about area, answers tended to be similar among the three categories: Area was not the main element to consider when selecting the project. Other elements sometimes force big companies to take small projects, just to stay in the market, or to let the companies and their team stay in business. Also large companies sometimes refuse to take part in a big project if the other participating parties, such as the funding organization or the supervisor, do

not go along with the company, or may have experienced a difficult experience in working together in previous project.

### 5.3.1.3 Experience:

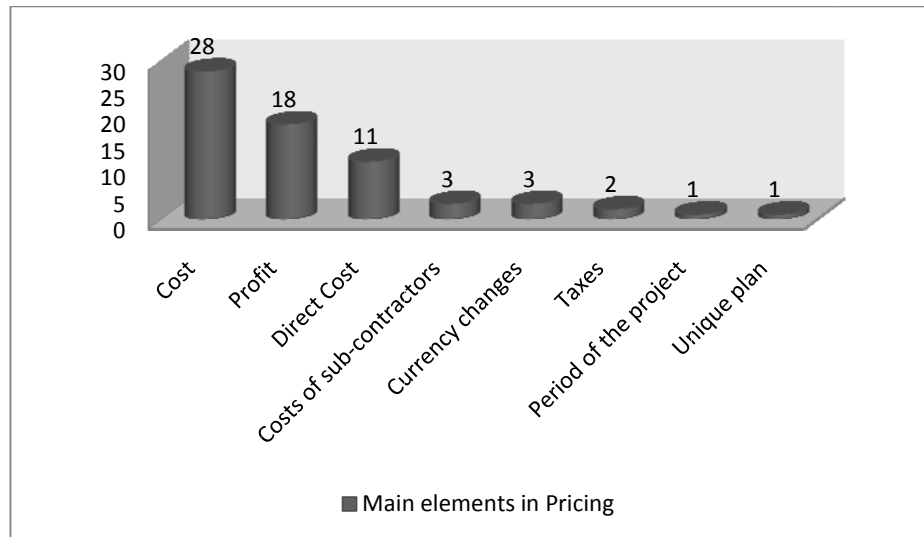
To understand the experience of the companies and the number of projects undertaken. Companies were grouped into those who had completed between 10-50 projects, 50-100 projects and more than 100 projects. The majority of the companies had done between 10 and 50 projects. This indicates that many West Bank projects are by the sample companies that were established not so long ago.



**Figure 5.4: Number of projects achieved compared with the classification of the company**

Figure 5.4 shows that the more projects undertaken, the higher the company will be classified. Grade A companies will gain more experience and will be stronger in the market, also this is a part of its classification in PCU which enables the company to participate in larger scale project.

### 5.3.1.4 Pricing:



**Figure 5.5: Main elements in pricing**

All project managers agreed about the importance of preparing a plan; but during the interviews few written or drawn plans were seen or described. The two major elements that are studied before entering a bid are cost and profit, followed by direct costs, followed by other elements.

### 5.3.4 Planning phase:

Preparing a plan is one important step in managing a project. Good planning takes time, effort and costs more, but the results can reduce risks, reduce waste and fulfill the client's requirements. Planning involves items such as:

- Integrating design, construction and ongoing operation and maintenance of the facility.
- Risk assessment, allocation and management throughout the project.
- Value management and value engineering to eliminate waste and inefficiency.

- Performance measurement and reporting.
- Use of control mechanisms for quality, cost, time and management changes (40).

When project managers were asked about planning the answers were that all project managers prepared a plan; but interviews did not indicate that many plans were followed thoroughly; instead, events were dealt with according to developing circumstances rather than according to the primary plan.

“Plan the work, and then work the plan.” This is what planning really means. Everyone agrees that good planning will lead to good results, but following this plan, is more important than just writing one. At the implementation stage, a plan should not be a miracle, but just reasonable, so it can be implemented.

Good planning takes time, but the effort ensures that time and cost are saved later, and risks are minimized. It ensures that client requirements and organizational values are understood and fulfilled.

Good planning helps to deliver better design; reduces waste and trains the project team to anticipate and deal better with risks. Good planning involves integrating design, construction and maintenance of the facility (41).

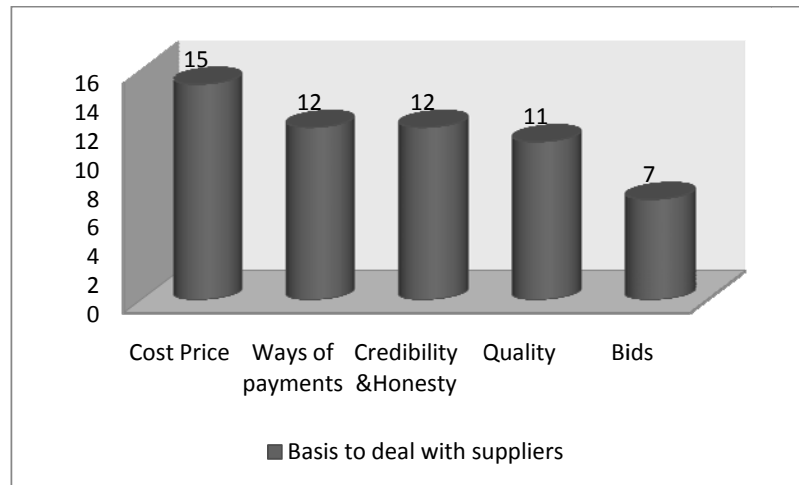
#### **5.3.4.1 Providing the needs for the project:**

Many project managers said that renting machinery often is much cheaper than buying it. Owning machinery adds costs for maintenance and operation, insurance and storage. Renting equipment can be much cheaper.

As for labor, when Palestinians are allowed to cross the Green Line to work inside Israel, this adds another cost complication: finding professional workers in the West Bank becomes harder and more expensive because the labor pool in the West Bank has shrunk.

Most managers estimated bidding costs by themselves. Other accounting issues were handled by an accountant. Legal issues are dealt with by professional people, when needed.

#### 5.3.4.2 Suppliers & construction materials:



**Figure 5.6: Basis to deal with suppliers**

In dealing with suppliers, the most important factor was cost, followed by means of payment, (whether cash or installment payments). A third factor considered is the credibility and honesty of the supplier. Quality was ranked as fourth most important; when asked why, many managers answered that they just followed and stuck to the specifications in the bid.

Other elements mentioned were including tax bills when purchasing, being on time and schedule as a supplier.

### 5.3.5 Execution Phase:

#### 5.3.5.1 Using software:

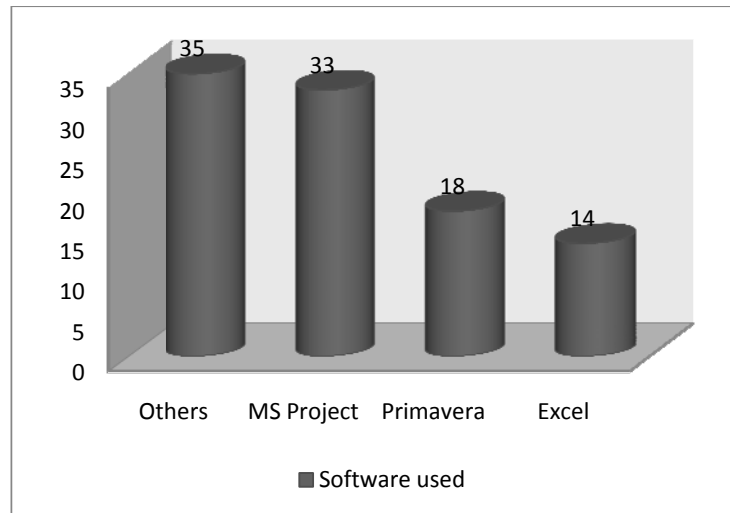


Figure 5.7: Software used by construction companies

Software helps to manage projects, but does not manage them. All project managers agreed that computer software is useful in project management. The most used are Microsoft Project (MS Project) followed by Primavera, and then other programs. One manager who used Primavera was asked if his project was progressing according to plan. He answered: *“this plan was prepared at the beginning of the project and now it doesn’t work because so many things since then changed”*

Unfortunately, many project managers talked about using computer software in preparing plans, but admitted that they did not use the software that much, or did not make the best use of it.

#### 5.3.5.2 Cash Flow:

All managers agreed in interviews that there is no commitment by the funding parties to pay their bills on time, especially in local government

projects, which suffer from bureaucratic procedures and lack of commitment by the employees. Therefore, government projects are seen as difficult as, and less desirable than private sector jobs. One project manager said: *“I will not work if all the projects are for the government only”*.

However, managers found that NGOs such as USAID, ARD, CHF, and ANERA were more committed to paying bills on time.

One manager said: *“There is a strategy in our company which is to provide 25 percent from the value of the tender, to comply the payments for the suppliers”*

#### **5.3.5.3 Risks:**

All contractors said that they should prepare themselves for risks, and the most important risk mentioned was currency fluctuations. Other risks differ from project to project.

Many procedures are essential to compensate the contractor for currency change:

- Fix the price currency from the beginning of the project, to help protect contractors the rate fluctuations.
- Compensate the contractors against the loss from currency changes.

The government has succeeded in resolving risk problems with the contractors. But with NGOs the problem remains.

Most projects are covered by some type of insurance, but insuring companies often do not follow the procedures on site, they cover simple accidents, but when there are more serious claims they try as much as they can to avoid responsibility and blame the contractor for



not fulfilling safety rules, to avoid many problems that may arise all contractors should stick to the Unified Palestinian Contract”.

#### **5.3.5.4 Safety Measures:**

All projects are subject to laws and safety procedures from the engineering associations the PCU, both the project owners’ rules and the local government laws. These apply in most projects, but precise on-site implementation depends on enforcement by managers and the xfunding organizations. Important measures include the provision of safety clothing, clear safety procedures, emergency phone numbers and a safe working environment.

Here are some notices mentioned:

*“Require safety procedures such as:*

- *Safety barriers.*
- *Warning signs.*
- *Protective clothing and footwear”.*

Most large projects have insurance for a variety of risks, ranging from theft to fire. By buying insurance, they have effectively transferred risk to the insurance company in that, if anything occurs the insurance company will compensate the company.

But insurance is not the only method the company can use to transfer its risk. For example, using subcontractors or hiring an expert to do the work, can also transfer risk. With fixed-price contracts, project managers know exactly what the cost of this part of a project will be. They have

effectively transferred the cost and schedule risks from the project to the subcontracting firm; any overruns will be the responsibility of the subcontractor. The only downside to this scenario is that the subcontractor will probably make the bid higher to make up for the risk it is assuming. Another type of contract for service is called a reimbursable, or cost-plus, contract. Reimbursable contracts pay subcontractors based on the labor, equipment, and materials they use on a project. In this type the project is not able to transfer risk, but when the work to be performed is poorly defined, or the type of service is open-ended, a reimbursable contract is the answer, and is the only type a subcontractor will sign. Clearly, transferring risk to another party has advantages, but it also introduces new risks (38).

### 5.3.6 Closing phase:

Many items should be checked and studied like:

#### 5.3.6.1 Main reasons for failure of construction projects:

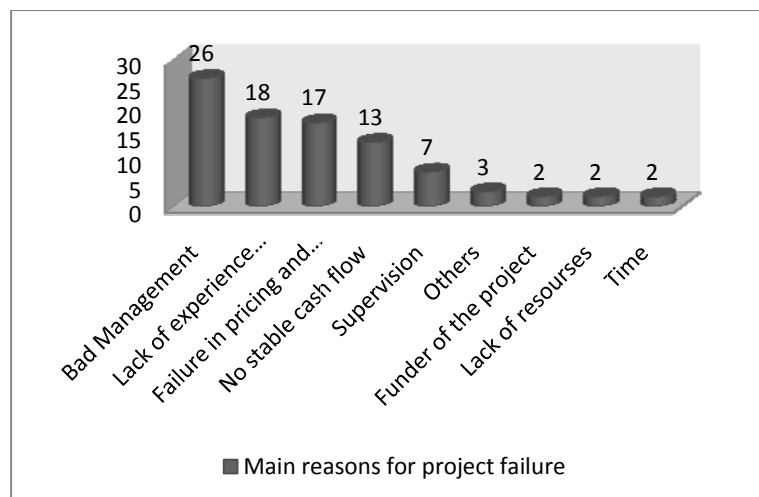


Figure 5.8: Main reasons for project failure

As seen in the figure 5-9, with the overlapping and the selection of multiple items, 29 percent of the contractors agreed that bad management is

one key reason for the failure of a project. Lack of experience is next, at 20 percent, followed by failure in pricing at 18 percent; other reasons were also given. Project managers agreed on these reasons for project failure:

- Lack of a good feasibility study at the beginning of the project (leading to economical problems and social failure).
- Lack of commitment by the funding party to paying bills on time (cash problem issues).
- Financial weakness of the contactor in conducting such projects (bad management).
- Bad or weak supervision (inexperienced engineers).

It should be clearly understood that if the project fails then the failure affects the contactor, owner, designer and supervisor. The failure is for all of them.

#### **5.3.6.2 Lessons learned:**

All project managers said they document all project activities in projects in daily, weekly and monthly reports. But the problem is many projects repeat past mistakes. If this happens, what is the use of documenting the events and the problems if we don't learn lessons from them?

Here is one of the comments: *“We don't always document all the problems we faced, but we know and recognize and make use of them in future projects”*.

Most of the project managers agreed that they document the events and the problems so in future lessons can be learned ,but as noticed by the

researcher many mistakes are repeated in more than one project , so is documenting these problems in accurate enough, or do contractors really learn from their own mistakes?

### 5.3.6.3 Project success:

All project managers considered their project successful, but some of their projects faced difficulties, and in a survey managers said:

- *“The most important sign in succeeding in projects is completing it on time and within pre-defined cost”.*
- *Conviction and self-satisfaction”.*

Most of the project managers agreed that their projects are successful, and they connected success with time and cost mainly, regardless of the quality or the owner satisfaction.

### 5.3.6.4 Indicators of project failure:

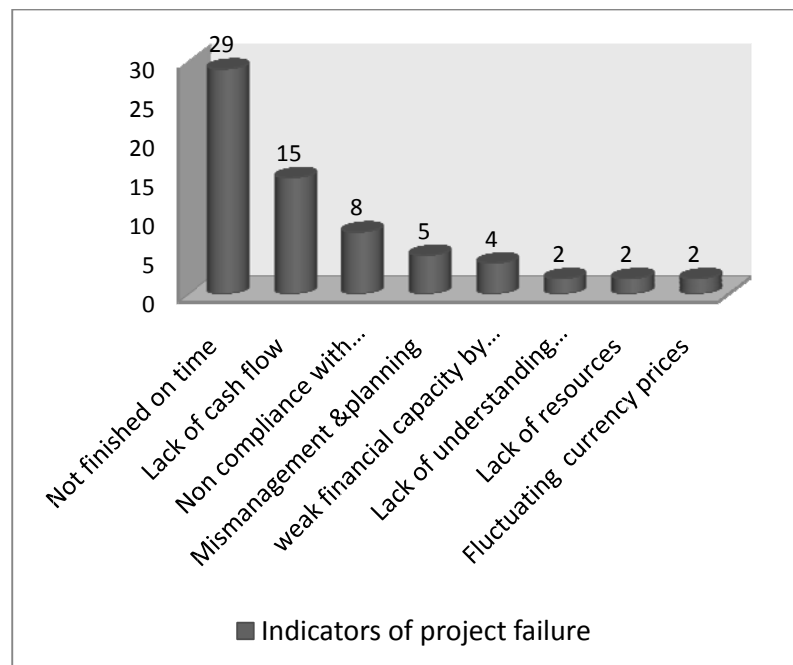


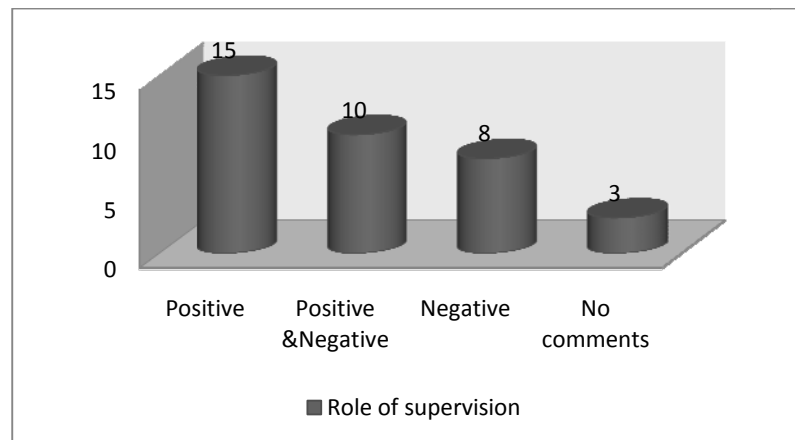
Figure 5.9: Indicators of project failure

The most important indicator of project failure is time-related, as mentioned is 28 which is 39 percent in the answers and in the above chart. All managers stressed the importance of time, many of their projects finished behind schedule. Many reasons were given for this, but one common cause given was Israel's occupation.

### 5.3.7 Monitoring:

Monitoring is considered a phase by itself, but the researcher considers it as part of every phase in the project lifecycle.

#### 5.3.7.1 Role of supervision:



**Figure 5.10: Role of supervision**

Supervision plays a major role in construction management, and can determine the success of a project. Here is one of the comments mentioned by project managers on this issue:

*“Supervision must be concerned with the benefit of the project and nothing else, and those are 50 percent of the engineers that works for supervision project; the other 50 percent either lack experience or have other motivations that do not benefit the project. One of the main concepts in a*

*project's success is the mutual trust between the contractor and the engineer supervising the project”.*

Most project managers agreed that the role of supervision is and must be positive, and being positive means act fair to both owner and contractor for the benefit of the project itself, and not to personal sides The role of supervision is to help the contractor in managing the project, so it can end with the best results. The role is positive if the supervisor has the right experience.

#### **5.3.7.2 Quality control:**

All project managers agreed that quality control is required in the industry, and that inspections should be done to insure quality.

Here are some points mentioned by the contractors:

To insure quality we:

- Finish the work according to the specifications.
- Provide the materials required according to what has been agreed.
- Conduct lab tests for all materials to compare to the specifications before work.

*“Our company has its own system to maintain quality and we gained ISOO 9002.<sup>1</sup>*

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<sup>1</sup> ISO: A family of standards and guidelines for quality in the manufacturing and service industries from the International Organization for Standardization (ISO) (56).

### 5.3.8 Human resources:

#### 5.3.8.1 Basis of employment:



Figure 5.11: Basis of employment

As shown in the chart above, experience is the main reason given for hiring staff, according to 39 percent of the comments. Managers considered experience more important than qualification.

#### 5.3.8.2 Motivation:

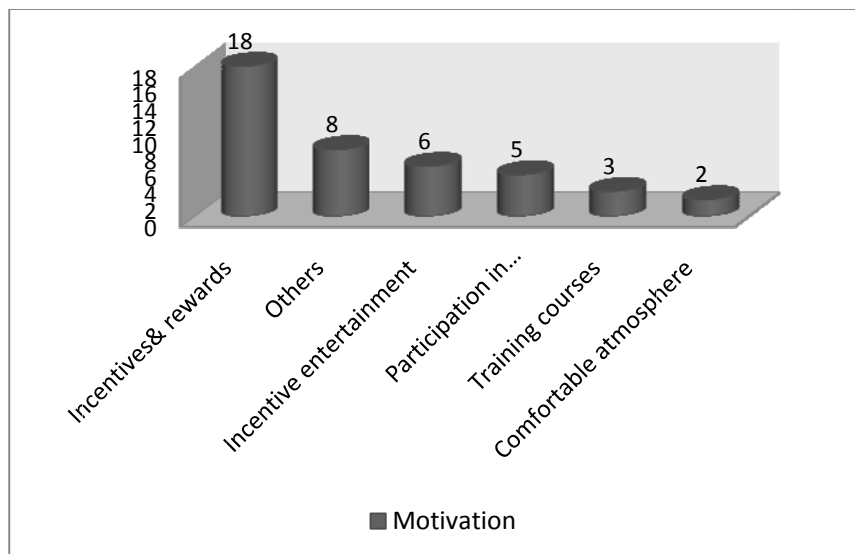


Figure 5.12: Motivation

Incentives and rewards are the most important motivation in hiring, managers said, then came entertainment and the participation in decision making as seen in Figure 5-12.

For any successful quality improvement effort, companies need to break down barriers between departments. Deming's idea of total quality management relies upon cross-departmental communication (42). Also as mentioned in the literature review; Y theory encouraged self satisfaction for more effective results for the personality of the team members.

Companies should provide training for employees to reduce variation, and focus on commitment, trust and loyalty; these are very important principles to be fostered among employees because commitment to quality improvement belongs to everyone. Involve everyone and don't just let anyone sit on the sidelines, this is a common saying and advices in leadership and management.

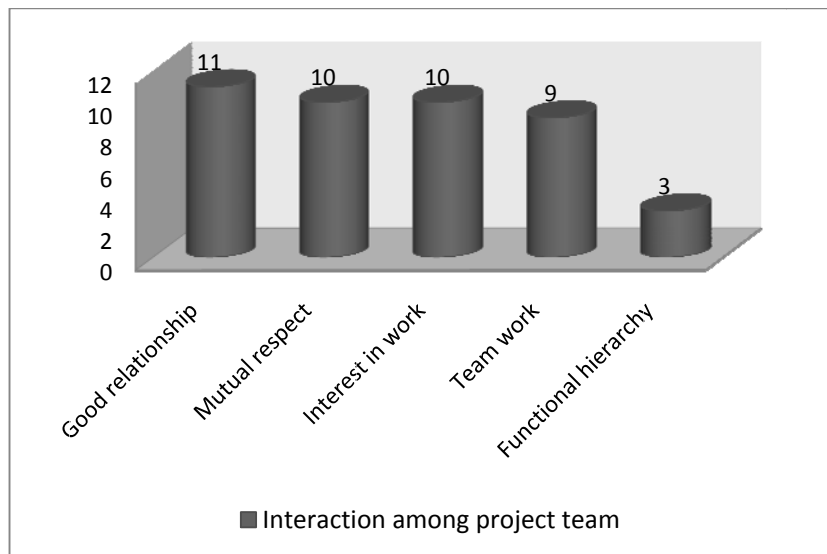
#### **5.3.8.3 Interaction among project team:**

The project manager must have personal influence in order to lead the project team. In order for the project manager to gain the support of his/her team, a few tips must be followed, according to the observation of the researcher and notes taken from the interviews:

- Project manager must have formal authority resulting from an official capacity which in order to implement the rules.
- The ability of the project manager to use rewards to exert power



- The project manager must possess special knowledge or expertise for the job.
- Attractive power (charisma). The project manager's personality and conduct, along with and characteristics will help him or her build a cohesive and loyal team.



**Figure 5.13: Interaction among project team**

As seen in the chart more than 25 percent of the answers said that good relationships are most important in building a team. Then 23 percent of the answers said that mutual respect is the next most important and 23 percent said it is how much employees are interested in their work (the percentages can be seen in the diagrams in the appendix).

Successful communications between management and the work force require teamwork and leadership, and training and encouraging employees to become leaders. Bring leadership practices into the company instead of simple supervisory tasks, in other words. Training supervisors and managers to be leaders, helps to build the team's commitment, trust, and

contribution to decision-making. Together, these practices will develop a culture of quality improvement.

### 5.3.9 Qualifications of project manager:

As mentioned in the table 5 and the figure 5-13, 35 percent of the project managers put experience as the first qualification for the project manager, rather than other qualifications.

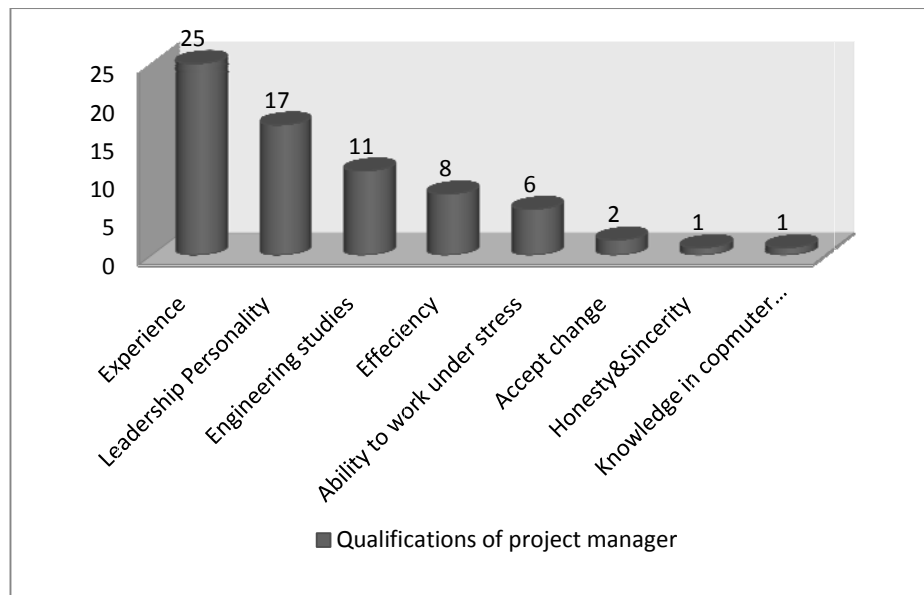


Figure 5.14: Qualifications of a project manager

### 5.4 The main elements affecting construction projects in West Bank:

The project managers were asked to give score to the main elements effecting construction projects from 1 -10. Here are the results after collecting the mean and the standard deviation for each element. The table below shows the results from the top, descending in scoring.

**Table 5.1: Main elements effecting construction projects**

<b>No.</b>	<b>Main elements affecting the construction projects</b>	<b>Mean</b>	<b>STD</b>	<b>Rank</b>
1.	Improper planning	8.58	1.51	1
2.	Cash-Flow problems during construction	7.66	2.8	2
3.	Mismanagement by the contractor (financial officer, sub-Contractor)	7.63	2.42	3
4.	Experience of project team	7.15	2.26	4
<b>No.</b>	<b>Main elements affecting the construction projects</b>	<b>Mean</b>	<b>STD</b>	<b>Rank</b>
5.	Lack of effective communication	6.94	1.73	5
6.	Design errors	6.77	2.76	6
7.	Shortage of material	6.49	2.18	7
8.	Mistakes during construction	6.02	1.67	8
9.	Changes of design	5.75	2.84	9
10.	Israeli occupation and related obstacles	5.40	1.98	11
11.	Changes in site conditions	5.58	2.53	10
12.	Late deliveries of materials and equipment	5.09	1.99	12
13.	Increase in quantities in materials on site	5.15	2.26	13
14.	Site accidents	4.98	2.53	14
15.	Weather conditions	4.85	2.51	15

**5.4.1 Results:**

- Improper planning was ranked as most important, with mean of 8.58 and STD 1.51. Most managers agreed that good and professional planning is one key factor for project success, but as mentioned but although this item is recognized as the first key factors, most companies suffer from improper and in accurate planning.
- Cash-flow problems during construction were ranked second, with mean of 7.66 and STD 2.8, most of the projects suffer from this problem, which is due either to the funding party, or to the weak financial condition of the contractors.

- Mismanagement by the contractor was the third element, with mean of 7.63 and STD 2.42; this comes from lack of experience by the contractor.
- Experience of project team was fourth, with mean of 7.15 and STD 2.26.

Unfortunately, project manager in most of our local companies, as observed during the interviews, makes all the important decisions alone. Sharing responsibility and delegating the work is not a widely-used plan. This makes a project a *one-man show*, and increases the load on the manager himself.

- Lack of effective communication came fifth, with mean of 6.94 and STD of 1.73, which reflects communication among the project team and especially between the contractor and the supervising engineer.

Many problems arise from lack of communications. Teamwork is the key for project success; all parties should acknowledge that the success of the project is the goal, and that they should all work in the same direction to achieve this goal.

### **5.5 Summary & Conclusion:**

Palestine faces challenges and opportunities in order to successfully compete in the modern global economy. Palestine needs comprehensive development and major innovations in all sectors - political, social, economic and technological. Urban planning and reconstruction will be among the most important priorities in the coming years. The construction industry may be seen as the foundation for basic infrastructure and all other processes.

In order to achieve our goals in building Palestine, construction-project management is a tool and also an art that will lead us to a successful conclusion. Demonstrating this is the goal of this study.

## **Chapter Six**

### **Project Management Framework**

#### **6.1 Introduction:**

Globalization brought more complexity to construction companies, it also opened the market areas with variety of projects and partners thereby increased a major driver of improvement called competitiveness. However, as a result of globalization unforeseen difficulties and risks brought also threats to construction companies as well as the opportunities. Consequently, performance measurement and management of companies and projects as a strategic decision making tool became an important subject of interest during the last decades. It became an integral part of planning and controlling of organizations (43).

As a result of competitiveness in construction many construction companies are now regarding project management as being the survival of the firm, rapid changes, dynamic environments and quick development of computer systems made the challenges among companies a major issue, as a result of all this companies are considering project management as a solution.

Project management can be beneficial and crucial in West Bank, this research in the literature view highlighted the main important scientific and logical basis which are needed to practice Project Management, and in the survey conducted in this research, a gap is found between science and real work in West Bank, as there are item missing in practice, the framework has been designed in this research to address this gap.

Many researches in Project Management were conducted to improve the efficiency and the quality of the construction projects. The researcher studied how construction projects in West Bank are managed and in this chapter a framework will be designed to help project managers to develop and improve the work done in this field, by trying to fill the gaps and highlight the weaknesses that fits the special Palestinian situation and deals with it through construction projects.

## **6.2 Project Management Framework:**

Project management framework is how a project is managed from first steps to completion through a natural life cycle, the lifecycle of a project (as mentioned in the literature view of this thesis), the life cycle of any project includes: initiating, planning, executing with controlling and closing, supported with the main principles and tools to achieve the goals and to create success (44).

The process of developing a framework began with documenting the analysis taken from the people who are experienced in this field, and from the feedback taken through the interviews with project managers. A preliminary framework was designed according to the researcher analysis and observations, compared to the literature review, this frame work was designed reviewed and refined through an iterative process that is summarized in the following issues and drawn in Figure

## **6.3 Elements of project success:**

In order to design a framework in construction project management that will lead to project success, elements of success should be studied first,

in order to lead the research to the main item that should be emphasized compared to the success elements in West Bank. In the last twenty years, the success of a project was defined by the completion of all its activities within time, cost and performance, but recently this definition has modifications due to the complexity of today's projects, here are the main elements of today's projects success (5):

1. Completed within the allocated time period: it's very important to put time schedule when conducting the plan, The Time Schedule identifies the relationships between project activities, and makes sure the right people and the right resources are available for the various tasks when needed , also it helps in managing time effectively which results in completing the project as planned (45).

In West Bank, one of the important problems in managing construction projects is sticking to the planned time, according to the researcher's observation, the lack of time management in construction projects in West Bank results from many reasons such as:

- Lack of efficient workers for certain jobs, which can be resolved by preplanning and looking for the right skills regardless of the prices, as in West Bank there are good labor skills but they work inside the green line for better payments.
- Ineffective supervision, by picking the right engineers to the right job this can be solved, as qualified engineers can be found.
- Changes in construction due to changes in the designs or changes on the worksite.



- Closures due to the Israeli occupation, or the need to import resources, that will be met by obstacles by the Israelis.
- Procrastination from certain parties for personal reasons or personal benefit, by good monitoring by the stakeholders and strict contracts, this can be solved.
- Geographical location of the project, which may be affected by the political situation, this problem is subjected to situation in West Bank which varies according to the political climate in Palestine.

As for the time planning, there are many methods in using software to help organizing the time scale in projects, using Project management software such as Gantt charts will give great help in planning the project schedule; Gantt charts are popular because they graphically display the relationships between tasks and their duration (46). There is other software programs that will help in organizing the time planning in the project, this software can help in allocating resources and organizing whom will be doing which job and the period needed for the task.

2. Keep the project within the budgeted cost: Accurate cost estimation in the beginning of the project is very important, as most of the project's calculations are based upon this primary cost estimation.
3. At the proper quality or specification level : Quality issues in West Bank sometime faces problems in construction project , due to the lack of specified specifications that could be misunderstood directly or in directly for the benefit of a certain party, this for sure will affect the quality if the results.

4. With acceptance by the customer: Customer satisfaction is a very important element that should be satisfied.
5. With mutually agreed upon scope changes: Very few projects are completed within the original scope. Scope changes can damage the morale on a project, but the entire project. Scope should be minimized, and those that are required should be studied carefully and then be approved by both the project manager and the customer, and these changes should be supported with the top management.
6. Without changing the corporate culture: If the company has a cultural standard of openness and honesty of its own when dealing with customers, then this cultural should remain in place for all projects, regardless of who the customer is or how strong the project manager's desire for success, the culture should not change according to circumstances or people.

It should be understood that simply because a project is a success then the company is successful in its project management. Excellence in project management is defined as a continuous stream of successfully managed projects, to have a successful continuous stream of projects to occur, there must be a strong commitment to project management (5).

#### **6.4 Key elements of construction project management:**

According to the definitions mentioned of project management in this thesis, many key elements are important in executing and managing construction projects, the researcher picked the main elements that have affects on projects in West Bank, these elements are operational and can lead to actions and directions in forming an improved system performance

in Project Management, these elements should be well understood, and correctly implemented to inspire the performance of any project conducted by a construction company :

#### **6.4.1 Clear Goals:**

The main goals of the construction project include many targets such as providing a safe project for all parties, at the same time making a reasonable profit while treating all partners in the construction process with respect and fairness, these goals should always be defined as SMART (specific, measurable, ambitious, realistic, time-bounden), short term goals are needed also in the practical way of conducting each project.

Many companies in West Bank lack the vision, and do not have a mission to visualize the goals of the company, this gap in company's culture should be fulfilled, creating a mission and vision must be clear and shared with all the staff, to motivate the staff to be part of decision making, thereby achieving goals will be the responsibility of everyone (47).

#### **6.4.2 Planning:**

As mentioned in the literature review in chapter two of this thesis, successful projects depends on three main dimensions *quality, resources (cost mainly) and time*. These dimensions are exactly the typical restrictions of many projects in West Bank as well as all other construction projects elsewhere (48).

The main elements of the project structure plan are:

- Project structure plan: This plan represent the work units that can be assigned to a personal, it highlights when each activity should be done, and who is in charge of it.
- Flow chart: A flow chart is a powerful tool to show the starting point and the ending point of each activity clearly.
- A milestone plan: Is the main step to test if the goals are achieved, and it helps in discovering the status of the project. Milestones define certain phases of the project, and represent decisive steps during the whole phases. They are set after a certain number of work packages that belong together in certain way.
- Details: the quality of planning depends upon the details available, details are crucial. The more details found in the plan, the more assurance will be obtained during the planning process.

Good planning is mostly needed in the companies in West Bank, as it's the most important item to successful projects; the researcher noticed many companies lack written plans in their projects. "A bad plan is better than no plan". Somebody who has no plan cannot adjust something. And somebody who doesn't adjust anything cannot improve (47).

#### **6.4.3 Process:**

Process can be defined as "*a set of continuing actions over time*". The management process must be carried on continually throughout the life. Management must be done in a systematic way, which means in a regular way, and dependable way, using a set of established procedures or methods (49).

The process of project management starts with identification of the user or the client requirements, it also studies project constraints, and the resource needs, to create and establish realistic objectives to meet the strategic goals. Many times this will be an iterative process that needs continuous work as new information becomes available through new input from third parties, communities, users, and agencies according to the project's needs (50).

The process of the construction projects in West Bank needs work to organize the phases in the project and keep doing the modification needed at each stage and doing the controlling in all stages:

- a. Initiation stage: Some items in initiation stage may change by time others stays as they are the culture of the organization and should not be changed, like the goals, mission and vision, but other information can be restudied if anything in the projects changes, such as the market study, cost of material, changes in the designs and other issues that may occur during the life time of a project.
- b. Growth stage: or planning stage in this phase the team must be built up according to the needs of the projects, and all the tasks and assignment must be clearly defined, in many projects in West Bank things are postponed to late stages when time and resources are limited.
- c. Production stage: which is executing, this phase has the major on site work and production and needs testing, monitoring and flexibility in dealing with every detail or problem.

- d. Termination: or closing which needs transferring the project, resources and commitments and ending one stage in the organization life successfully (14).

#### **6.4.4 Monitoring & Supervision:**

In all the stages above the most important item is monitoring, and in WB as any other place this relies mostly on the supervision, as this is considered from the important reasons to a project's success in WB, from the researcher point of view, and from the feedback from stakeholders, the supervisor engineers must be:

- Qualified as a supervised engineer and has the right qualification and experience for the job as an engineer and as a project manager.
- The supervising engineers must be flexible, understanding, accept change and the ability to lead the work and communicate with all parties.
- To be committed to work for the benefit of the project first, and then to serve all the other parties.
- To be honest and trustful and has the ability and personality to build a good team work under the available circumstances.

#### **6.4.5 Risk Recognition & Managing Project Disturbances:**

Construction projects are characterized as very complex projects, where uncertainty comes from various sources such as technical, legal, natural, social, economical, financial, commercial and political, these may differ according to the specialty of each project.

In West Bank construction projects share the same risks with some specialty such as:

- Changes in project scope and requirements, and this is one major problem that can be noticed in many projects conducted in WB.
- Design errors and omissions that are found in the designs and the list of quantities.
- Inadequately defined roles and responsibilities, which results from either lack of resources, or in experienced management.
- Insufficient skilled staff, whether they are chosen directly to minimize the cost, or indirectly as a result of lack of resources in West Bank.
- Subcontractors, using subcontractors is essential, but not to be as a way to take a job which is much bigger than the ability of the subcontractor, many big contractors apply for big projects according to the requirements of the bid, and then this project is transferred to smaller contractors for a certain amount of money.
- Inadequate contractor experience and lack of specialty, this is a problem that many contractors face, and should be dealt with, by reinforcement of the knowledge of new technology among the contractors.
- Uncertainty and lack of trust about the fundamental relationships between project participants, leads to failures in the construction projects.

Co-operation is the key to success, but detailed ways of performing it are missing. Construction projects are joint efforts of number of actors who need to work closely together. Changes in schedules, incomplete plans and

other unexpected events lead to the need to coordinate daily work and efficient practical problem solving and on site management to ensure efficient performance (51).

#### **6.4.6 Performance measurements:**

According to PMBOK Guide (7), these are the most used performance measures to measure construction performance:

1. Effectiveness: (Are we doing the right things?)

Effectiveness is defined as “A process characteristic indicating the degree to which the process output (work product) conforms to requirements”.

2. Efficiency: (Are we doing things right?)

Efficiency is known as “*A process characteristic indicating the degree to which the process produces the required output at minimum resource cost*” (4).

3. Quality: “*The degree to which a product or service meets customer requirements and expectations.*”

4. Timeliness: It’s a tool that measures whether a unit of work is done correctly and within the right time (based on customer requirement).

5. Productivity: “*The value added by the process divided by the value of the labor and capital consumed*”.

6. Safety: Measures the overall health of the organization and the working environment of its employees (4).



The purpose of measuring performance is to create and get feedback that will lead top management to recognize the risks or the problems that may occur, or to improve the performance of the project,

In summery it simply stated that any success in achieving the desired output will be driven by goals and culture, planning, process used and performance measurements, all together will lead to the desired outcomes as in Figure 6-1.



**Figure 6.1: Foundations to success**

### **6.5 Project Management Design Framework:**

In this research Projects management in West Bank was studied, the current situation needs to be developed, the researcher in this master thesis aims to develop or improve the methodology in which construction projects are managed. This framework contains tools and processes applicably to the management process, as it fits the environment where this research has been conducted.

The framework is designed based basically on several ideas taken from other frameworks designed by experts in this field; the PMI's

PMBOK is a popular one and PRINCE from UK. But mainly it is based on the results taken from the qualitative and quantitative study performed by the researcher in the previous chapter.

The framework consists of three major sections, the creation section, which contains the mission, vision and goals, and the concept creation with the cost estimation and the feasibility study.

The second stage contains the main process which handles planning and executing supported by risk management, chain management, time management, software management and cost management, and all these functions are under monitoring and controlling in each of them.

The third section is response, which contains feedbacks and lesson learned.

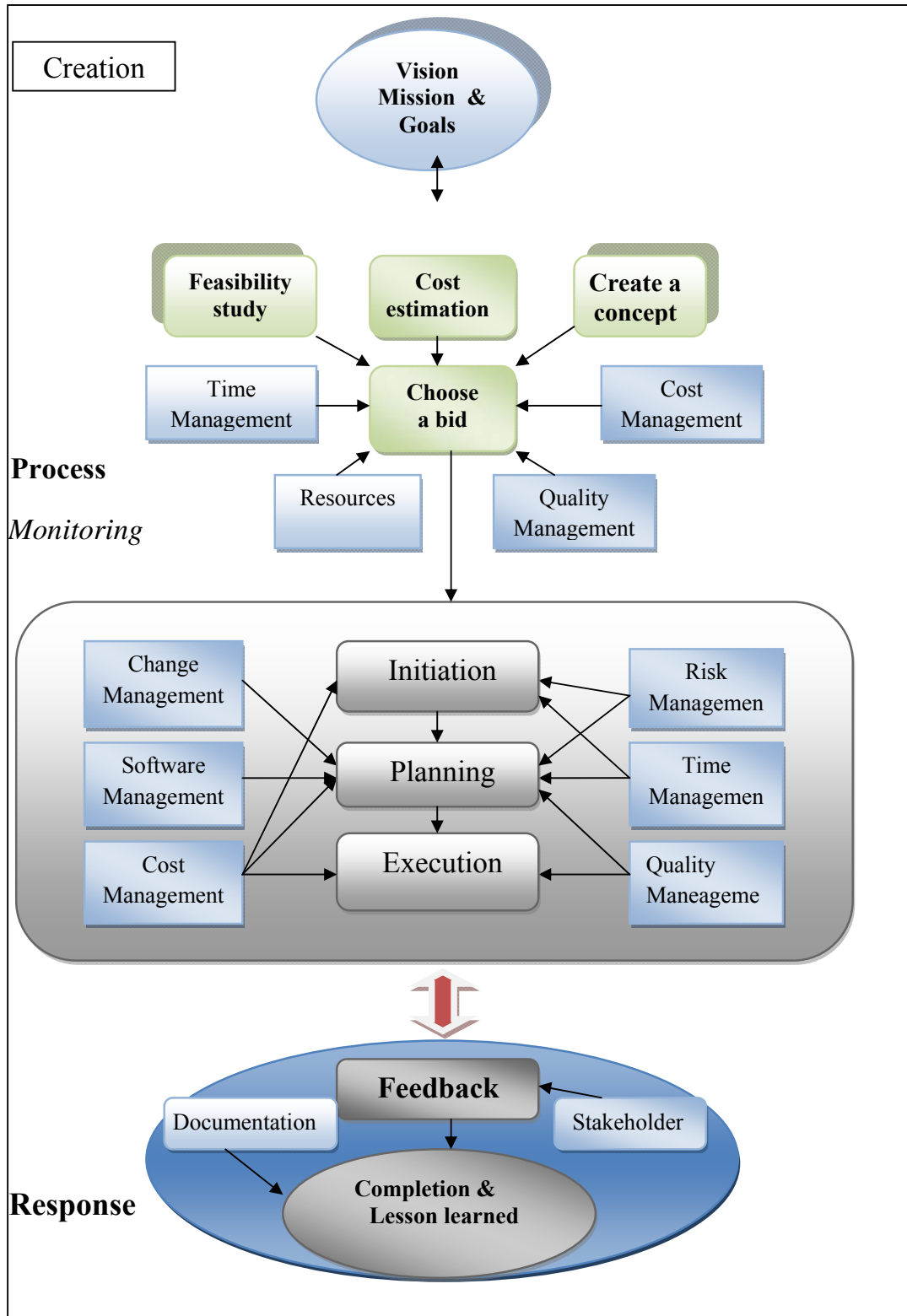


Figure 6.2: Framework

### 6.5.1 Creation design:

The first step of the framework is the creation, which has main item as mission, vision and goal. These three concepts must be defined in each company.

Vision statement vision statement are words which inspires leaders to choose the right direction. And give the motivation to the whole company, mission simply defines the organization's purpose, and objectives, where vision defines the organizational values, and helps employees in their behavior to achieve the objectives and all together have the same goal that is defined clearly by the stakeholders in each period of the company's life (52).

Defining the culture in the company has a great importance to go to details and ethics of how to implement each project. After each of the mission, vision and goals are clearly defined then the cost estimation and the feasibility study is the next step before choosing a bid, at this point supporting tools are needed as a compass that will lead the way to successful selection.

When choosing a bid and to fill the gaps the researcher noticed from the interviews many points should be taken care of:

- Accurate cost analysis but quality based, so as not to be cost oriented only.
- Checking availability of resources and suppliers.
- Basic creation of the project team.

This first step or stage is crucial, as it represents the infrastructure of the planning stage for any construction project, and it helps in creating the strategies of the organization and it helps in viewing the organization development in many ways such as:

- The philosophy practiced by the organization becomes way of life in it and raise the employees to be loyal and committed to their work.
- The concept and the theories of company can be developed according to development of the company itself.
- The vision, mission and goal should reflect always the requirements not only of the employees but the environment around.

#### **6.5.2 Process Stage:**

The second section of the frame work is “Process”. The process through which a project is implemented from start to end can be described as the project lifecycle. As construction project is considered complex so its process; however, it can be divided into several stages, and each stage needs both technical and managerial skills, and dealing with each stage may differ according to the type of the project, and to the style of leadership and management used by top management, but regardless of the type of project and the style of management, the best solutions at various stages are the integration to obtain the final outcome, and flexibility in applying all stages when needed, managers may choose to change the composition of the entire process and the stages into more or less stages based on the size and nature of the project, which results in much more efficient results

It should be recognized that there is no single best approach in project management throughout a project's life cycle, every approach has

advantages and disadvantages, each way in managing a construction project may differ from one company to another depending on the knowledge and the experience of the manager as well as the type, size and location of the project itself and to the environment in which the project is conducted, not to forget the level of performance desired. But the most important thing is what approach to pick to be suitable for the project (53).

Through process as the project is executed, the project will go through each stage, with control and monitoring through all stages, and with using all the supportive tools needed as mentioned in the literature view in this thesis such as:

- Time Management.
- Cost Management.
- Quality Management.
- Change Management.
- Risk Management.
- Software management.

All these tools and others will be needed such as human resources, communication and procurement.

Construction projects consists of processes, a process consists of series of actions and tasks which leads to certain goals, a process is performed by people derived by resources and supported by a flexible top management, that supports the result of all of that together will lead to project success (45).

### **6.5.3 Response:**

This is the third and last stage of the framework. Every project in construction or any other field goes through a series of phases, first born and appear to life then getting mature and going to the end of old age, construction projects are the same, as it grow old it will gain wisdom and understanding which is the case in the closing stage, in this stage is the time to write the final report and archive all the documents and records, and it's time to reallocate the resources to start all over somewhere else, but what is really needed here is to get feedback, collecting feedback from project team, managements, clients and suppliers, from all those capturing lessons and knowledge for future projects is crucial, and will help it helps in identifying project success and project failures, at this stage the project is complete but the management process of the organization will start somewhere else but with more experience and more lessons learned.

### **6.6 The process of the framework through templates:**

To take a clear and through look on the framework, and to help in understanding the actual steps in each stage, next the researcher will identify the main elements and points in each stage with the templates of construction frame work.

**6.6.1 Creation:**

Creation	
A. Vision & mission	Define the stakeholder's needs, expectations and goals. Develop a mission statement. Create a vision statement. Decide the values and the core believes that will lead to success.
B. Create concepts and goals	Create strategic goals. Setting SMART goals. Decide the main concepts and the priorities. Align the goals with the adopted values.
C. Feasibility study & Cost estimation	Study contracts & regulations. Make feasibility study. Develop cost estimation Design a primary study for the resources Identify possible risk areas.
D. Chooses a bid	Cost analysis Decide quality degree & performance. Choose suppliers Team selection.

The creation is a very critical stage, where the basic steps to carry out a successful project is created.

**6.6.2 Process:**

Process	
A. Initiation	<ul style="list-style-type: none"> <li>• Determine project's needs</li> <li>• Collect data needed.</li> </ul>
B. Planning	<ul style="list-style-type: none"> <li>• Produce time schedule.(time management for the project)</li> <li>• Estimate resources required (cost management).</li> <li>• Measure the capacity and the skills of project team to perform the project plan.</li> <li>• Develop a detailed project plan.(using software management).</li> <li>• Identify tasks and sequences (develop a work breakdown structure).</li> </ul>



	<ul style="list-style-type: none"> <li>• Develop full detailed project budget (cost management).</li> <li>• Select resource providers within required quality (quality management).</li> <li>• Design risk plan evaluation (risk management).</li> <li>• Develop a change plan management according to expectations.</li> </ul>
C. Implementing and execution	<ul style="list-style-type: none"> <li>• Ensure the execution of the plans designed.</li> <li>• Identify any changes from the original plan.</li> <li>• Make sure to perform changed plan according to revised plans.</li> <li>• Provide daily, weekly and monthly reports and make them accessible to stakeholders.</li> <li>• Conduct milestones and review check points.</li> <li>• Update documents, plans and charts according to work on site.</li> </ul>

### 6.6.3 Monitoring

<b>Monitoring</b>	
Cost monitoring	<ul style="list-style-type: none"> <li>• Monitoring sub-contractor's claims.</li> <li>• Controlling cost &amp; currency variations.</li> <li>• Monitor budget and expenditures.</li> <li>• Let feedback be part of decision making.</li> </ul>
Quality monitoring	<ul style="list-style-type: none"> <li>• Monitoring inspection tests.</li> <li>• Getting continuous feedback</li> </ul>
Progress monitoring	<ul style="list-style-type: none"> <li>• Tracking project progress.</li> <li>• Monitor construction delays.</li> <li>• Keep tracking through summary status report.</li> <li>• Provide guidelines for each step.</li> </ul>

Monitoring is a continuous work which starts from the beginning of the project until the end, Monitoring helps in identifying problems before they occur, and gives accurate evaluation in decision making.

### 6.6.4 Response & Completion

Response & Completion	
A. Feedback	<ul style="list-style-type: none"> <li>• Archive all project data.</li> <li>• Receive feedback from stakeholders.</li> <li>• Finalize the final reports.</li> </ul>
B. Lesson learned	<ul style="list-style-type: none"> <li>• Evaluate the project</li> <li>• Document the problems faced.</li> </ul>
	<ul style="list-style-type: none"> <li>• Finalize legal requirements like bid forms, wages and bills.</li> <li>• Signing and sealing final documents</li> </ul>

### 6.7 Validation:

In order to test the framework and to explore if this model is applicable or not, this framework was discussed with practitioners and contractors who are professional in this field, to see their point of view and these were the results:

- The first contractor who is an engineer studied the framework and all the recommendation, and it gained a great acceptance and support with a few points mentioned, he agreed that the framework is applicable and many of its components are implemented already but not in this sequence and organization, although some items about recruitment is missing there are many useful steps that can fill gaps needed in conducting construction projects. It was mentioned also that the success of the project does not depend only on managing it; other elements take part in this decision such as the external environment, the local situation and the funder himself.
- Another opinion of the framework was by another contractor who said that he is satisfied with his way of managing his project, as he is used to it and he does not have the ability to change, applying this

framework will need to learn many things he does not understand, so he will stick to the usual old way that works fine for him.

- The third opinion came from a third contractor who found the framework excellent and should be applied on construction project, but the contractors needs rehabilitation to refresh their information and to train them and teach them about the new technology concerning construction project management, as this field is developing rapidly and providing good quality needs being part of this competitive world. Applying this framework will organize the work and will help in getting filling all the subjects needed in this field that will improve the construction work and support the contractors in their work. Many important items that are considered important are mentioned in the framework, he said: *“Calculating the true costs of implementing the project in terms of Materials, workmanship, contractors, sub-contractors, additional costs, administrative expenses and taxes. Determine the prices of items on this basis when you are really interested in the project, and take into consideration the number and quality of competitors who are entering the same bid”*.

## **6.8 Conclusion:**

- This research only serves as introduction to project management design framework, this framework is a tool to guide project managers in managing construction projects, and it does not give solutions or best approaches of project management.
- Modernization and electronic age is here to stay, and old ideas must give away to the new, presenting further challenges and further

successions or failures, depending on how the future will shape life, and how life will go along with modernization.

- In the literature review, the main keys to project management is cost, time and performance, but still all the component added in the framework are considered important to guarantee the project success, which are create, process and response.

## **Chapter Seven**

### **Conclusion and recommendations**

#### **7.1 Introduction:**

The construction industry is a development tool for achieving goals in modern society. As the world becomes more complex, and remains hazardous and risky, so do the processes and management of the construction industry. The art of project management is a mixture of administration, planning, experience, analysis, people skills, leadership and a little bit of luck (54).

The construction industry in Palestine is also under pressure to meet future demands and changes, not merely because of the political instability, but because it would be difficult to obtain sustainable development in this challenging world if these changes do not occur. These issues among others are particularly challenging in the complicated situation that is facing Palestine as an occupied country with limited resources and restricted access to the outside world.

The West Bank has witnessed major developments positive as well as negatives in the construction sector in the last decade. In order to meet future demands and foster successful projects, it is hoped that this study may contribute to the development of Palestine by helping define some of the difficulties facing project management.

This chapter reveals conclusions and recommendations for improving project management in the West Bank.

## **7.2 Conclusions of the research:**

It should be emphasized that the purpose of this research was to shed light on the issues of project management in Palestine, and to identify the problems and the obstacles facing PM and the construction industry; the research looked closely at the situation in the contractor's sector related to projects, and analyzed the current situation where construction projects face problems.

The problems in the construction industry in developing countries and their causes in general, can be put in three major groups:

1. Problems with industry infrastructure, such as the supply of materials, lack of training and inadequate communications.
2. Project problems, including changes in instructions and designs, inaccurate information and problems concerning clients and consultants.
3. Problems created by the team members (stakeholders).

## **7.3 Problems facing project management in the West Bank:**

From data collected it can be shown that there are many problems in the construction sector, but these are the major ones and can be identified in four overlapping parties sharing responsibility:

### **7.3.1 Problems introduced by a funding party (owner):**

- The owner or the funder of the project has great responsibility in conducting the projects, as from the owner come the orders or the

changes in the scope of work, and from the owner comes the plans and the changes in drawings and the redesigns, and also from the owner comes the main funding of the project.

- In West Bank the funding party who is in many project is from foreign donors, decides the kind of the projects to be executed, regardless if the local community needs these projects, or if they have other priorities, this is unfortunately due to the lack of existing data and research in this sector, and lack of any references to cover the needs of what kind of construction projects are needed on local issues.
- The construction projects in West Bank still suffers from bureaucratic procedures instituted by the funders and especially PA projects.
- Another important problem that rises from the funding party is the cash flow, many project in West Bank suffered from lack of commitment by the funder in maintaining timely cash flow.

### **7.3.2 Problems introduced by designers:**

In West Bank there is a general consensus among project managers that one of the problems in construction projects is the designer's drawing that can be described as poor and have many mistakes, also sometimes the designs are incompatible with each other (architectural, structural, mechanical and electrical).

That is for drawings, as for the bill of quantities, also it suffers from lack of accuracy and incompatible quantities when compared with the actual work. All of these problems are a result of lack of cooperation

between parties working on the same project or unqualified people for the job. The rush to complete designs in certain time that is not sufficient, also creates a mess in the designs and will result with problems on site.

### **7.3.3 Problems introduced by contractors:**

Contractors are blamed for many of the problems that happens on site and on the performance of the project, such as:

- Poor planning and poor management and technical performance.
- Inexperienced contractors and poor technical qualifications.
- Low margin of profit due to competition, which as a result affects the quality of the work, that may not reflect the specifications needed.
- No use of the tools of project management or its methods, such as “Critical Path Method” (CPM), and “Program Evaluation and Review Technique” (PERT), as observed from the visits to the contracting companies.
- No use of Work Break down Structure in most of the plans of the contractors.
- Lack of team work among all parties working in the project.
- Lack of clear strategies, mission and vision in some companies in developing their work and improving their reputation.



### **7.3.4 Problems introduced by a supervisor:**

Supervision or the consulting firm who is responsible of supervision are most of the times accused of being negative rather than cooperative, inexperienced in some big projects, has uncompromising attitude and they use the position of supervision in some conditions to achieve personal benefits, for example in extending the period of the project, to stay in business without reasonable causes.

In the contractors point of view, as the researchers noticed, many consultants do not accept the changes proposed by contractors, even if those changes are for the benefit of the project as they believe the contractors do not have the right qualifications to do that, also contractors complain that supervisors engineers tend to find problems rather than solve them and work in harmony.

### **7.4 Recommendations:**

Following this research, which included interviews and discussions with professional people, these guidelines are suggested:

- ❖ The need for institutional and administrative development within a reformed legal environment, with efficient procedures that reduces bureaucracy and raise confidence among participants.
- ❖ The importance of improving the ability of the government regarding strategic decision-making, and make the best of resources and donations that supports the construction industry and empowers the Palestinian society.

- ❖ Government projects should be selected carefully, to make use of all local resources and materials and fulfill the needs of the local society, also the municipalities should start by doing researches on the construction projects needed in each city or village to be ready for funders to use, and not let them choose what project to build.
- ❖ Greater efforts should be made to execute high quality projects, by selecting the best-organized designs and the best-qualified work rather than lower costs alone.
- ❖ Designers, planners, managers, contractors and government officials must avoid nepotism, bribery and personal interests when dealing with contracts and bids. The sole concern should be the quality of the work.
- ❖ Training programs should be compulsory for contractors, engineers and subcontractors to develop their management abilities, skills and knowledge. Such courses should be held yearly, to keep the profession and individual contractors abreast of global developments and help them improve their methods.
- ❖ This study recommends that local contractors concentrate more on using software programs in project to obtain more accurate data, save time, minimize errors, and hopefully complete much better-quality projects. The study also strongly recommends computer-training courses, seminars and workshops for contracting companies.

- ❖ Activate the role of Palestinian Contractors Union (PCU) in organizing the profession, and to act more professionally with all clients, without being biased for certain party for special interests.
- ❖ Activate the recruitment process in the contracting companies, so that all the staff to be real and not for the legal procedure of getting the contracting license, by employing a staff of engineers and other essential employees, the work of the company will improve and the quality of the production will be better .
- ❖ Monitor the work of some first degree companies, as they apply for the bid and then transfer all the work to lower grade companies for a certain amount of money, this for sure affects the results ,as the work was supposed to be finished by (first grade) company that has certain skills.

#### **7.4.1 Recommendations for future studies:**

- ❖ This research was conducted on a limited sample of contracting companies. It is recommended that future researches expand the study for all kinds of contracting companies, and on the public sector.
- ❖ Such future expansion should include the private companies who are working on large-scale projects, to study and compare the results.
- ❖ Researches on many important issues in West Bank is needed such as:
  - Causes of failure in construction projects in West Bank.
  - The role of ethics in construction projects management.
  - Causes of delay in the construction projects in West Bank.

### **7.5 Summary:**

Construction projects have been managed since old ages, but recently, the great revolution in technology, and the significant changes in the construction industry, forced changes in the way projects are managed.

The main aim of this research was to study the situation of project management in West Bank and to identify the problems in managing construction projects. This research has suggested a framework to organize the managing of construction project, and to achieve the long and short-term goals, it provides a foundation for a successful management construction. This research is made to help and develop the work of project managers to produce better work that is well-defined between the strategic and operational components.

## References

1. Walker, A. **Project Management in Construction**. Oxford , Blakwell, 2007.
2. Johnson, J. Hall , E. **Integrated Projec Management**. Prentice Hall, 2002.
3. Palestinian Contractors Union . [www.pcu.ps](http://www.pcu.ps). 2011.
4. Committee, PMI Standards. **Guide project Management Body of Knowledge PMBOK**. 1996. third edition.
5. Kerzner, H. **Project Management A system Approach to Planning Scheduling and Controlling**. Ohio , John Willey & Sons, 2006. Vol. 1.
6. Folleett, M.P. **Freedom and Coordinanation:Lectures in business organization**. London : Pitman, 1949.
7. PMBOK. **Guide Project Management Body of Knowledge**. 2006.
8. Anzalone, F.M. *A technique for coping with change*. Law Library Journal, 2000. Vol. 92.
9. Anne, M. *PM in Practice.Net*. 2009.
10. Chandra Pandey, S. *The challenges of Contract/Project Implementation*. Journal of Defence Studies, 2010. Vol. 4.
11. Ahuha, H.N . Dozzi, S. Abourizk, M. **Project Management, Techniques in Planning and Controlling Construction Projects**. New York : Wiley & Sons Inc, 1994.

12. Brown, E. **Survey Shows Value Gained Using PM Best Practices.** 2006 ,december.
13. Brown, Eric. ***Technology, Strategy & Projects.*** ericbrown.com.
14. Wideman, M.R. ***The Role of the Project Life Cycle in Project Management.*** [www.maxwideman.com](http://www.maxwideman.com). 2004.
15. Kerzner, H. Sladis, F. **What Executives Need to Know About Project Management.** John Wiley& Sons Inc.
16. Dunham, M.P.& Pierce J.P. **Management.** Illinois Scott,Foresman& Co., 1989.
17. Wysocki, R. Beck, R. Crane,D. **Effective Project Management.** s.l. : John Wiley & Sons, 2003.
18. S.M, Buney. ***Inductive & DeductiveResearch Approach.*** [www.drburney.net](http://www.drburney.net), 2008.
19. World Bank. ***country clssifications.*** [worldbank.org](http://worldbank.org).
20. Sultan, B. ***The Construction Industry in Yemen: Towards Economical Sustainability, PHD Thesis.*** Queensland University of Technology, 2005.
21. G, Mbuthia. ***Potential Applications of Real Option Analysis in the Construction Industry in Developing Countries.*** [www.ods.coza/cdcproc/docs/2nd/mbuthia\\_g.pdf](http://www.ods.coza/cdcproc/docs/2nd/mbuthia_g.pdf).
22. Palestinian Economic Policy Research Instite (MAS),***Construction Services in the Informal Sector in the Occupied Palestinian Reality and Propects*** ,[Arabic] 2006.

23. Encyclopedia of the Nation. **Jordan**. *www.nationsencyclopedia.com*.
24. International Copyright, U.S. & Foreign Commercial Service & U.S. Department of State. **US Commercial Service**. 2010.
25. MAS, Palestinian Economic Policy Institute. **Quarterly Economic and Social Monitor**. MAS, 2010.
26. Javendanfar, M. **Yemen's Economy**. meemas.com, 2005, Vol. The middle east.
27. World Fact Book. **Jordan economy**. theodora.com. 2010.
28. Palestinian Central bureau of Static. **Labour Force Survey**. [Arabic]. <http://www.pcbs.gov.ps>.2010.
29. Sultan, B. Kajeski, S. **The Behavior of Construction Cost andAffordability in Developing Country: Ayemen Case Study**. 2006.
30. Morgan, D. **Jordan Construction Boots and Economic Growth**. *www.english.globalarabnetwork.com*. Global Arab Network, April 2010.
31. Petra.Jordanian Agency News.**Costruction Projects in Jordan**. [Arabic]. amman ,[www.petra.gov.jo](http://www.petra.gov.jo), 2010.
32. Enshassi, S . Al-Hallaq K. Mohamed. **Causes of Contractor's Business Failure in Developing Countries**. Journal of Construction in Developing Countries, 2006. Vol. 11.
33. US Commercial Services, **West Bank**. <http://www.buyusa.gov/westbank/en/briefs.html> .

34. Sultan, B. Kajewsk, S. **The Yemen Construction Industry:Reading the Industry for the Successful Implementation of Sustainability.** 2006.
35. Abbasi, G.Y. Abdel -Jaber, M.S. Abu Khaeejeh,A. **Risk Analysis for the Major Factors Affecting the Construction Industry in Jordan.** Emirates Journal for Engineering Research, 2005. Vol. 10.
36. Abu komsan,K. *An analytical study of the reality of the Palestinian economy between investment opportunities and update the future.* First scientific conference for investment in Palestine.[Arabic] 2005.
37. Mefleh,A. *Problems and Constrains Faced by Banks in the Financing of the Construction Sector.*[Arabic]Amman : www.muflehakle.com, 2003.
38. Mohammad S. El-Mashaleh, Bashar M. Al-Smadi , Khalied H. Hyari , Shaher M. Rababeh *Saftety Management in the Jordanian Construction Industry.* Amman : Jordan Journal of Civil Engineering, 2010, Vol. 4.
39. Odeh B. *Causes of Construction Delay:Traditional Contracts.* Jordan, International Journal of Project Management, 2002.
40. Commerce, UK Office of Government. *Project procurement lifecycle.* OGC. 2007.
41. Wideman, M. **The Role of the Project lifeCycle (Life Span) in Project Management.** 2004.
42. Deming, E. *The W.Edward Deming Institution.* deming.org.



43. Neely.A. **Measuring Business Performance** . London,1998.
44. ehow. ***What is a Project Management Framework? eHow.***
45. Hamilton.A. **Managing Projects for success**. London : Thomas Telford Ltd, 2001.
46. Technology, Office of Learning. ***Introduction to Project Management Technology***. Human Resources Development 2003.
47. Borow, H. ***7 Basic Principles of Effective Management***. Hauke *Borow.org*. 2010.
48. Borow.H. ***How to build A Project Structure Plan***. 2010.
49. Project Scheduling and Management . ***Scheduling-Management***. [www.reedconstructindate.com](http://www.reedconstructindate.com). 2009.
50. Fedral Transit Administration. ***Construction Project Management Handbook***. [www.fta.dot.gov](http://www.fta.dot.gov). 2007.
51. Klemetti,A. ***Risk Management in Construction Project***. Helsinki : Helsinki University of Technology, 2006.
52. Mind Tool. ***Mission Statement and Vision Statement***. *Mind Tools Essential Skills for an Excelent Career*. 1996.
53. Hendrikson, C. **Project Management for Construction Fundamental Concept for Owners,Engineers,Architects and Builders**. New Jersey : Prentice- Hall, Inc, 1988.
54. Pandey, S.C ***The Challenges of Contract/ Project Implementation***.Journal of Defence Studies, 2010, Vol. 4.

55. Engineering Association . [www.paleng.org](http://www.paleng.org).
56. Farlex. ***The Free Dictionary***.  
*<http://encyclopedia2.thefreedictionary.com/ISO+9002>*.
57. Odeh A., Battaineh J. ***Causes of Construction Delay:Traditional Contracts***. International Journal of Project Management, 2002.
58. Salleh, R. ***Critical Success Factors of Project Management:Improvinig Project Performance***. Queensland University of Technology, 2009.

## Appendices

### Appendix A

#### Tables of data collected

**Table A.1: Classification of companies used in this research**

City	No	%
Ramallah	11	30.5%
Nablus	6	16.5%
Jenin	9	25%
Tulkarm	2	5.5%
Hebron	4	11%
Jerusalem	2	5.5%
Qalqilya	1	3%
Bethlehem	1	3%

**Table A.2: Location of the companies who participated in this research**

Classification of companies:	No.	%
First Class	14	39%
Second Class	13	36%
Third Class	9	25%

**Table A.3: Degree of academic study of the managers**

Academic Study	No.	%
High school	3	8%
Diploma	4	11%
University	18	50%
Master	3	8%
PhD	1	3%
Not mentioned	7	20%

## Appendix B

### Questions asked to project managers and their answers

#### Question One

What are the sizes of the projects that your company selects, regarding area and budget?

**Table A.4: Size of project**

Size of project	No.	%
0 – 5000 m <sup>2</sup>	6	16%
5000 -10000 m <sup>2</sup>	4	11%
More than 10000	1	3%
Area is not important	25	70%

#### Question Two

How many projects has your company accomplished?

**Table A.5: Size of projects achieved**

No. of projects	No.	%
0 -10	2	6%
10 – 50	14	38%
50 – 100	12	33%
More than 100	8	23%

#### Question Three:

What are the main elements that make you decide to participate in a bid?

**Table A.6: Elements to choose a bid**

Main Elements	No.	%
Cost	22	29%
Area	11	14%
Location	16	21%
Availability of resources	22	29%
others	5	7%

Question Four:

How do you price a bid?

**Table A.7: Pricing a bid**

<b>Main elements in pricing</b>	<b>No.</b>	<b>%</b>
Cost	28	41%
Profit	18	27%
Direct Cost (administration)	11	16%
Period of the project	1	1.5%
taxes	2	2.5%
Costs of sub-contactors	3	4.5%
Unique plan for the company	1	1.5%
Currency changes	3	6%

Question Eight

Do you think using any kind of software is useful in managing projects? Do you use it? Which software?

**Table A.8: Software used**

<b>Computer Software</b>	<b>No.</b>	<b>%</b>
Primavera	9	18%
Ms Project	16	33%
Excel	7	14%
Others	17	35%

Question Nine:

How do you buy the materials needed for the project? On what basis do you deal with suppliers?

**Table A.9: Basis to deal with suppliers**

<b>Basis to deal with suppliers</b>	<b>No.</b>	<b>%</b>
Bids	7	12%
Cost price	15	27%
Quality	11	19%
Ways of payments	12	21%
Credibility and Honesty	12	21%

Question Eleven:

What is the role of the supervising company, in your view? Do you think it's positive or negative in your projects?

**Table A.10: Role of supervision**

	<b>Negative</b>	<b>Positive</b>	<b>Positive +negative</b>	<b>No comments</b>
Role of supervision	8	15	10	3

Question fourteen:

What are the main reasons for the failure of a construction project?

**Table A.11: Main reasons for project failure**

<b>Reasons of failure</b>	<b>No.</b>	<b>%</b>
Bad management	26	29%
Lack of experience and efficiency	18	20%
Funder of the project	2	2.5%
Failure in pricing and planning the project	17	18%
Unstable cash flow	13	14%
Supervision	7	8%
Lack of resources	2	2.5%
Time to finish the project	2	2.5%
Other	3	3.5%

Question seventeen:

What are the indicators of project failure?

**Table A.12: Basis of employment**

Indicators of project failure	No.	%
Not finished on time	29	39%
Mismanagement and planning	5	6.5%
Non-compliance with the specifications	8	11%
Non-compliance with the planned price	15	20%
Lack of cash flow	7	9.5%
Weak financial capacity by the contractor	4	5%
Lack of understanding between the parties	2	3%
Lack of resources	2	3%
Fluctuating prices	2	3%

Question nineteen:

On what basis do you employ your team?

**Table A.13: Basis of employment**

Basis of employment	No.	%
Qualification	26	36.5%
Experience	28	39%
Salary	3	4%
Credibility	4	5.5%
Location of residence	3	4%
Other	7	11%

Question twenty:

How do you motivate team members who are burned out, or bored?

**Table A.14: Motivations**

<b>How to deal with burned out team</b>	<b>No.</b>	<b>percent</b>
Incentives & rewards	18	42 percent
Training courses	3	7 percent
Incentives entertainment	6	14 percent
Comfortable atmosphere	2	5 percent
Participation in decision – making	5	12 percent
others	8	20 percent

Questions twenty-one:

How should the interaction between the team be?

**Table A.15: Interaction among team**

<b>Ways of interaction at work</b>	<b>No.</b>	<b>%</b>
Good relationship	11	25.5%
Mutual respect	10	23%
Functional hierarchy	3	7%
Interest in work	10	23%
Teamwork	9	21.5%

Question twenty two:

What do you believe the qualifications of the project manager position must be? Is there such qualification in Palestine?

**Table A.16: Qualifications of project manager**

<b>Qualifications of the project manager</b>	<b>No.</b>	<b>%</b>
Experience	25	35%
Leadership personality	17	24%
Knowledge of construction work	11	15.5%
Efficiency	8	11%
Ability to work under stress	6	8.5%
Honesty & Sincerity	1	1.5%
Knowledge of computer software	1	1.5%
Accept change	2	3%



**Table A.17: Qualifications of a project manager**

<b>Qualifications of the project manager</b>	<b>No.</b>	<b>%</b>
Experience	25	35%
Leadership personality	17	24%
Knowledge of construction work	11	15.5%
Efficiency	8	11%
Ability to work under stress	6	8.5%
Honesty & sincerity	1	1.5%
Knowledge of computer software	1	1.5%

## Appendix C

### Questions asked to project managers in the interviews

Dear Sir:

This is an interview that will be conducted with project managers in the West Bank as a tool for a thesis degree in Engineering Management, to study how projects are managed in the West Bank.

The information in this interview will be used only for academic research, with a complete commitment to absolute confidence.

Supervisors

Prepared by

Dr. Nabeel Dmaidy

Researcher

Dr. Husam Arman

Hidaya Najmi

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Name

Position

Qualifications

- What are the sizes of the projects ( in m2) that your company selects, regarding area and budget ?

0 -5000 m2            5000 – 10000            More than 10000            Area not important

- How many projects has your company accomplished?

0 – 10            10 – 50            50- 100            more than100

**Initiation phase**

- What are the main elements that make you decide to participate in a bid?
- How do you price the bid?
- Do you prepare a plan for your project, and how?

**Planning phase**

- How do you provide the needs for the project, such as:  
Resources, equipment, machines, engineers and workers?
- How do you deal with accounting and legal issues?
- Do you think using any kind of software is useful in managing projects? Do you use it? Which software?
- On what basis do you deal with suppliers?
- How do you buy the materials needed for the project?
- How do you maintain timely cash flow?
- What is the role of the supervising company, in your view? Do you think the role is positive or negative in your projects?
- Is there any study for risks in the project, such as currency fluctuations, accidents on the project site, delays due to Israeli checkpoints, or other factors?

- How do make sure that safety measures are implemented during the project?

### **Delivery phase**

- What do you think is the most important reason for project failure?

### **Managing the project**

- What are indicators that your project might fail?
- Do you plan for and inspect for quality?

### **Managing the team**

- On what basis do you employ your team?
- How do you motivate team members who are burned out or bored?
- How should the interaction between the team be

### **Qualifications of the project manager**

- What do you believe the qualifications of the project manager position must be? Are there such qualifications in Palestine?
- What do you consider the main element affecting the project?(give score from 1- 10)

1. Improper planning
2. Lack of effective communication
3. Design errors

4. Shortage of supply, such as steel, concrete, etc.
5. Cash-flow problems during construction
6. Mismanagement by the contractor (financial, subcontractor)
7. Executive bureaucracy in the owners' organizations
8. Changes in site conditions
9. Conflicts in work schedules of subcontractors
10. Contractors & Contractual Relationships
11. Experience of project team
12. Quality assurance/control
13. Site accidents
14. Changes of design
15. Mistakes during construction
16. Weather conditions
17. Israel's occupation and related obstacles.

We thank you for your effort and time

Signature

## النسخة العربية:

السادة مدراء المشاريع والمهندسين المحترمين

نشكر تعاونكم في تعبئة المعلومات اللازمة من اجل استكمال دراسة حال إدارة المشاريع الهندسية في الضفة الغربية من خلال أطروحة للحصول على درجة الماجستير في الإدارة الهندسية , وذلك من اجل الحصول على معلومات عن المشاريع الهندسية والشركات الهندسية في الضفة الغربية من خلال القيام بمقابلات مع مدراء لمشاريع إنشائية ضمن شركات مؤهلة من قبل اتحاد المقاولين الفلسطيني. والشركات الهندسية المؤهلة للإشراف على المشاريع الهندسية من قبل نقابة المهندسين ستتم الاستفادة والاطلاع على المعلومات من اجل البحث العلمي فقط , مع الشكر الجزيل .

اشراف م .  
د. نبيل الضميدي  
د. حسام عرمان

إعداد  
هداية أنجمي

الاسم

المركز

الكفاءة (تصنيف الشركة):

ما حجم المشاريع التي تختارها شركتكم من ناحية المساحة ؟

5000-0 10000-5000 اكثر من 10000 غير مهم المساحة

ما عدد المشاريع الكلي التي قامت الشركة بتنفيذها منذ بداية التأسيس ؟

0 – 10 10 – 50 50- 100 اكثر من 100

## Initiation phase

ما هي العوامل الرئيسية التي تحدد قبولك ودخولك لأي عطاء؟  
 الكلفة المساحة الموقع توفر المصادر اسباب اخر  
 كيف تقوم بتسعير عطاء؟

هل تقوم بأعداد خطة لتنفيذ مشروع؟ وكيف يتم تحضيرها؟

## Planning phase

ما هي طريقتك في دراسة وتأمين احتياجات المشروع من ناحية المصادر التالية:  
 أجهزة ومعدات , مهندسين عمال:

كيف يتم التعامل مع الأمور المحاسبية والقانونية بالشركة؟

هل استعمال برامج كمبيوتر في إدارة المشروع مفيد؟ وهل تقوم باستعمالهم؟ ما هي البرامج؟

كيف يتم شراء المواد للمشروع؟ وعلى اي اساس يتم انتقاء الموردين والتعامل معهم؟

كيف تضمن الالتزام بالدفعات المالية في الزمن المحدد؟

ما هو دور الجهة المشرفة على المشروع من وجهة نظرك؟ وهل هو دور سلبي أم ايجابي؟

هل هنالك إجراءات واجب اتخاذها لتخطي المخاطر. مثلا اختلاف تصريف العملة, حوادث في مكان العمل , تأخير ناتج عن إجراءات الحواجز والإغلاق؟

ما هي طرق السلامة العامة المتخذة في المشروع؟

## Delivery phase

ما هي باعتقادك أهم أسباب فشل المشاريع الإنشائية؟

هل يتم توثيق ما حصل في المشروع. وهل تعتقد أن هذه طريقة فعالة يمكن الاستفادة منها للمستقبل؟

## Managing the project

هل تعتبر مشاريعك ناجحة؟ وعلى أي أساس تعتمد في حكمك على نجاح المشاريع؟

ما هي الدلائل التي توشر بفشل المشروع؟

كيف يتم تخطيط وقياس الجودة في مشاريعكم؟

## Managing the team

عل أي أساس يتم توظيف العاملين بالمؤسسة؟

كيف تحمس أعضاء فريقك المصابين بالملل والإحباط وعدم الانتاج؟

كيف يكون التعامل بين الإدارة وفريق العمل أو بين الموظفين أنفسهم؟

ما هي باعتقادك مواصفات وكفاءات مدير المشروع؟ وهل تتوفر كفاءات في فلسطين للقيام بإدارة مشاريع ناجحة؟

ما هي برأيك أهم العوامل التي تؤثر على المشروع (أعطي علامة من 1-10 )

- التخطيط غير السليم .....
- الافتقار إلى التواصل الفعال. ....
- أخطاء في التصميم .....
- نقص الحديد أو المواد اللازمة للمشروع ، الخ. ....
- مشاكل التدفق النقدي خلال البناء.....
- زيادة في كميات بناء على الواقع.....
- سوء الإدارة من قبل المقاول (الأمر المالية والمقاولين من الباطن).....
- البيروقراطية التنفيذية في المنظمات .....
- التغييرات في ظروف الموقع .....
- خبرة فريق عمل المشروع .....
- ضمان الجودة / مراقبة .....



- ..... الحوادث في الموقع
- ..... التأخير في تسليم المواد والمعدات
- ..... الأوضاع الاقتصادية
- ..... تغييرات في التصميم
- ..... أخطاء أثناء البناء
- ..... حالة الطقس
- ..... الاحتلال الإسرائيلي وعراقيله

نتقدم لك\ لكي بالشكر على الجهد والوقت المبذول لإتمام المقابلة  
توقيع

جامعة النجاح الوطنية

كلية الدراسات العليا

## أدارة المشاريع الإنشائية

إعداد

هداية سعيد النجمي

إشراف

د. نبيل الضميدي

د. حسام عرمان

قدمت هذه الأطروحة استكمالاً لمتطلبات درجة الماجستير في الإدارة الهندسية بكلية الدراسات

العليا في جامعة النجاح الوطنية في نابلس، فلسطين

2011

ب

## أدارة المشاريع الإنشائية

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### الملخص

هدف هذه الدراسة وهذا البحث دراسة وضع وحال إدارة المشاريع الإنشائية في الضفة الغربية لما يحتاجه قطاع الإنشاءات في فلسطين من اهتمام بسبب التطور والنهضة العمرانية التي يشهدها العالم بشكل عام وتشهده الضفة الغربية بشكل خاص. ولما لهذا القطاع من أهمية اقتصادية واجتماعية وحيوية قامت هذه الدراسة بإلقاء الضوء على جوانب كثيرة في موضوع إدارة المشاريع من حيث مشاكلها وعوائقها ومحاولة طرح حلول.

استخدمت الباحثة المنهج النوعي بشكل رئيسي والكمي بشكل تكميلي لإتمام العمل البحثي حيث قامت الباحثة بقاء عدد من المختصين في هذا المجال وبالإضافة إلى إجراء 36 مقابلة مع مدراء مشاريع في مختلف مناطق من الضفة الغربية ومن الفئات الثلاثة الأولى من الشركات والمصنفة ضمن اتحاد المقاولون الفلسطيني في المجال الإنشائي .

بعد دراسة نص المقابلات ضمن مجموعة من الأسئلة التي تم طرحها تم تحليل المعلومات المعطاة وتبين أن هنالك عدة عوامل والعديد من المشاكل التي تعاني منها عملية إدارة المشاريع الإنشائية في الضفة الغربية ومن أهمها هي ضعف التخطيط وإدارة المشروع وضعف التواصل بين كافة الأطراف للوصول إلى الحلول المثلى بالإضافة إلى العديد من الثغرات والنقاط التي سيتم إيضاحها في سياق البحث. ونتيجة لهذا قامت الباحثة بتطوير نموذج لمحاولة ترتيب وتنظيم عملية إدارة المشاريع الإنشائية لكي يكون أداة فاعلة تساعد مدراء المشاريع في وضع الأولويات والظهار أماكن النجاح والفشل. فعملية الإدارة هي جزء هام لإنجاح أي مشروع هندسي من خلال عوامل عدة أولها فهم الهدف الرئيس من كل مشروع ومحاولة تطبيق هذا الهدف بشكل واضح وثانيها تطوير نظام مترابط يتم من خلاله تنفيذ المشروع ضمن أسس

واضحة. وثالثها استغلال كل مشروع كي يكون درسا في محاولة الوصول لأحسن النتائج من خلال اخذ العبر. وأيضا محاولة توضيح عوامل النجاح في المشاريع الإنشائية لتحقيق أفضل النتائج للشركات الهندسية وتلبية حاجات المجتمع المحلي من خلال مشاريع هندسية عالية الجودة والقيمة لمجتمعنا الفلسطيني .