

An-Najah National University

Faculty of Graduate Studies

**Assessment of Monitoring and Evaluation
Process for Governmental Construction
Projects in the West Bank.**

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**This Thesis is Submitted in Partial Fulfillment of the Requirements for
the Degree of Master in Engineering Management, Faculty of
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**Assessment of Monitoring and Evaluation
Process for Governmental Construction Projects
In the West Bank**

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III

DEDICATION

بسم الله الرحمن الرحيم

(شَهِدَ اللَّهُ أَنَّهُ لَا إِلَهَ إِلَّا هُوَ وَالْمَلَائِكَةُ وَأُولُو الْعِلْمِ قَائِمًا بِالْقِسْطِ لَا إِلَهَ إِلَّا هُوَ الْعَزِيزُ الْحَكِيمُ)

(سورة آل عمران ، آية ١٨)

I would never have been able to finish my dissertation without the help of almighty Allah firstly, and without guidance of my committee members in addition to the supports of my wife, and help of my colleagues, teachers, and friends.

I dedicate this humble work in particular to my father , mother who have helped, supported, encouraged me to complete this work and their ongoing prayers asking our Gad to help and bless me to complete my work successfully, my sisters and my brothers who have been always supporting me by their best wishes.

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IV

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أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

**ASSESSMENT OF MONITORING AND EVALUATION PROCESS
FOR GOVERNMENTAL CONSTRUCTION PROJECTS IN THE
WEST BANK.**

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.

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Abbreviation

M&E	Monitoring and Evaluation
IT	Information Technology
ANOVA	Analysis of Variance
SPSS	Statistical Package for the Social Sciences
B.O.Q	Bill of Quantity
UNURWA	United Nations Relief and Works Agency
KPI	Key Performance Indicators
PPI	Project Performance Indicators
PCU	Palestinian Contracting Union
USAID	United States Agency for International Development
LSD	Least Significant Difference

**Assessment of Monitoring and Evaluation Process for Governmental
Construction Projects in the West Bank.**

By

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Abstract

The problem of delaying in the construction industry is a global phenomenon, and the construction projects in governmental construction industry in the West Bank have no exception. The goal of all parties involved in construction projects (owners, engineers, consultants, contractors, etc) is to complete the project on exact time, within dedicated budget, with quality on successful way, accurate results and outputs.

Governmental construction projects in the West Bank are mainly and frequently influenced by all success and/or failure factors that should be monitored and evaluated because these factors either help the projects to reach goals or postpone completion.

The purpose of this research is to assess the monitoring and evaluation process for success or failure factors which can help the projects to reach exact goals at the right time and greater efficiency.

This research suggests the most important elements of monitoring and evaluation process that should be assessed and checked. The availability of this process on these elements related to all aspects of construction projects as (client, contractor, consultant,.. etc), and according to literature and all construction projects parties of success or failure factors, and hence assessed the monitoring and evaluation process for these factors.

To determine the existence of monitoring and evaluation which were most influential to success construction projects.

To achieve the purpose, this research uses a comprehensive literature review in order to design a questionnaire to assess, monitoring , evaluating and to obtain a full investigation on success and failure factors of governmental construction projects in West Bank. Accordingly ranking the most prominent factors on the monitoring and evaluation process.

A specific survey was distributed among owners, contractors and engineers in order to assess and examine the M&E process which covered the most important factors that should be monitored and evaluated. In addition, general survey was distributed to assess the availability of M&E process for main construction projects parameters and to examine the satisfactory of main parameters of M&E that implemented on construction projects in the west bank. A consensus of expert opinion using Delphi methodology was used to conduct that exam or check.

Data was collected and evaluated by statistical methods in order to assess the monitoring and evaluation process for all success and failure factors, measure the strength and direction of monitoring, evaluate the governmental construction projects in the west bank, and to evaluate the influence of these success and failure factors on performance of construction project.

A one and two way analysis of variance (ANOVA) has been used to examine how groups evaluated the influence of all related success and failure factors of construction projects. Finally, the Delphi method using consensus from experts was employed in order to identify satisfactory and

availability on monitoring and evaluation process for final assessing governmental construction projects in West Bank monitoring and evaluating.

This study employed a descriptive survey research design. The targeted population was 300 respondents and numerical data collected using questionnaires was coded , entered the computer and analyzed by using Statistical Package for Social Scientists (SPSS) version 21 software program. Data collected was analyzed and interpreted. The findings of the study (in relation to the first objective) revealed that the level of training on M & E was of central importance to the performance of M & E public projects. However, the second objective revealed that there was a high correlation between influence of training and performance of monitoring and evaluation, influence of costs , high correlation between performance of monitoring and evaluation, and high correlation between influence of time and Performance of monitoring and high correlation between evaluation and influence of strength of monitoring team. The study results also revealed that M & E is important for success of any project, yet, most government projects have not been able to adopt it effectively.

Chapter One

Introduction

1.1 Overview

Construction works and industry is one of the natural, indispensable and primary needs of human life. Construction sector is considered as a vital sector in today's economy worldwide due to the developments in the construction sector. Its techniques, equipment and materials which are taking place in the world in general and especially in the West Bank. Construction sector is of an utmost significance, not only to the economic and social life, but also to the needs and inspiration of the local culture (Najmi, 2011, P13).

The importance of construction projects are for providing necessary service for the public. There is a need to establish a relevant infrastructure as construction, roads, public spaces, gardens ... etc. Infrastructure should be available, especially buildings as public service locations. For this facility, it should include certain level of privacy guaranteed in the public service provision. Hence, buildings for public services should clearly comply with all requirements for public service buildings. To achieve such buildings project, complete bid documents should be prepared including bill of quantities and specifications, bids to be declared to open before contracting companies so as to implement announced projects and sometimes buildings project also including supervision of the construction.

The successful project completion requires the effort of the project team in order to carry out the various project activities and all goals that should be monitored and finally evaluated; and it is the project manager who at the centre of the project network is responsible for coordinating the whole construction process.

Construction industry has complexity in its nature because it contains large number of parties such as clients, contractors, consultants, stakeholders, shareholders, regulators and others. Construction projects in the West Bank suffer from many problems and complex issues in performance such as cost, time and safety. The Monitoring and Evaluation Process is to identify and evaluate the main factors affecting the performance of construction projects in the West Bank. This thesis is concerned with the assessment of the Monitoring and Evaluation Process that will be done in the governmental construction projects in the West Bank and it investigates the importance of studying all factors which affect the construction projects performance with all parties related to these projects.

Monitoring and evaluating are processes through which we get sure that the assigned project is performed in accordance to the engineering designs and work plans for administering the process of constructing in a right manner. It implies using the possible tools for reaching the judgment that constructions specifications are fair and

considers the professional specifications of the targeted construction. (Abbasi, 2005)

The construction industry plays a very important role in developing countries, and project failures are still frequent mainly due to inadequate management practices especially (Monitoring and Evaluation Process for the project), and due to the intrinsic characteristics of projects of the construction industry. Even though, Palestinian construction has been improved in recent years. Cost and schedule overruns, low productivity and final product quality problems are still common. In this context, assessment of the monitoring and evaluation of project management is a crucial tool for improving construction operations and for the overall success of projects.

Construction projects performance problem appears in many aspects in the West Bank. There are many constructed projects fail in time performance, others fail in cost performance and others fail in other performance indicators. In 2006, there were many projects which have been finished with poor performance because of many evidential reasons such as: obstacles by client, non-availability of materials, road closure, amendment of the design and drawing, additional works, waiting the decision, handing over, variation order, amendments in Bill of Quantity (B.O.Q) and delay of receiving drawings (UNRWA, 2006). There are other indicators for problems of performance in Gaza Strip such as project management, coordination between participants, monitoring, and

feedback and leadership skills. In addition, political, economic and cultural issues are three important indicators related to failures of projects' performance in the Gaza strip. (UNRWA, 2006 & 2007).

In this study, monitoring and evaluation process and all factors affecting the performance of construction projects in the West Bank will be assessed. Ready framework and Performance indicators in governmental construction projects are used to assess the M&E and performance in construction projects. These frameworks and indicators can be used for benchmarking purposes. Also, they will be a key component of any organization's movements towards achieving best practice in order to overcome performance problem, doing monitoring and evaluation in best way. However, this study aims at identifying the factors and features affecting the monitoring and evaluation process which directly affecting the performance of governmental construction projects in the West Bank. Moreover, it aims to obtain main criteria and indicators in order to improve performance.

1.2 Research Questions

The current situation of assessment of monitoring and evaluation of governmental construction projects in West Bank needs to be initiated and to be improved in the best manner. In addition to provide appropriate laws, control and pricing system with efficient designs and appropriate construction material. Providing such conditions would help project managers to lead their companies to reach success, and to make a

difference in a highly competitive environment. To achieve these objectives, the following questions might be raised:

- What are the current status of M&E and the assessment of this process of governmental construction projects in the West Bank of Palestine?

This question can be subdivided into many minor questions as:

- What are the tools & facilities used with M&E?
- What are the technical issues of any M&E (Electrical, Mechanical, etc)?
- What are the challenges facing M&E process?
- How the assessment of M&E would affect the performance of construction projects?

These questions and others will be answered in this thesis, in order to improve the assessment of M&E process of governmental construction projects in West Bank.

1.3 Aims and Objectives of the Research:

The primary aim of this thesis is to initiate a clever and useful assessment of M&E process with acknowledge based, that will help project managers to lead their companies to reach success and to make a difference in a highly competitive environment.

The objectives of the research are:

- To pinpoint the current situation of practicing M&E in the governmental construction projects in west bank.
- To assess the M&E process in the Palestinian construction industry, define the nature and performance of management in the industry, and to improve its contribution to the overall economy of social life.
- To highlight the various challenges facing M&E process, and propose remedial and precaution measures for them.
- To explore the tools, facilities and methods used for M&E.
- To pinpoint the need to focus on the issues for M&E scientifically in order to ensure a successful completion of construction projects for public utilities.
- To evolve best practices for applying M&E, and to make best practice for assessment process all the time.

1.4 Significance of the Study

The importance of the study is reflected in the need for having a good construction which will inhabit services to the public. Since its specification is one of the essential factors for the success of firms working in such buildings. It's a parent that there are many practices concerned to fulfill the functions of those firms: as engineers, owners, sponsors, and public.

When the objective of the study are fulfilled, all stakeholders will know and understand the current status of M&E. This would enable

them to project the future prospects and be able to develop the current situation to a more productive and effective one. Therefore, constructions will form a good incubator for handling public services. The public who visit those buildings will feel safer when these constructions are built in accordance to a better M&E process.

This study will deal with the era tent relationship between engineers who are performing M&E in one side and construction companies and contractors on other side. This will lead to a comfortable relationship when cooperation replaces conflict and confrontation. In this case all parties will win.

1.5 Methodology

This study adopts pattern of data collection tools to ensure that all types of data required for this study will be collected.

- The most prominent tool is the questionnaire which is specially designed to the benefit of the study. While building a questionnaire, the researcher will benefit from the previous studies, theoretical publications on M&E, the adopted models and the experts points of view. Before distributing questionnaire, it will be validated and examined in accordance to scientific research methodology. It will be distributed to all stockholders of construction industry, mainly, to: engineers, contractors, sponsors, and the concerned organization.

- Interviews through Delphi method also be conducted with all stakeholders (engineers, contractors, etc). Interviews will help in crystallizing the questionnaire and in enhancing the perception of M&E in the Palestinian context. It will also help in analyzing the results of the study as an outcome of the questionnaire.
- Documentary analysis, will be another tool for data collection, The targeted documents are: M&E reports, contracts, instructions....etc, and this tool will provide the study with facts related to challenges faced while performing M&E.
- Focus group will be implemented through which a group of experts and stakeholders will need to discuss strategy and policy issues related to M&E.
- SPSS also used for analyzing collected data for developing final conclusion.
- Developing conclusions and recommendations.

All data collected using these methods will be integrate and categorized in order to ensure the questions of the study.

1.6 Definition of Significant Terms

Performance: The degree to which a development intervention or a development partner operates according to specific criteria or achieves result in accordance with stated plans.

Project: Is an individual or collaborative enterprise that is carefully

planned and designed to achieve a particular aim.

Public projects : Public facilities and improvements financed by the government for the public good. Public works include hospitals, bridges, highways, and dams. These projects may be funded by local, state, or federal appropriations.

Evaluation: A periodic but comprehensive assessment of the overall progress and worth of a 'project' (Woodhill & Robins 1998). The term used for final assessment of whether the BMP has achieved its predefined objectives.

Monitoring: The collection of data by various methods for the purpose of understanding natural systems and features, evaluating the impacts of development proposals on such systems, and assessing the performance of mitigation measures.

1.7 Thesis Structure

The study comprises five chapters of which:

Chapter One: The current chapter is one which involves, background, research questions, objectives, significance of the study, methodology, limitations and organization of the study.

Chapter Two: The literature review. This chapter shows a historical review from previous studied to identify the assessment of M&E process.

Chapter Three: Methodology. This chapter shows the main methodologies used in previous studies and the methodology used in this research in order to achieve the required objectives.

Chapter Four: Presents' results and analysis. This chapter shows analysis, description and discussion of research results;

Chapter Five: The final chapter is the summary conclusions and recommendations.

Chapter Two

Literature Review

2.1 Introduction

This chapter presents the literature review of monitoring and evaluation process in relation to construction projects, project managers, and effective performance that should be interrelated with M&E of government construction Projects.

2.2 Definitions and Concepts

Shreyash (2014) said that it is very common to see project failing to achieve its mission within specified time and cost. The factors contributing to overrun are inadequate project formation, poor planning for implementation and lack project management during project execution, but the main cause of failure can be attributed to cost estimation failure and management failure. As project become larger and more complex, the ability to exchange information on a timely basis is shrinking. Looking to current scenario in Pune construction, industry problem faced is of cost & time overruns. Shreyash' paper is intended at exploring the cost monitoring technique used to manage the budget of the real estate construction projects in Pune. Suggesting feasible monitoring methods to the suitable for Pune's real estate sector working environment & approach of the industry towards construction projects is also one of the intentions of Shreyash' paper.

Zubair (2006) stated that project progress monitoring and control is one of the most important tasks of construction project management. Every team member needs to know, in a timely and accurate manner, how is the project progressing, where they are currently in comparison to the initially set plans, whether deadlines are met, budgets are safely measured and followed.

Meman et al (2006) revealed that there is a lack of systematic and automated evaluation and monitoring in the construction project. It was also found that information from construction drawing, digital images of construction site and plan schedules where integrated in evolving these systems of M&E. It was also found that the use of technology in M&E can be improved and scientifically digitalized.

Figure 2.1 shows the traditional project progress monitoring process and the progress reports are updated on a periodic printed form; issued in most of the cases on a monthly basis.

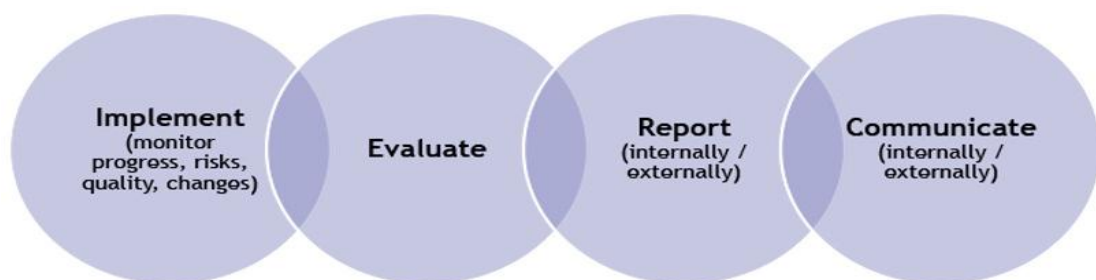


Figure 2.1: Traditional project progress for monitoring process.

Figure 2.2 shows the conceptual framework for a depiction on how the monitoring and evaluation variables related to one another.

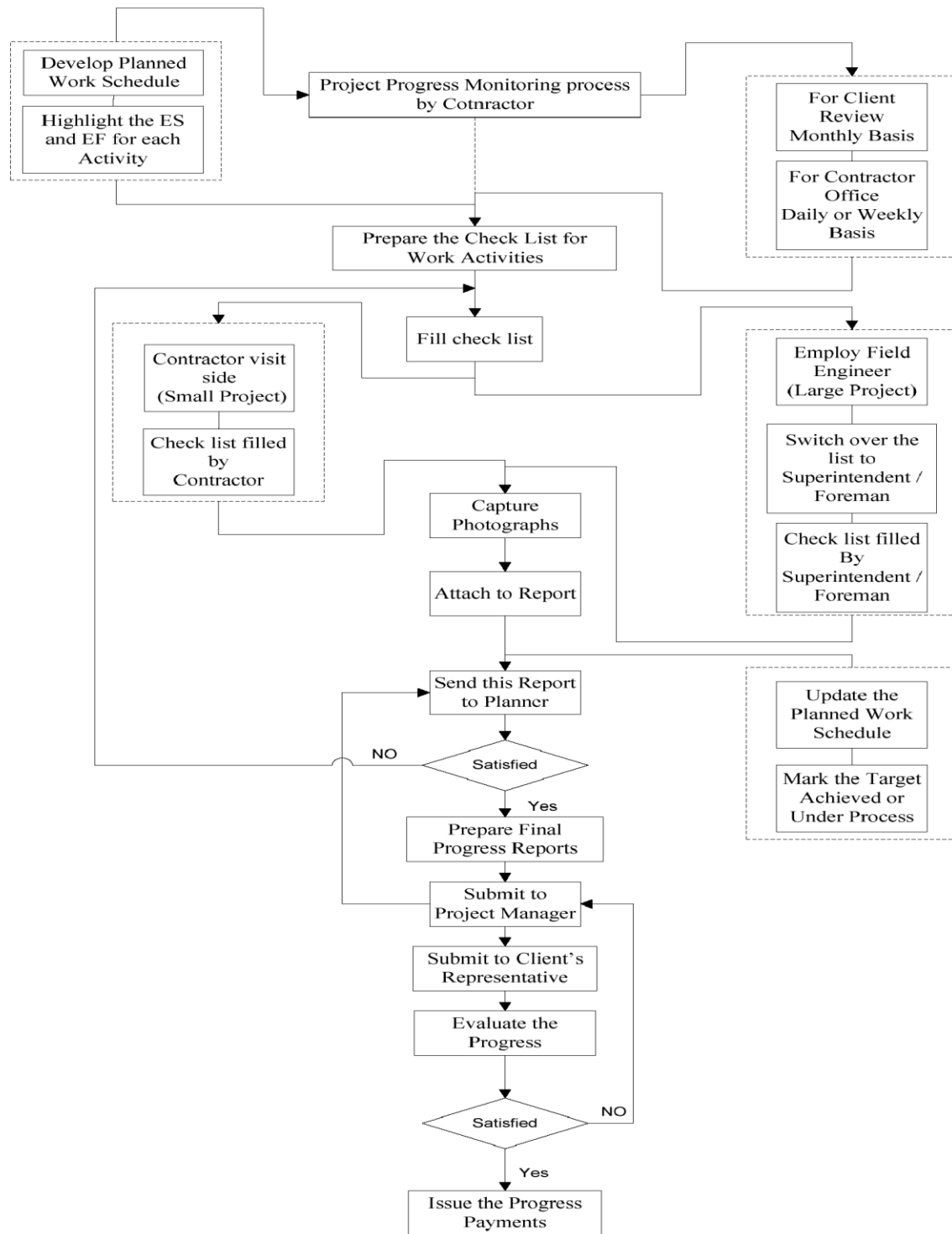


Figure2.2:ConceptualFramework

Conlin (1997) stated that the most construction project employs scheduling methods to monitor and control the progress of work and to develop progress reports, which involves the recording of construction achievements for detection of deviations from actual plan and for forecasting project performance. Zubair (2006) stated that the current practice of project control is entirely dependent on cost, schedule, quality reports and personnel performance reviews.

Performance Management and Evaluation Unit Cabinet Support and Policy Division Cabinet Office (2010) stated that the linking of performance measurement of projects and Monitoring and Evaluation process are a public management tools that will be used to improve the way in which government achieves results by examining outcomes and impacts of projects, programs and policies which can be used for informed decision-making. It provides a means whereby reliable performance feedback can be ascertained.

Okuwoga (1998) stated that the performance of the construction industry is considered a source of concern to both public and private sector clients. Karim and Marosszeky (1999) studied performance measurement using Key performance indicators (KPIs). Key performance indicators (KPIs) enable a comparison between different projects and enterprises in order to identify the existence of particular patterns. The specialist contractors hoped that the data trends observed will provide insight into certain inefficiencies that are prevalent in the market. They

intend to use the data expose these inefficiencies and as a basis for industry development (Karim and Marosszeky, 1999).

Key performance indicators (KPIs) include factors such as time, cost, quality, client satisfaction; client changes, business performance and safety in order to enable measurement of project and organizational performance throughout the construction industry. This information can be used for benchmarking purposes and will be a key component of any organization movement towards achieving best practice (DETR, 2000). Lehtonen (2001) stated that performance measurement is a current issue in academia as well as in business community. Samson and Lema (2002) stated that KPIs are very important for delivering value to stakeholders. So, companies must be sure that they have right processes and capabilities in place. The KPIs also allow to trace which processes and capabilities must be competitively and distinctive, and which one merely need to be improved or maintained.

In order to define the KPIs throughout the lifetime of a project, five key stages have been identified as shown in Figure 2.3 (DETR, 2000):

A. Commit to Invest: The point, at which the client decides in principle to invest in a project, sets out the requirements in business terms and authorizes the project team to proceed with the conceptual design.

B. Commit to construct: the point at which the client authorizes the project team to start the construction of the project.

C. Available for Use: the point at which the project is available for substantial occupancy or use. This may be in advance of the completion of the project.

D. End of Defect Liability Period: the point at which the period within the construction contract during which the contractor is obliged to rectify defects ends (often 12 months from point C).

E. End of Lifetime of Project: the point at which the period over which the project is employed in its original or near original purpose ends. As this is usually many years after the project's completion, this is a theoretical point over which concepts such as full life costs can be applied

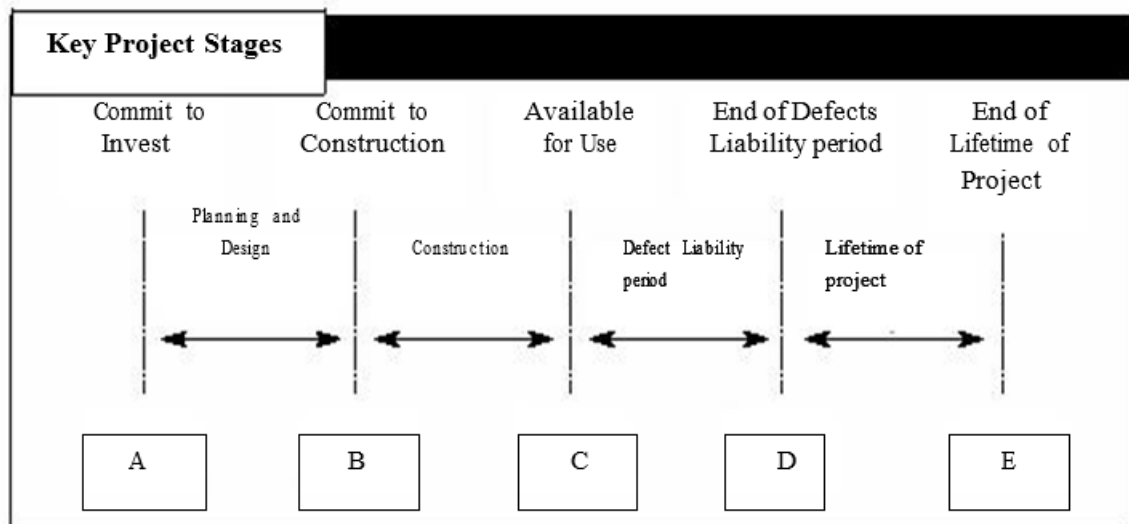


Figure 2.3: KPIs throughout the lifetime of a project (Source: DETR, 2000)

Performance measurement and its indicators had been studied for several years. (Karim and Marosszeky ,1999) defined performance measurement as an operational management accounting including financial and non-financial performance indicators. And they stated that

performance measurement is a process of re-thinking and re-evaluation of business processes to achieve significant performance improvements of projects. (Reichelt and Lyneis ,1999) defined performance measurement as a model which treat project as the complex dynamic system.

The key performance indicators are identified by DETR (2000) as an applicable indication of project and/or company levels. In some cases, the company indicator is the average value of that company's project indicators. Al-Momani (2000) stated that the owner satisfaction for performance can be defined as the gap between what the owners expect and the level of performance they believe that is being delivered by the contractors. Lehtonen (2001) stated that performance measurement is a basis for progressive improvement and monitoring of company productivity. Chan and Kumaraswamy (2002) remarked that project performance measurement includes time, budget, safety, quality and overall client satisfaction. Thomas (2002) defined performance measurement as monitoring and controlling of projects according to regular basis. Kuprenas (2003) stated that project performance measurement means an improvement of cost, schedule, and quality for design and construction stages. Long et al (2004) stated that a project performance measurement is related to many indicators such as time, budget, quality, specifications and stakeholders' satisfaction. Navon (2005) defined performance measurement as a comparison between the desired and the actual performances. Ugwu and Haupt (2007) classified

the key performance indicators as site-specific and project-specific. Early Contractor Involvement (ECI) and Early Supplier Involvement (ESI) give contractors and suppliers the opportunity to give advice and/or specific ideas earlier to enhance performance.

According to previous studies, concepts and definitions, it can be said that the assessment of monitoring and evaluation process in the construction projects depends on the performance measurement which is a process including factors as Key Performance Indicators (KPIs) such as time, cost, quality, client satisfaction; productivity and safety in order to enable measurement of current organizational project performance and to achieve significant performance improvements of future projects by doing assessment stage by stage. Also, they attempt to overcome the limitations of the previous research development in the area of evaluating the construction phase. The main focus of this research is to go ahead with project client's to do methodology for the monitoring and evaluation of governmental construction project.

2.3 Relation between Project Performance, Monitoring and Evaluation.

An effective project performance of the project control can't be achieved only by monitoring the actual physical progress with the planned progress and actual spending with the budgeted values. Harris and McCaffer (2001) describe monitoring as the act of checking actual

performance progress, actual resource usage against planned, the act of taking decision to alter the likely future outcome and bring the project back on the planned schedule.

Shreyash (2013) stated that start stage for any project to middle stage is very important hence it is necessary to monitor and control the project performance.

Successful implementation of all index of construction projects can result in the successful relation between project monitoring and performance progress of project.

2.4 Problem of Monitoring and Evaluation of Performance in Construction Industry

Shreyash (2013) stated that it has been usually seen that there is a lack of systematic and automated evaluation and monitoring system in construction project. The main problems which account for poor cost management by traditional methods are the flaws in cost estimates and cost control process, inadequate information modeling, and lack of integration of cost management and production management system.

The failure of any construction project is related to the problems and failure in performance mainly with monitoring and evaluation process that should be assessed periodically. Moreover, there are many reasons and factors which are attributed to such problems. Monitoring, evaluation and control are very important management functions for ensuring that

project objectives are fully achieved and that the project remains on course. Ogunlana et al, (1996) stated that the construction industry performance problems which are related to monitoring and evaluation process can be classified in three layers: problems of shortages or inadequacies in industry infrastructure (mainly supply of resources), problems caused by clients and consultants and problems caused by contractor incompetence/inadequacies. Okuwoga (1998) identified that the monitoring and evaluation of performance problem is related to poor budgetary and time control. Long et al (2004) remarked that performance problems arise in large construction projects due to many reasons such as: incompetent designers/contractors, poor estimation and change management, social and technological issues, site related issues and improper techniques and tools. Zubair (2006) stated a persistent problem in construction is documentation changes which occur in the field and to prepare the as-built schedule. In current practice, deviations from planned performance can only be reported after significant time has elapsed and manual monitoring of the construction activities are costly and error prone.

Samson and Lema (2002) found that the traditional M&E systems have problems because of large and complex amount of information with absence of approaches aiming to assist decision -maker understand, organize and use such information to manage organizational performance.

2.5 Construction Management and monitoring and Performance

Shreyash (2013) mentioned that project monitoring is the process where the construction resources of project is managed through the best methods and techniques so that the client does not suffer the losses when carrying out the project activities.

There is a strong relation between project management who do monitoring and evaluation in the project and project performance. Management in construction industry is considered as one of the most important factors affecting performance of works.

Shreyash (2013) stated that project monitoring is considered to be a managerial process which aims to generate information for supporting decision-making and for stimulating cost reduction, value improvement and continuous improvement in the organization.

2.6 Construction Projects and Monitoring and Evaluation.

The success of construction projects depends mainly on success of monitoring and evaluation process. Many previous researches had been studied controlling of construction projects (monitoring and evaluation) and noticed the deep relation with performance of the project.

In order to show that Andrzej Gredka (2014) stated that the main goal of monitoring construction projects is to identify any negative deviations from the approved plan. Therefore, the possibility of the

permanently monitoring the progress of construction work scope is an extremely important issue. Shreyash (2013) focuses to get information about monitoring from four field of construction industry such as road & highways, bridges & stadium, real estate and oil & gas. He also shows the relation between project performance and monitoring with progress of project. And he believes that as project grows in size and complexity, the ability to plan, monitor and control the project become a key project management function. Like any other business, builders, contractors and developers have to plan and organize their day to day activities in order to manage effectively.

It is obtained by Navon (2005) that the control system is an important element in identifying factors affecting construction project effort. For each of the project goals, one or more Project Performance Indicators (PPI) are needed.

2.7 Information Technology and Construction Projects Performance

Computer aids are more available and widely used for many of the activities involved in construction projects monitoring and evaluation process than assessment for this process related to project performance.

Information technology technique is very important in the entire world. Andrzej Gredka (2014) stated that the effective monitoring, as “an integral part of the daily management of any construction project”, should be based on the systematic observation of the construction project

progress in the planning phase as well as in the realization phase. The computer programs available for the management of the linear construction projects are currently used in the domestic market. Based on the graphic form of a cyclogram and using interpretive possibilities contained in the process of the graphic visualization, traditional forms of project management support systems present their results in the form of bar charts or network diagrams.

Nitithamyong et al (2004) remarked that information Technology (IT) is now routinely used in the construction industry as a tool to reduce some of the problems generated by fragmentation. The use of IT improves coordination and collaboration between firms participating in a construction project, leads to better communication practices and good performance. Its benefits include several features such as increasing in the quality of documents and the speed of the work, better financial control and communications, and simpler and faster access to common data as well as a decreasing in documentation errors.

According to Zubair Ahmed Memon (2006), An integrated simulation model, named DCM (Digitalizing the Construction Monitoring) has been developed to integrate digital images of construction scene with Autocad drawings and it resolves the existing project progress reporting problems. The DCM models improve the decision-making and productivity of construction activity.

Thomas (2002) proposed that contractor Performance Appraisal and

Reporting (PAR) system for monitoring contractor performance at an organizational level. Advancements in World Wide Web techniques provide enhanced capacities for collecting compile and disseminate performance-related information of various construction stakeholders in a timely and cost-effective manner. Becerik (2004) stated that the rapid advances of web-based project management and collaboration technology offer new opportunities for improving existing construction project performance.

2.8 Factors Influencing Performance of Monitoring and Evaluation of Construction Projects.

Managing projects requires an operational M&E system. The M & E system is a set of planning, gathered and synthesized information, refection, and reporting processes, along with the necessary supporting conditions and capacities required for the outputs of M & E for making valuable contributions to decision making and learning.

Williams (2000) asserts that monitoring provides management and the main stakeholders of a development intervention with indications of the extent of the progress and achievement of expected results and progress with respect to the use of allocated funds. Monitoring provides essential inputs for evaluation and therefore constitutes a part of the overall evaluation procedure. Evaluation is an organized objective assessment of an ongoing or concluded policy, program/project, its design, execution and results.

2.9 Factors Affecting Performance of Managers and Team that should be with M&E.

Naidoo (2011) believed that providing support and strengthening of M & E team is a sign of good governance. Providing support and strengthening of M&E team will also play a key role in ensuring that the M & E team adds value to the organizations operations. Behn (2003) mentioned that monitoring and evaluation (M&E) has become an increasingly important tool within the global efforts for achieving environmental, economic and social sustainability. At national and international scales, the sustainability criteria and indicators for M&E are very crucial in defining, monitoring and reporting on ecological, economic and social trends, tracking progress towards goals and influencing policy and practices. Nabulu (2015) described monitoring and evaluation (M&E) as a process that assists project managers in improving performance and achieving results. The goal of M&E is to improve current and future management of outputs.

According to Sammy(2015), most planning and execution processes of the projects are well laid out but most of them do not consider monitoring and evaluation as an important phase in the project, and to assess the influence of training staff and personnel, stakeholder participation, and political interference on monitoring and evaluation performance of projects.

2.10 Factors Affecting Cost and Time Performance that should be monitored.

The project costing should provide a clear and adequate provision for monitoring and evaluation events. Monitoring and evaluation budget can be obviously delineated within the overall project costing to give the monitoring and evaluation function the due recognition it plays in project running and completion.

Bruijn (2007) stated that plans are not always aligned and synchronized with the cost of the project. Other challenges include the lack of accountability, particularly for monitoring and reporting on performance information, unrealistic target setting and poor quality of performance information.

Chan and Kumaraswamy (2002) remarked that studies in various countries appear to have contributed significantly to the body of knowledge relating to time performance in construction projects over the past three decades, while Iyer and Jha (2005) remarked that project performance in term of cost is studied since 1960s. These studies range from theoretical work based on experience of researcher on one end to structured research work on the other end. Moreover, Pheng and Chuan (2006) stated that there have been many past studies on project performance according to cost and time factors. Channah Sorah (2003) stated that monitoring gives information on where a policy, program, or project is at any given time (and over time) relative to respective targets

and outcomes. It is descriptive in intent. Evaluation gives evidence of why targets and outcomes are or are not being achieved. It seeks to address issues of causality and a particular emphasis here is the expansion of the traditional M&E function to focus explicitly on outcomes and impacts.

2.11 Measurement of Project Performance Related with M&E.

Susan (2005) mentioned that the performance measurement focuses on whether a program has achieved its objectives, expressed as measurable performance standards, program evaluations typically examine more broader range of information on program performance and its context than its feasible to monitor on an ongoing basis.

Karim and Marosszeky (1999) stated that performance measurement systems have been one of the primary tools used by the manufacturing sector for business process re-engineering .They are used to monitor the outcomes and effectiveness of implementation.

According to Susan (2005), performance measures may address the type or level of program activities conducted (process), the direct products and services delivered by a program (outputs), and/or the results of those products and services (outcomes).

2.12 Key Performance Indicators KPI with Evaluation process

University of oxford (2010) revealed that the KPI process is a whole life project process of evaluating project key performance indicators and team key performance indicators throughout, and following, the design and construction of new buildings or facilities, as well as the refurbishment of existing buildings and facilities.

Karim and Marosszeky (1999) defined the purpose of KPI's as to enable a comparison between different projects and enterprises in order to to identify the existence of particular patterns.

Cheung et al (2004) remarked seven main key indicators for performance, these indicators are: time, cost, quality, client satisfaction, client changes, business performance, and safety and health. Navon (2005) stated that a number of research efforts to fully automate project performance control of various project performance indicators have been carried out in recent years. These are also briefly described together with the concept of measuring indirect parameters and converting them into the sought indicators. These indicators are (1) labor and earthmoving productivity based on measuring the location of workers or earthmoving equipment at regular time intervals; (2) progress based on the above data; (3) a comprehensive control of construction materials starting by monitoring orders and purchasing up to the movement of the materials on site.

2.13 Monitoring and Benchmarking Project Performance.

Jackson and Lund (2000) defined Benchmarking as, first and foremost, a learning process structured aiming to enable those engaging in the process to compare their services/activities/ products in order to identify their comparative strengths and weaknesses as a basis for self-improvement and/or self-regulation.

Tolosi (2000) defined benchmarking as a process which continuously measures the products, services and operational practices of a given organization to compare the organization's performance and operational practices with a selected sample group. In addition to create a basis for comparison, benchmarking is a good development tool because it enforces a self-critical approach, indicating the points of operation the company must improve.

Li et al (2001) stated that cooperative benchmarking should be used as a tool for achieving partnering excellence in construction projects. Benchmarking involves a comparative analysis between at least two parties in order to compare the current performance gap. Chan Albert and Chan Daniel (2004) defined benchmarking as searching for the best practices that will lead to superior performance of an organization. Performance indicators can also play a role in the accomplishment of a coherent policy making process. Finally, they are important for improving of mutual administrative relationships between institutions and government.

Abdel-Razek et al (2007) discussed improving construction labor productivity in Egypt by applying benchmarking for labor productivity performance. Labor productivity data was used from masonry activities on eleven building projects in Egypt. Several measures of benchmarks of construction labor productivity were demonstrated, calculated, and then used to evaluate the productivity and identify the best and worst performing projects.

2.14 Project success and performance evaluation

According to Wang (1994), as construction is becoming more complex, a more sophisticated approach is necessary to deal with initiating, planning, financing, designing, approving, implementing and completing a project.

Takim and Akintoye (2002) stated that the construction industry is vital for the development of any nation. In many ways, the pace of the economic growth of any nation can be measured by the development of physical infrastructures, such as buildings, roads and bridges. Construction project development involves numerous parties, various processes, different phases and stages of work and a great deal of input from both the public and private sectors with the major aim being to bring the project to a successful conclusion. The level of success in carrying out construction project development activities will depend heavily on the quality of the managerial, financial, technical and organizational

performance of the respective parties while taking into consideration the associated risk management, the business environment, and economic and political stability.

Nitithamyong et al (2004) remarked that the success of construction projects depends up on technology, process, people, procurement, legal issues, and knowledge management which must be considered equally.

2.15 Monitoring and Evaluation for Project Success and Project Performance

Lucian (2007) stated that one of the key stages in the lifecycle of a project is monitoring and evaluation. Regarding these tow management responsibilities, there are different conceptions and approaches, but a common core knowledge base can be captured for operational purposes of better operating in a project environment. Project monitoring and evaluation support improving the performance and attaining the expected results. M&E have as objective performance measuring and evaluation for ensuring a better management of outputs and outcomes. Monitoring and evaluation help improving performance and achieving results. More precisely, the overall purpose of monitoring and evaluation is the measurement and assessment of performance in order to more effectively manage of the outcomes and outputs known as development results. Performance is defined as progress towards achievement of results.

USAID (2006) concluded that the overall objective of the monitoring and evaluation systems is to associate projects improvement process, and the quality of data generated to measure success of implemented activities.

More specifically, the monitoring and evaluation systems has been designed to achieve the following goals, among them are:

- Assessing the M&E Plan and capacities of the Program's/project's implementing entities;
- Evaluating how the M&E activities of Programs/projects are linked and integrated within the National M&E System;
- Helping to develop a costed action plan to strength the M&E systems.

2.16 Assessment of Monitoring and Evaluation process.

ASQ (2015) defined the assessment as an investigation and analysis of construction work management systems, methods, procedures and processes to determine suitability, effectiveness, and compliance with contracts / project specifications.

Lucian (2007) stated that the M&E assessment grid is a tool designed to assist evaluators in the process of analyzing the construction project M&E system. It provides the main framework against which evaluators will make the assessment of the four components of the M&E system.

Lucian (2007) mentioned that monitoring and evaluation focused on assessing inputs and implementation processes. Today, the focus is on assessing the contributions of various factors to a given development outcome, with such factors including outputs, partnerships, policy advice and dialogue, advocacy and brokering/coordination.

Monitoring and Evaluation planning should be scheduled as soon as possible after an assessment to ensure timely implementation of recommended actions. An assessment which is not followed by appropriate M&E planning and implementation serves little or no purpose.

2.17 Previous Local Studies

Sajeda (2011) studied Analysis of Project Management Practices in Public Sector in West Bank "Ministry of Public Works & Housing". Al Ostaz (2004) studied a cost monitoring system for Gaza Strip contractors. Rawan (2015) studied Assessing Innovation Practices in Project Management: The case of Palestinian Construction Projects. Hassouna (2005) studied the improvement of safety performance in construction projects in the Gaza Strip. Nihal (2015) studied assessment of delay causes of construction projects in Palestine.

Enshassi et al (2006) studied causes of contractor's business failure in developing countries. According to Saleh (2014), factors were grouped together in only five main groups which are:

- Managerial: managerial factors are mainly related to experience, control, decisions, procurement, communication, productivity and claims factors
- Financial: financial factors are mainly related to cash flow, loans, profit, expenditures, equipment cost and usage, material wastages, and variation order
- Business environment: Business environment factors are mainly related to awarding, regulations, owner involvement, accounting practices and economy
- Business growth: Business growth factors are mainly related to size of projects, managerial development, number of projects and type of work.
- Political: Political factors are mainly related to, lack of resource delay, closure, high cost of materials, dealing with suppliers and banks policy

The results of Saleh (2014) showed that political group is the most important influencing factor on contractor's business failure in Palestine. Otherwise, Business growth and Business environment had been ranked as the lowest influencing factors on failure.

Balousha (Un Published)) has studied success factors of local construction projects in the Gaza strip. Saleh (2014) studied only three

factors affecting success of projects which are related to cost, time and quality based on the following issues:

- Project characteristics: this factor is broken into three main factors of : Contractual arrangement, project environment and internal project characteristics.
- Project management strategies: this factor is broken into three main factors of: communication, control and planning.
- Project participants: this factor is broken into three main factors of: consultants, client and contractors.

Mohammad (2014) has studied Causes of Delay in Construction Projects in Hebron Municipality.

Hidaya (2011) has studied Project Management for Construction Projects.

2.18 Summary

According to previous studies, it can be noticed that the monitoring and evaluation process for the performance of construction projects is a collaborative process of learning and demands responsibility on the part of all team members. According to them, it can be maintained a set of broad principles when addressing monitoring and evaluation that should be done to stage by stage along project life cycle. These principles would help in performing assessment process for M&E in several steps. Firstly; participation which can defined opening up the design process to include those most directly affected. Secondly, gaining agreement to carry out monitoring and evaluation together, then negotiation which will reach agreement on what will be monitored and evaluated. Thirdly, how data will be collected, who will do the collection and analysis, how frequently this will be done and in what format, how findings will be disseminated among those involved and what actions will be taken as a result, after that learning which becomes the basis for subsequent improvements and corrective action. Finally, flexibility that is critically given the variety of stakeholders involved, the changing external environment, and the need to make performance improvements along the way which is a process include factors as Key Performance Indicators (KPIs) such as time, cost, quality, client satisfaction; productivity and safety in order to enable measurement of current organizational project performance and to achieve significant performance improvements of future projects by monitoring and evaluation of these KPIs,

and in this thesis we assess this process.

It was obtained that there were many fields and topics which are related to monitoring and evaluation process such as performance,

Construction management, information technology, factors affecting performance of managers, measurement of project performance, key performance indicator and benchmarking.

The key performance indicators are used to monitor and evaluate success and performance of construction projects. These indicators can then be used for benchmarking purposes, and will be as a key component of any organization to move towards achieving best practice and to overcome performance problem in West Bank through the assessment of monitoring and evaluation process. Based on previous studies and literature review, the most important indicators which will be studied in this research are related to table 2:1

1. Cost

2. Time

3. Quality

4. Productivity

5. Client satisfaction

6. People

7. Health and Safety**8. Innovation and learning, and****9. Environment**

All of these should be monitored and evaluated, and the assessment process will guide the successful governmental construction in the West Bank.

Chapter Three

Methodology

3.1 Introduction:

This chapter shows an overview of the methodological approach which the researcher used for assessing, monitoring and evaluation process for governmental construction projects in West Bank through studying the current situation in contracting companies and studying project management from (Contractor, Consultant, Owner) point of view. From literature review and previous studies, it was clear that there were different directions and methodologies used in order to achieve the required objectives, target and goals. Some of previous studies concentrated on one or two directions such as cost, time or quality performance. Other studies focused on factors affecting the performance of construction projects. Other studies deal with different aspects related to performance such as information technology (IT) and Some of them focused on measurement of construction projects performance. This is empowered by the literature review which will help the researcher in selecting the way to conduct the analysis. This thesis also provides some view of the interviews, the targeted population, the samples used, and evaluation of the questionnaire followed by detailed analysis that will help in assessing the monitoring and evaluation process of construction projects . The conclusions of the questionnaire and interviews are related to this study.

The differentiation of goals and directions of topic as mentioned,

needed different manners and methodologies. The main methodologies obtained from literature review were: interviewing, questionnaire survey. The following topics show summary of the main studies related to monitoring and evaluation and their related methodologies.

3.2 Research methodology diagram

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

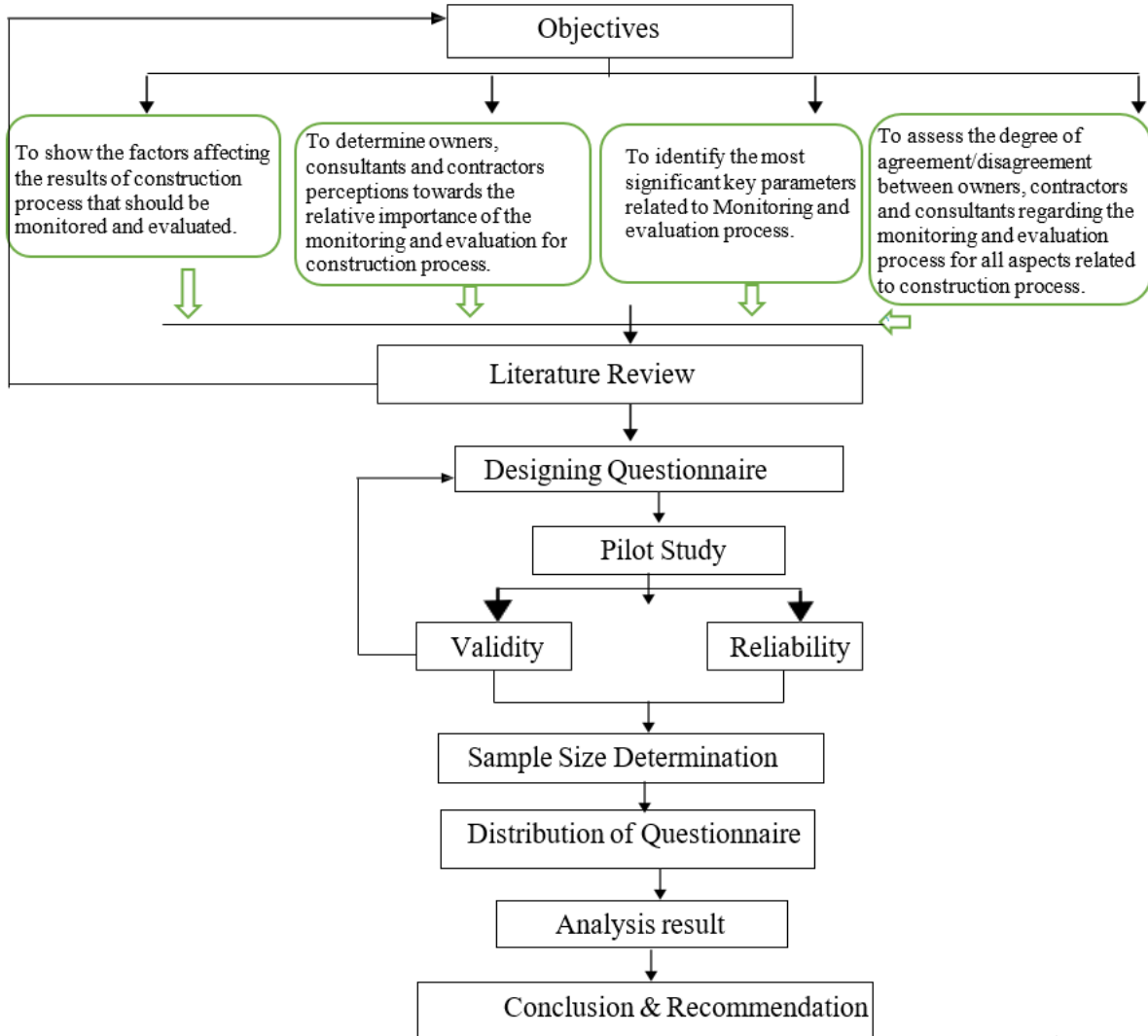


Figure 3.1: Summary of methodology used in this research

3.3 Methodology Outline for this Research:

This research discusses and assesses the monitoring and evaluation process for governmental construction projects in West Bank. The basic methodology which is considered to achieve the main objectives of this research is as the following topics:

➤ *First Phase:*

First Phase includes completely literature review, which supported the questionnaire methodology, identified aims and goals, and identified the research problem. Included activities in this phase:

- Describing the monitoring and evaluation related to construction project.
- Identification of all parameter of M&E.
- Extraction of information from main areas with data about the process, such as previous thesis, 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.

➤ *Second Stage:*

This stage includes data collection, using interviews with contractors working in construction projects through the West Bank area . 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 local survey.

This phase includes the following activities:

- Clear identification of West Bank as the main area of study.
- Data collection.
- Identification of local difficulties and constraints of the survey.
- Pilot study, proposing a question to key people experienced in construction management in West Bank to obtain their opinions.
- For the survey of the Palestinian west bank owners, consultants, and contracting companies are included

Here are some ways used in the interviews:

- Planning how to meet them.
- Motivating him to answer all questions.
- Using communication media and software to facilitate communication.

➤ *Third Stage:*

In this stage analysis is made using data collected from knowledge, literature review, data from the interviewers, and the information about the construction working in West Bank. This phase will include the following activities:

- Collected information and data available to make the analysis.
- Conclusion and recommendations from the analysis.

- Assessment for all aspects from all stakeholder.
- Recommendation to enrich this field in order to solve some of the obstacles faced construction.
- Suggestions for another related studies.

3.4 Research Approach:

Selecting a research method is a critical important decision that the researcher needs to study the approaches in order to know which of them will satisfy the objectives of the study, 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, 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.

➤ *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.

Table 3.1 : Differences between quantitative & qualitative methods (salleh,2009)

Quantitative approach	Qualitative approach
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
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

3.5 Method used in the research:

As the above table shows, Quantitative method is used to predict and measure for achieving 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, 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.

Interviews analysis:

One of the qualitative methods which is used to 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 interviewers, 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 in order to re-examine the relations.

- When the themes will be collected and the literature will be studied, the researcher formulated the mestatements.

3.6 Research population and sample size:

This research studies all stakeholders related to the construction work in the West Bank, specifically, who are contacting directly with construction as the contracting projects owners. The second represents the contractors companies and finally involved party represents by the consultant engineer.

In this research, we select the samples from these populations as follows:

3.6.1 Projects owners

The first party is represented by the projects owners in the West Bank. Meetings with some large projects owners such as municipalities and ministries were held to list the names of projects' owners who have experience in the monitoring and evaluation process in construction contracting sector.

In this research, the projects' owners include: governmental ministries, governmental municipalities and agencies, large governmental projects owners as school, roads, etc . As a result, the questionnaire was distributed to a random sample of (90) projects' owners, distributed in the research represented cities in the West Bank.

3.6.2 Projects consultant engineer

According to the owners' representatives, only the consultants who have a valid membership in the engineering association were obtained. (96)st class consultants were targeted; (20) of them located in Hebron City, (30) in Nablus city, (30) in Ramallah City, and (16) in Jenin and Tulkarm City.

3.6.3 Contractors companies

The third population is represented by the contractors companies who have a valid registration according to the PCU and those classified as building, water and wastewater, electromechanical and roads. According to (PCU, 2011a) , four main cities were selected to represent the contractor's sample of contracting companies in the West Bank : Hebron, Ramallah , Jenin and Nablus since those parts represent more projects in that aspect as referred in the figure 3.2:

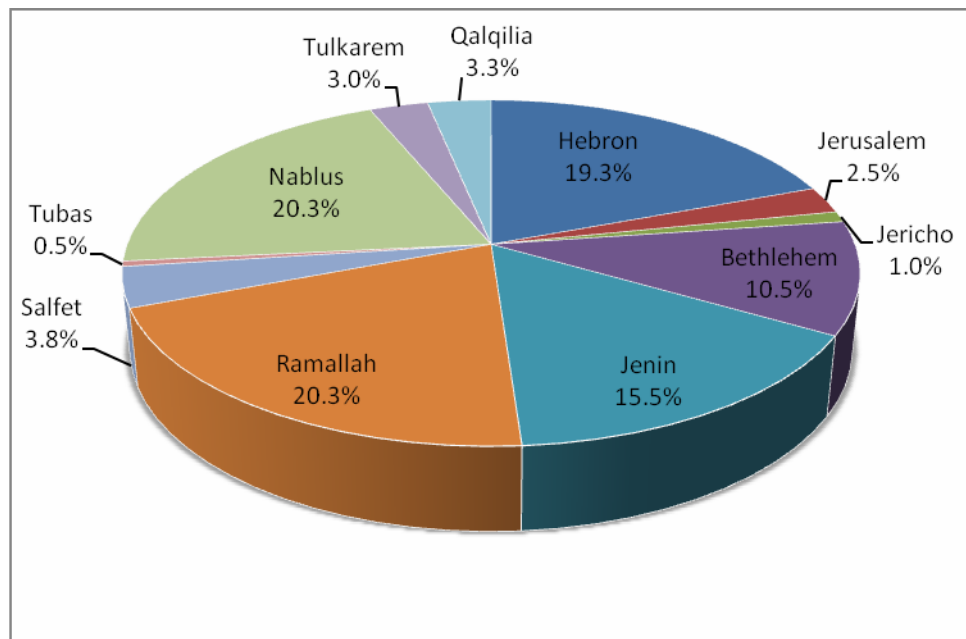


Figure (3.2): Percentages of the classified contractors with respect to the location in the West Bank in 31 Mar 2011. Formatted from classification lists (PCU, 2011a).

As mentioned there, a total of (300) owners, consultants, construction companies are working in the governmental construction projects in WB. This number includes all kinds of companies, but this research is limited to study the three main categories: A, B and C, which are 300 parties these companies are categorized as follows

in Figure 3-4 which are classified as big project accomplished on their cities and mainly upon elements such as capital, experience, history of achieved projects and many other qualifications .

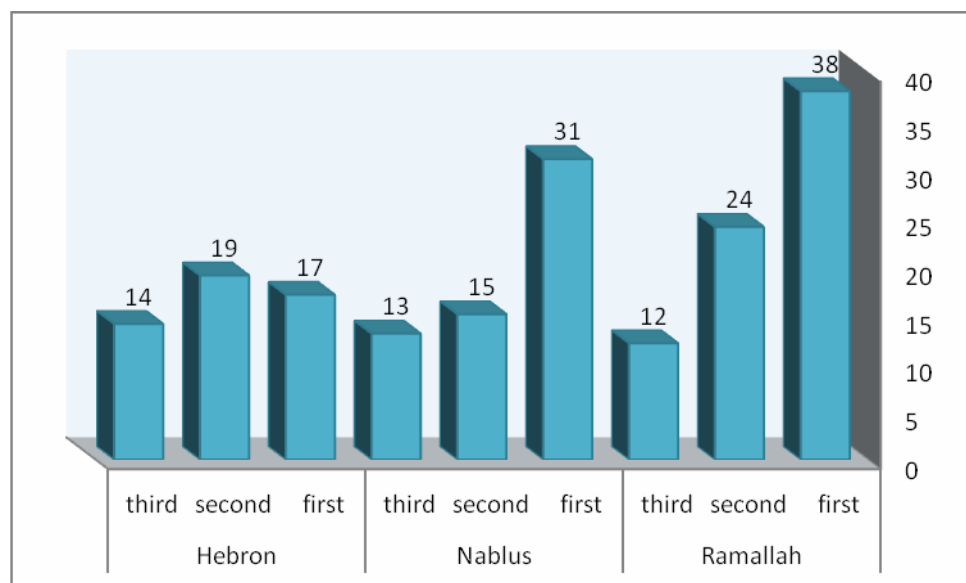


Figure (3.4): The distribution of the contracting companies' population. Formatted from classification lists (PCU, 2011a).

3.7 Distribution of the interview sample

To study the monitoring and evaluation process of the construction companies in the West Bank, interviews were conducted randomly with project managers and contractors.

More than 50 attempts were made to do interviews with contractors; 22 meetings were conducted with various contractors in Ramallah, Nablus, Jenin, Hebron, and Jerusalem. The researcher concentrated the work mainly in Ramallah as it contains the biggest number of projects constructed in West Bank, and because it has the most important companies with the vital projects in West Bank, next comes Nablus which is also a big city which it has its importance in West Bank and because it 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, Finally, Jenin as a near place for researcher location . Also most of the West Bank cities were part of this research as shown in figure3-5.

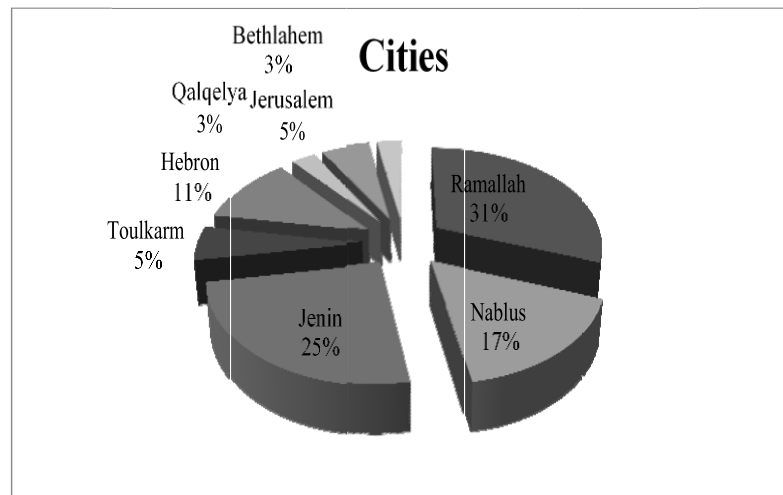


Figure (3.5): The distribution of the manager population for interview.

Interviews were conducted: as a group of unstructured interviews: A preliminary study was held with some involved stakeholders in the

construction contracting sector in order to collect its related problems. Open conversations were held with interviewees, asking them about the existence of monitoring and evaluation process in the construction projects and the obstacles they are facing during their work. The collected success and frailer factors were used in formulating the questionnaire aiming to assess their importance degrees. On the other hand, after analyzing the questionnaire outputs, interviews with some M&E experts and professionals were held to check the outputs reliability and enrich the research results.

3.8 Academic study of the sample managers

The respondents had an average ranged between 10 and 20 years experience in the construction industry. Their formal engineering education ranged from high school to Ph.D.

3.9 Distribution of the Questionnaire

The random sampling was adopted to collect data from the previous mentioned sample industries such construction projects owners, consultants, and contractors spread out in all the West Bank areas and governorates.

The questionnaire was distributed in all West Bank cities, in which each city considered to be one subgroup from the research population, and the number of questionnaire in each area fits with number of construction projects accomplished in these areas.

The following table (table 3.-2) shows how the questionnaire were distributed throughout all construction projects parameters such as project

owner, contractor, and consultant. As well as, it shows all details about data collection and the percentage of response rate.

Furthermore, it is obvious from the table 3-2 that the overall response rate within all construction project parameters is 81%.

Table 3-2: distribution and collection of data

No.		No. of surveyed	Surveys received	Valid Surveys	Response Rate
1	Owner	90	78	76	84.4%
2	Consultant	96	89	84	87.5%
3	Contractor	114	83	81	71.0%
Total		300			81%

3.10 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 assessment process for monitoring and evaluation process .It will provide a basis to manage construction project in West Bank and to help in improving the M&E process of the work achieved by project managers, owners, consultant and engineers in construction projects.

Chapter Four

Data Analysis and Results

4.1 Overview

This chapter presents the results of analysis data collected and discusses the results that are obtained from the questionnaire. It shows the results of descriptive statistics and hypotheses testing derived from the Statistical Package for Social Science (SPSS) software in order to assess the monitoring and evaluation of governmental construction projects in the West Bank.

4.2 Introduction

In order to obtain the research results, Statistical Package for the Social Sciences (SPSS) software was used to analyze the questionnaires. SPSS has been chosen in this research because it has many features and properties which can provide appropriate results which lead to achieve research purpose by providing several statistics for each element in the research questionnaire. Hence, SPSS is useful to get the causal relationships between questionnaire elements.

4.3 Descriptive Analysis

According to the questionnaire design, respondents have different personal information; these differences introduce different responses toward the evaluation of monitoring and evaluation process in the governmental construction projects. The following results show these differences.

4.3.1 General Information

The total number of participants is 300. With response rate 81%, the following description presents the characteristics of the participants.

Sector Type

Table 4.1 shows frequencies and percentages for each type of sector:

Table (4.1): Distribution of Sector Type.

Variable	Classification	Frequencies	Percentage
Sector Type	Owner	90	30%
	consultant	96	32%
	contractor	114	38%
	Total	300	100%

Sector Project

Table 4.2 shows frequencies and percentages for sectors projects types according to each type of target group:

Table (4.2): Distribution of Sectors Project.

Variable	Classification	Frequencies	Percentage
Sectors Project	Buildings	162	54%
	Roads and Transportation	104	34.7%
	Electro- Mechanical	22	7.3%
	Other	12	4%
	Total	300	100%

Company Size

Table 4.3 shows the percentage and frequencies for organization employee sizes according to characteristics of the variable among three types of organization type:

Table (4.3): Distribution of Company Size.

Variable	Classification	Frequencies	Percentage
Company Size	1 – 10	66	22%
	11 – 30	165	55%
	31 – 50	48	16%
	51 – 100	9	3%
	More than 100	12	4%
	Total	300	100%

- **Job Title**

Table 4.4 shows the percentage and frequencies for job title of the respondent according to each type of target group:

Table (4.4): Distribution of Job Title.

Variable	Classification	Frequencies	Percentage
Job Title	Project Manager	90	30%
	Site / Office Engineer	102	34%
	Organization Manager	72	24%
	Other	36	12%
	Total	300	100%

- **Experience**

Table 4.5 shows percentage and frequencies for experience per year of the respondent according to each type of target group:

Table (4.5): Distribution of Experience (years).

Variable	Classification	Frequencies	Percentage
Experience	2 – 6	51	17%
	7 – 15	135	45%
	16 – 25	93	31%
	More than 25	21	7%
	Total	300	100%

- **Projects Number**

Table 4.6 shows percentage and frequencies for number of projects executed in the last five years according to each type of target group:

Table (4.6): Distribution of Project Number.

Variable	Classification	Frequencies	Percentage
Project Number	1 – 10	114	38%
	11 – 20	78	26%
	21 – 30	42	14%
	More than 30	66	22%
	Total	300	100%

- **Projects Financial Value**

Table 4.7 shows percentage and frequencies for budget value of projects executed in the last five years according to each type of target group:

Table (4.7): Distribution of Projects Financial Value.

Variable	Classification	Frequencies	Percentage
Project Financial Value	Less than 2 million dollars	78	26%
	2 to 5 million dollars	72	24%
	5 to 10 million dollars	66	22%
	More than 10 million dollars	84	28%
	Total	300	100%

4.3.2 Monitoring and Evaluation Process Elements

The results of this part of study provide an indication of the relative importance element and rank of factors (high, very high) affecting the performance monitoring and evaluation of construction projects in the West Bank. The following Table (4.8) shows summary of each element and many of statements related. The rank very high and high shows the estimation degree of each statement related to each elements.

Table (4.8): Descriptive statistics of Monitoring and Evaluation Process Elements.

Element	Statement	Mean	Std. Deviation	Percentage	Estimation Degree
Client	Financing and payments of completed works	4.27	.810	85.4%	Very high
	Owner interference.	3.67	.974	73.4%	High
	Decision making.	4.23	.812	84.6%	Very high
	Contract duration and requirements imposed.	4.03	.802	80.6%	Very high
	Total	4.05	.604	81%	Very high
Contractor	Subcontractors.	3.76	1.015	75.2%	High
	Site Management.	4.35	.811	87%	Very high
	Construction Methods.	4.35	.812	87%	Very high
	Planning.	4.48	.802	89.6%	Very high
	Construction Stages and mistakes.	4.08	.799	81.6%	Very high
	Experience of contractors.	4.37	.747	87.4%	Very high
	Total	4.23	.516	84.6%	Very high
Consultant	Contract Management.	4.34	.722	86.8%	Very high
	Preparation and approval of drawings.	4.19	.849	83.8%	Very high
	Quality assurance/control.	4.27	.739	85.4%	Very high
	Time for approval for test and inspection.	4.13	.869	82.6%	Very high
	Total	4.23	.596	84.6%	Very high
Supply of material	Quality of material.	4.38	.692	87.6%	Very high

	Shortage of material.	4.00	.890	80%	Very high
	Total	4.19	.626	83.8%	Very high
Labor and equipment	Labor supply.	4.25	.796	85%	Very high
	Labor productivity.	4.17	.817	83.4%	Very high
	Equipment availability.	4.29	.736	85.8%	Very high
	Equipment Failure.	3.77	1.018	75.4%	High
	Total	4.12	.618	82.4%	Very high
Contract	Contract orders (Change).	3.90	.903	78%	High
	Contract documents (Mistakes and discrepancies).	3.82	.828	76.4%	High
	Total	3.86	.735	77.2%	High
Contract relationship	Major disputes and negotiation.	3.76	.872	75.2%	High
	Overall organizational structure linking to project.	3.85	.895	77%	High
	Communication between the parties.	3.81	.910	76.2%	High
	Total	3.80	.713	76%	High
External Factors	Climate conditions.	3.47	1.121	69.4%	High
	Regularity changes.	3.40	1.056	68%	High
	Relationships with neighbors.	3.54	1.179	70.8%	High
	Unforeseen site conditions.	3.39	1.117	67.8%	High
	Total	3.45	.925	69%	High

The most important elements agreed by the owners, consultants and contractors as the main statements affecting the monitoring and evaluation process of construction projects in the West Bank were: with respect to client element the very high rank is for financing and payments of completed works, and the lowest rank is for Owner interference. From contractor element point of view the very high rank is for planning, and the lowest rank is for subcontractors. Consultant element showed that the very high rank is for contract management, and the lowest rank is approval time for test and inspection, supply of material element revealed that the very high rank is for quality of material, and the lowest rank is for shortage of material, Labor and equipment element revealed that the very high rank is for equipment availability, and the lowest rank is for equipment failure, contract element showed that the very high rank is for contract orders (Change), and the lowest rank is for contract documents (mistakes and discrepancies). Contract relationship element ensures that the very high rank is for overall organizational structure linking to project, and the lowest rank is for major disputes and negotiation, finally for external factor element the very high rank is for Relationships with neighbors, and the lowest rank is for Unforeseen site conditions. Finally, the overall element of the most important in measuring monitoring and evaluation process in construction projects are the contractor and consultant parameter, and the lowest is external factors.

4.3.3 Construction Projects Factor Evolution

Table (4.9): D Descriptive statistics of Construction Projects Factor Evolution.

Factors	Statement	Mean	Std. Deviation	Percentage	Estimation Degree
Success Factors	Organization planning.	4.35	.876	87%	Very high
	Project manager's goal commitment.	4.25	.906	85%	Very high
	Clarity of the project scope and definition.	4.12	.996	82.4%	Very high
	Project manager experience.	4.32	.915	86.4%	Very high
	Applied procedure.	3.91	.951	78.2%	High
	Safety precautions.	3.90	1.098	78%	High
	Strong control system	3.99	1.017	79.8%	High
	Total	4.12	.774	82.4%	Very high
Fails Factors	Inadequate contractor planning.	3.94	1.088	78.8%	High
	Inadequate contractor experience.	3.99	1.052	79.8%	High
	Subcontractor.	3.67	.938	73.4%	High
	Lack of communication between stakeholders (clients, implementing companies, contractors)	3.73	.974	74.6%	High
	Slow decision making.	3.91	1.003	78.2%	High
	Owners finance and payment of completed works.	3.96	.947	79.2%	High
	Change orders.	3.60	1.003	72%	High
	Total	3.83	.697	76.6%	High

The data was analyzed from the perspective of owners, consultant and contractors. Each individual causes perceived by all respondent was shown for overall analysis, from the ranking assigned to each cause of success or fail in construction projects were able to be identified .The table above shows that there are factors affect monitoring and evaluation process for construction projects such as success factors and failure factors. Table 4.9 shows that there are degree of quality for each factor independently that should be monitored and evaluated. These surveys reveal opinion of all aspects of construction projects such (owner, consultant, contractor) and from success factor .The result shows the degree of organization planning, project manager's goal commitment, clarity of the project scope and definition. Also, project manager experience are grouped for very highly degree and classified for success factor for any construction projects. The grouping is important to assess the monitoring and evaluation for them, and from failure factor .The result shows the degree of all statement related as inadequate contractor planning, inadequate contractor experience, subcontractor, lack of communication between stakeholders(clients, implementing companies, contractors), ...etc are highly degree classified for delay factor, than from all aspects of construction projects the success factors have very highly degree of quality that should be monitored and then evaluated.

4.3.4 Monitoring and Evaluation Process Factors

Table 4.10 below shows all factors related to monitoring and evaluation process. For each type factor, the surveys shows the existence statements

related to M&E process in construction project in the West Bank that should be assessed.

Table (4.10): Descriptive Statistics for Monitoring and Evaluation Process Factors.

Factors	Statement	Mean	Std. Deviation	Percentage	Estimation Degree
Leadership	Top management commitment for M&E.	2.32	1.058	46.4%	Mid
	Ability of top management to identify the M&E responsibilities for project that affects performance.	2.33	1.059	46.6%	Mid
	Ability to distribute the responsibilities for M&E on the department heads.	2.35	.991	47%	Mid
	Attached to M&E by the top management in relation to cost and schedule objectives.	2.37	1.090	47.4%	Mid
	Support of M&E in organization culture.	2.50	1.116	50%	Mid
	Involvement in M&E objective task definition, budgeting, and measurement.	2.61	1.128	52.2%	Mid
	Total	2.41	.898	48.2%	Mid
Human Resource	Availability of Methodology for collecting and analyzing information to do M&E.	2.65	1.118	53%	Mid
	Availability of program that employs Suggestions and complaints system in M&E.	2.72	1.063	54.4%	Mid
	Taking into account training needs and evaluating skills that may wanted in M&E.	2.66	1.169	53.2%	Mid
	Total	2.68	.997	53.6%	Mid
Information Resource	Availability of Information system for doing M&E.	2.66	1.048	53.2%	Mid
	Updating Program for specifying the needs for information system of M&E process.	2.51	1.104	50.2%	Mid
	Existence of Information system covering most of the all aspects of M&E.	2.65	1.081	53%	Mid
	Total	2.61	.982	52.2%	Mid
Financial Resource	Availability of budget for doing the M&E process.	2.63	1.206	52.6%	Mid
	Existence of M&E for	2.47	1.185	49.4%	Mid

	methodology of preparing budget over all cycle project.				
	Availability of M& E for Plans to increase income, and decrease expenditures.	2.53	1.213	50.6%	Mid
	Availability of M& E process for meeting allocated budget and control of project cost.	2.53	1.180	50.6%	Mid
	Total	2.54	1.044	50.8%	Mid
Material Resource	Availability of M& E for specifying the required materials.	2.43	1.089	48.6%	Mid
	Availability of M& E for Storage system.	2.61	1.061	52.2%	Mid
	Availability of M& E for using material resources in best case.	2.51	1.151	50.2%	Mid
	Total	2.51	.990	50.2%	Mid
Technological Resource	Availability of technologies that can employ in M&E process.	2.75	1.254	55%	Mid
	Availability of M&E for corrective actions to improve the technical.	2.66	1.225	53.2%	Mid
	Total	2.70	1.180	54%	Mid
Strategy and Plans	Availability of M&E for project goals.	2.55	1.139	51%	Mid
	Availability of M&E for customers and their need.	2.48	1.073	49.6%	Mid
	Availability of strategic base on the concept of M&E.	2.61	1.060	52.2%	Mid
	Availability of M&E for analysis of internal and external environment.	2.67	1.114	53.4%	Mid
	Availability of M&E for control and improve of plans.	2.65	1.204	53%	Mid
	Total	2.59	.950	51.8%	Mid
Process system	Availability of M&E for Project objectives.	2.29	1.027	45.8%	Mid
	Availability of M&E for Conformance of all aspects of construction projects.	2.27	1.048	45.4%	Mid
	Availability of M&E for Project time.	2.15	1.089	43%	Mid
	Availability of M&E for Conformance to control.	2.33	1.039	46.6%	Mid
	Availability of M&E for Conformance to safety process.	2.15	1.064	43%	Mid
	Availability of M&E for Conformance to design processes and procedures.	2.19	.960	43.8%	Mid
	Availability of M&E for Engineering drawings based on	2.17	1.058	43.4%	Mid

	local standard.				
	Availability of M&E for Conformance to documentation.	2.29	1.000	45.8%	Mid
	Availability of M&E for Conformance to calculation standards.	2.32	1.045	46.4%	Mid
	Total	2.24	.843	44.8%	Mid
Coordination and relationship	Availability of M&E for System of needs, suggestions and complaints.	2.55	1.040	51%	Mid
	Availability of M&E for mechanism of coordination between different project parties and all stockholders.	2.53	.988	50.6%	Mid
	Availability of M&E process towards ensuring good coordination.	2.47	1.034	49.4%	Mid
	Availability of M&E process to towards ensuring results.	2.32	1.107	46.4%	Mid
	Total	2.47	.897	49.4%	Mid

From all respondents standpoint, there is a clear difference in views between them for each factor .So, the views show the following:

1. With respect to leadership, the support of M&E in organization culture is major existence with respect to all respondent overview, but top management commitment for M&E is the lowest degree for existence.
2. With respect to human resource, availability of program that employs suggestions and complaints system in M&E is major existence. With respect to all respondent overview, but availability of Methodology for collecting and analyzing information to do M&E is the lowest degree for existence.
3. With respect to information resource, availability of Information system for doing M&E is major existence with respect to all respondent

- overview, but updating program for specifying the needs for information system of M&E process is the lowest degree for existence.
4. With respect to financial resource, availability of information system for doing M&E is major existence with respect to all respondent overview, but updating program for specifying the needs for information system of M&E process is the lowest degree for existence.
 5. With respect to material resource, availability of M& E for Storage system is major existence with respect to all respondent overview, but availability of M& E for specifying the required materials is the lowest degree for existence.
 6. With respect to technological resource, availability of technologies that can employ in M&E process is major existence with respect to all respondent overview, but availability of M&E for corrective actions to improve the technical is the lowest degree for existence.
 7. With respect to strategy and plans, availability of M&E for analysis of internal and external environment is major existence with respect to all respondent overview, but availability of M&E for customers and their need is the lowest degree for existence.
 8. With respect to process systems, availability of M&E for Conformance to calculation standards is major existence with respect to all respondent overview, but availability of M&E for Project time and Availability of M&E for Conformance to safety process is the lowest degree for existence.

9. With respect to coordination and relationship, availability of M&E for System of needs suggestions and complaints is major existence with respect to all respondent overview, but availability of M&E process to towards ensuring results is the lowest degree for existence.

Finally, survey results among all aspects related to construction projects show that affects, the availability of monitoring and evaluation strategy and plans have major percentage for interest to do M&E and all factors related to this part have over mid percentage of existence but process system has the lowest percentage of effect.

4.3.5 Monitoring and Evaluation Satisfactory Parameters

Table 4.11 shows the degree of satisfaction of main parameters influencing the implementation of M&E process on governmental construction projects in the West Bank.

Table (4.11): Descriptive statistics of Monitoring and Evaluation Satisfactory Parameters.

Parameter	Statement	Mean	Std. Deviation	Percentage	Estimation Degree
Parameters of M&E Process	Leadership.	4.07	1.085	81.4%	Very high
	Human Resource.	3.95	1.041	79%	High
	Information Resource.	3.73	1.111	74.6%	High
	Financial Resource.	3.97	1.170	79.4%	High
	Material Resource.	3.94	1.057	78.8%	High
	Technological Resource.	3.69	1.159	73.8%	High
	Strategy and Plans.	4.03	.934	80.6%	Very high
	Process system.	3.94	.914	78.8%	High
	Coordination and relationship.	3.85	1.060	77%	High
	Total	3.91	.866	78.2%	High

The previous table shows that there is a very high degree of satisfaction influencing the implementation of M&E process on governmental construction projects on West Bank towards leadership , strategy and plans from point of view of owners, consultants and contractors .But, there is a small different between them on other parameter such human resource, information resource, financial resource, material resource, technological resource, process system, and coordination and relationship which is high degree of satisfaction. Also, results reveals that leadership has the most degree for satisfaction and, on the other hand, information resource has the lowest degree of satisfaction to do M&E process.

4.4 Statistical Differences among Survey Respondents

This section outlines the statistical differences between participants in this research according to received data. Independent Samples Test (t-test for Equality of Means) and one-way ANOVA Test are used to explain these differences. These two tests are used because correlations between qualitative and quantitative factors will be tested.

T-test method compares means of qualitative independent variable which has two levels, but according to this research all information gather in more two scale, whereas one-way ANOVA compares means of qualitative independent variable which has more than two levels. In this case, all statistical differences are testing by one-way ANOVA test.

➤ Statistical Differences According to Organization Type

According to this study, organization type was collected as interval, therefore, the researcher used One-way ANOVA test to determine the correlation between participant organization type and other dependent variables. Statistical differences between organization type intervals show that there is statistical differences between human resources, information resources, and technological resources factors where ($P > 0.05$) for all.

The following table shows full details about these results:

Table (4.12): Descriptive of statistical differences among participants according to organization type.

Factors	Organization type	N	Mean	Std. Deviation
Leadership	Owner	90	2.50	1.007
	Consultant	96	2.52	.868
	Contractor	114	2.26	.821
	Total	300	2.41	.898
Human Resource	Owner	90	3.05	.977
	Consultant	96	2.50	1.045
	Contractor	114	2.53	.904
	Total	300	2.68	.997
Information Resources	Owner	90	2.91	1.006
	Consultant	96	2.52	.948
	Contractor	114	2.44	.954
	Total	300	2.61	.982
Financial Resources	Owner	90	2.74	1.149
	Consultant	96	2.60	.887
	Contractor	114	2.33	1.060
	Total	300	2.54	1.044
Material Resources	Owner	90	2.56	1.042
	Consultant	96	2.53	1.093
	Contractor	114	2.46	.865
	Total	300	2.51	.990
Technological Resources	Owner	90	3.08	1.097
	Consultant	96	2.64	1.224
	Contractor	114	2.46	1.153
	Total	300	2.70	1.180
Strategy and Plans	Owner	90	2.70	1.027
	Consultant	96	2.60	1.028
	Contractor	114	2.50	.817
	Total	300	2.59	.950
Process System	Owner	90	2.42	1.030
	Consultant	96	2.31	.795
	Contractor	114	2.04	.678
	Total	300	2.24	.843
Coordination and Relationship	Owner	90	2.57	.886
	Consultant	96	2.48	.850
	Contractor	114	2.37	.947
	Total	300	2.47	.897
Total Score	Owner	90	2.73	.857
	Consultant	96	2.52	.819
	Contractor	114	2.38	.780
	Total	300	2.53	.823

Table 4.12 above shows the response of consultant, contractor, and owner towards each parameter related to monitoring and evaluation process in governmental construction projects. The surveys result summarize that from owners and consultants opinions, the leadership factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from contractor opinion, the leadership factor of the availability is primary. From owners opinion, the human resource factor has many parameters that partially available to influence M&E process of governmental construction projects. From consultants and contractors opinions, the human resource factors the availability is primary and that from owners opinion the information resource factor has many parameters that partially available to influence M&E process of governmental construction projects .From consultants and contractors opinions the information resource factor, the availability is primary, and that from owners and consultants opinions, the financial resource factor has many parameters that partially available to influence M&E process of governmental construction projects but from contractors opinions the financial resource factors the availability is primary, and that from owners, consultants, and contractors opinions the material resource factor has many parameters that primary available to influence M&E process of governmental construction projects, and that from owners opinion the technological resource factor has many parameters that weak available to influence M&E process of governmental construction projects but from contractors opinions the technological resource factors the availability is primary, and that from owners, consultant, and contractor

opinions the strategy and plans factor has many parameters that primary available to influence M&E process of governmental construction projects, and that from owners opinion the process system factor has many parameters that partially available to influence M&E process of governmental construction projects but from consultants and contractors opinions the process system factors the availability is primary, and that from owners, consultants, and contractor opinions the coordination and relationship factors has many parameters that partially available to influence M&E process of governmental construction projects.

Table (4.13): ANOVA Test for organization type differences among participants

Factors		F	Sig.
Leadership	Between Groups	1.422	0.244
Human Resource	Between Groups	4.820	0.009*
Information Resources	Between Groups	3.275	0.041*
Financial Resources	Between Groups	2.099	0.126
Material Resources	Between Groups	.137	0.872
Technological Resources	Between Groups	3.631	0.029*
Strategy and Plans	Between Groups	.581	0.561
Process System	Between Groups	2.789	0.065
Coordination and Relationship	Between Groups	.625	0.536
Total Score	Between Groups	3.309	.0103

*. The mean difference is significant at the 0.05 level.

ANOVA test shows that the hypothesis "there is no significant statistical differences at ($\alpha=0.05$) between factors related to leadership, financial resources, material resource, strategy and plans, process system, coordination and relationship refer to degree of satisfaction of main

parameters influencing the implementation of M&E process of governmental construction projects in West Bank related to type of organization" will be accepted because the *p-value* is more than (0.05). On the other hand, the hypothesis " there is significant statistical differences at ($\alpha=0.05$) between factors related to human resource, information resource, and technological resource refer to degree of satisfaction of main parameters influencing the implementation of M&E process of governmental construction projects in the West Bank related to type of organization " is rejected because the *p-value* is less than (0.05) .

In order to clarify these differences, post hoc LSD test was used and the following table shows the results.

Table (4.14): LSD Test for company type differences among participants (Human Resource)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Human Resource	Owner	Consultant	0.552*	0.007*
		Contractor	0.526*	0.008*
	Consultant	Owner	-0.552*	0.007*
		Contractor	-0.026	0.890
	Contractor	Owner	-.0526*	0.008*
		Consultant	0.552*	0.890

*. The mean difference is significant at the 0.05 level.

LSD test for human resource factor which influence M&E process of governmental construction projects in West Bank refers to company type shows:

- There are differences between (owner organization type) and (consultant organization type). So owner organization type identifies the availability of human resource more than consultant organization type.
- There are differences between (owner organization type) and (contractor organization type).So owner organization type identifies the availability of human resource more than contractor organization type.
- There are no differences between (consultant organization type) and (information resources).

Table (4.15): LSD Test for company type differences among participants (Information Resources).

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Information Resources	Owner	Consultant	0.390	.054
		Contractor	0.473*	.016*
	Consultant	Owner	-0.390	.054
		Contractor	0.082	.665
	Contractor	Owner	-0.473*	.016*
		Consultant	-0.082	.665

*. The mean difference is significant at the 0.05 level.

LSD test for information resource factor which influence M&E process of governmental construction projects in West Bank refers to company type shows:

- There are no differences between (owner organization type) and (consultant organization type).

- There are differences between (owner organization type) and (contractor companies type). So owner companies' type identifies the availability of information resource more than contractor companies type.
- There are no differences between (consultant organization type) and (contractor organization type).

Table (4.16): LSD Test for company type differences among participants (Technological Resources)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Technological Resources	Owner	Consultant	0.442	0.068
		Contractor	0.613*	0.009*
	Consultant	Owner	-0.442	0.068
		Contractor	0.171	0.454
	Contractor	Owner	-0.613*	0.009*
		Consultant	-0.171	0.454

*. The mean difference is significant at the 0.05 level.

LSD test for technological resource factor which influence M&E process of governmental construction projects in west bank refers to company type shows:

- There are no differences between (owner organization types) and (consultant organization type).
- There are differences between (owner organization types) and (contractor organization type). So owner organization type identifies the availability of technological resource more than contractor organization type.
- There are no differences between (consultant organization types) and (contractor organization type).

➤ **Statistical Differences According to Organization Projects**

According to this study, organization projects was collected as interval, therefore, the researcher used One-way ANOVA test to determine the correlation between participant organization projects and other dependent variables. Statistical differences between organization projects intervals shows that there is no statistical differences between them is recognizing in all factors where ($P > 0.05$) for all.

Tables below shows full details about this results:

Table (4.17): Descriptive of statistical differences among participants according to organization projects.

Factors	Organization projects	N	Mean	Std. Deviation
Leadership	Buildings	162	2.36	0.928
	Roads and Transportation	104	2.43	0.842
	Electro- Mechanical	22	2.80	0.909
	Other	12	2.33	0.983
	Total	300	2.41	0.898
Human Resource	Buildings	162	2.64	1.018
	Roads and Transportation	104	2.63	0.909
	Electro- Mechanical	22	3.30	1.169
	Other	12	2.39	0.953
	Total	300	2.68	0.997
Information Resources	Buildings	162	2.57	0.964
	Roads and Transportation	104	2.54	0.915
	Electro- Mechanical	22	3.30	1.159
	Other	12	2.39	1.219
	Total	300	2.61	0.982
Financial Resources	Buildings	162	2.54	1.025
	Roads and Transportation	104	2.50	1.070
	Electro- Mechanical	22	2.95	0.914
	Other	12	2.17	1.329
	Total	300	2.54	1.044
Material Resources	Buildings	162	2.50	0.952
	Roads and Transportation	104	2.52	1.040
	Electro- Mechanical	22	2.58	0.932
	Other	12	2.56	1.393
	Total	300	2.51	0.990
Technological Resources	Buildings	162	2.66	1.164
	Roads and Transportation	104	2.60	1.107
	Electro- Mechanical	22	3.45	1.368

	Other	12	2.83	1.472
	Total	300	2.70	1.180
Strategy and Plans	Buildings	162	2.55	0.953
	Roads and Transportation	104	2.60	0.897
	Electro- Mechanical	22	2.80	0.839
	Other	12	2.70	1.624
	Total	300	2.59	0.950
Process System	Buildings	162	2.27	0.878
	Roads and Transportation	104	2.16	0.793
	Electro- Mechanical	22	2.21	0.633
	Other	12	2.48	1.216
	Total	300	2.24	0.843
Coordination and Relationship	Buildings	162	2.46	0.853
	Roads and Transportation	104	2.37	0.907
	Electro- Mechanical	22	2.95	0.999
	Other	12	2.54	1.145
	Total	300	2.47	0.897
Total Score	Buildings	162	2.51	0.813
	Roads and Transportation	104	2.48	0.789
	Electro- Mechanical	22	2.93	0.847
	Other	12	2.49	1.203
	Total	300	2.53	0.823

Table 4.17 above shows the responses of building, roads and transportation, and electro-mechanical towards each parameter related to monitoring and evaluation process in governmental construction projects. The surveys result summarize that from electro-mechanicals opinions the leadership factor has many parameters which partially available to influence M&E process of governmental construction projects .But, from buildings opinions, the leadership factor availability is primary and that electro-

mechanical opinions the human resource factor has many parameters which partially available to influence M&E process of governmental construction projects .But, from Buildings opinions the human resource factors, the availability is primary, and that electro-mechanicals opinions the information resource factor has many parameters which partially available to influence M&E process of governmental construction projects .But ,from buildings and roads and transportation opinions, the information resource factor availability is primary and that electro-mechanicals opinions the financial resource factor has many parameters which partially available to influence M&E process of governmental construction projects .But, from roads and transportations opinions, the financial resource factors availability is primary. From building, roads and transportation, and electro-mechanical opinions, the material resource factor has many parameters which primary available to influence M&E process of governmental construction projects, and that electro-mechanicals opinion for technological resource factor has many parameters that weak available to influence M&E process of governmental construction projects .But, from building, and roads and transportation opinions, the technological resource factors the availability is partially, and that from building, roads and transportation, and electro-mechanicals opinions the strategy and plans factor has many parameters which primary available to influence M&E process of governmental construction projects,

Finally, from electro-mechanicals opinion, the process system factor has many parameters which primarily available to influence M&E process of governmental construction projects. But, from building, roads and

transportations opinions, the process system factors the availability is partially, and that from buildings, roads and transportations, and electro-mechanicals opinions, the coordination and relationship factors has many parameters which partially available to influence M&E process of governmental construction projects.

Table (4.18): ANOVA Test for organization projects differences among participants

Factors		F	Sig.
Leadership	Between Groups	0.812	0.489
Human Resource	Between Groups	1.710	0.167
Information Resources	Between Groups	2.097	0.103
Financial Resources	Between Groups	0.856	0.465
Material Resources	Between Groups	0.025	0.995
Technological Resources	Between Groups	1.712	0.167
Strategy and Plans	Between Groups	0.252	0.860
Process System	Between Groups	0.347	0.791
Coordination and Relationship	Between Groups	1.331	0.267
Total Score	Between Groups	0.943	0.421

*. The mean difference is significant at the 0.05 level.

ANOVA test shows that the hypothesis "there is no significant statistical differences at ($\alpha=0.05$) between factors related to leadership, financial resources, material resource, strategy and plans, process system, and coordination and relationship refer to degree of satisfaction of main parameters influencing the implementation of M&E process of governmental construction projects in West Bank related to typical projects of organization " is accepted because the *p-value* is more than .05.

Statistical Differences According to Job Title

According to this study, job title collected as interval, therefore, the researcher used One-way ANOVA test to determine the correlation between participant job title and other dependent variables. Statistical differences between job title intervals shows that there is no statistical differences between them is recognizing in all factors where ($P > 0.05$) for all. Tables below show full details about these results:

Table (4.19): Descriptive of statistical differences among participants according to Job Title.

Factors	Job Title	N	Mean	Std. Deviation
Leadership	Project Manager	90	2.39	0.769
	Site / Office Engineer	102	2.63	1.005
	Organization Manager	72	2.14	0.825
	Other	36	2.45	0.956
	Total	300	2.41	.898
Human Resource	Project Manager	90	2.55	0.912
	Site / Office Engineer	102	2.83	0.997
	Organization Manager	72	2.68	0.995
	Other	36	2.54	1.246
	Total	300	2.68	.997
Information Resources	Project Manager	90	2.38	0.810
	Site / Office Engineer	102	2.77	1.017
	Organization Manager	72	2.62	1.010
	Other	36	2.73	1.218
	Total	300	2.61	.982
Financial Resources	Project Manager	90	2.46	0.960
	Site / Office Engineer	102	2.73	1.160
	Organization Manager	72	2.39	1.008
	Other	36	2.56	.985
	Total	300	2.54	1.044

Material Resources	Project Manager	90	2.63	0.907
	Site / Office Engineer	102	2.61	1.071
	Organization Manager	72	2.24	0.951
	Other	36	2.50	1.026
	Total	300	2.51	.990
Technological Resources	Project Manager	90	2.54	1.021
	Site / Office Engineer	102	2.80	1.225
	Organization Manager	72	2.65	1.279
	Other	36	3.00	1.265
	Total	300	2.70	1.180
Strategy and Plans	Project Manager	90	2.58	0.805
	Site / Office Engineer	102	2.78	0.989
	Organization Manager	72	2.35	0.859
	Other	36	2.62	1.324
	Total	300	2.59	.950
Process System	Project Manager	90	2.35	0.785
	Site / Office Engineer	102	2.27	0.926
	Organization Manager	72	2.07	0.784
	Other	36	2.21	0.883
	Total	300	2.24	0.843
Coordination and Relationship	Project Manager	90	2.31	0.823
	Site / Office Engineer	102	2.61	0.965
	Organization Manager	72	2.45	0.838
	Other	36	2.55	1.017
	Total	300	2.47	0.897
Total Score	Project Manager	90	2.47	0.711
	Site / Office Engineer	102	2.67	0.892
	Organization Manager	72	2.40	0.790
	Other	36	2.57	0.980
	Total	300	2.53	.823

Table 4.19 above shows the responses of project manager, site/office engineer, and organization manager job title towards each parameter related to monitoring and evaluation process in governmental construction projects. The surveys result summarize that from organization manager opinions the leadership factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from site/office

engineer opinions the leadership factor availability is partially. From project manager opinions, the human resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from site/office engineers opinions the human resource factors the availability is partially, From project managers opinions, the information resource factor has many parameters which primary available to influence M&E process of governmental construction projects ,but from site/office engineers opinions, the information resource factor availability is partially. From organization managers opinions, the financial resource factor has many parameters which primary available to influence M&E process of governmental construction projects ,but from site/office engineers opinions, the financial resource factors availability is partially, From organization managers opinions ,the material resource factor has many parameters which primary available to influence M&E process of governmental construction projects ,but from project managers and site/office engineers opinions, the financial resource factors availability is partially. From project manager's opinions, the technological resource factor has many parameters which primary available to influence M&E process of governmental construction projects, but from site/office engineers opinions, the technological resource factors the availability is weak,

From project manager, site/office engineer, and organization manager opinions, the strategy and plans factor has many parameters which primary available to influence M&E process of governmental construction projects. From organization managers opinions, the process system factor has many

parameters which strongly available to influence M&E process of governmental construction projects ,but from project manager, site/office engineer opinions the process system factors, the availability is primary, Finally, from project managers opinions, the coordination and relationship factors has many parameters which primary available to influence M&E process of governmental construction projects ,but from site/office engineers opinions, the information resource factor availability is partially,

Table (4.20): ANOVA Test for job title differences among participants

Factors		F	Sig.*
Leadership	Between Groups	2.224	0.088
Human Resource	Between Groups	0.745	0.527
Information Resources	Between Groups	1.350	0.261
Financial Resources	Between Groups	0.909	0.438
Material Resources	Between Groups	1.296	0.278
Technological Resources	Between Groups	0.762	0.517
Strategy and Plans	Between Groups	1.438	0.234
Process System	Between Groups	0.841	0.473
Coordination and Relationship	Between Groups	0.932	0.427
Total Score	Between Groups	0.899	0.444

*. The mean difference is significant at the 0.05 level.

ANOVA test shows that the hypothesis "there is no significant statistical differences at ($\alpha=0.05$) between factors related to leadership, financial resources, material resource, strategy and plans, process system, and coordination and relationship refer to degree of satisfaction of main parameters influencing the implementation of M&E process of governmental construction projects in West Bank related to job title" is accepted because the *p-value* is more than .05.

Statistical Differences According to Projects Number

According to this study, projects number collected as interval, therefore, the researcher used One-way ANOVA test to determine the correlation between participant projects number and other dependent variables. Statistical differences between projects number intervals shows that there is statistical differences between them is recognizing in all factors except Material Resources and Process System. P- value less than (0.05)

Tables below show full details about this results:

Table (4.21): Descriptive of statistical differences among participants according to projects number.

Factors	Projects Number	N	Mean	Std. Deviation
Leadership	1 - 10	114	2.64	0.896
	11 - 20	78	2.24	0.810
	21 - 30	42	2.67	1.015
	More than 30	66	2.09	0.804
	Total	300	2.41	.898
Human Resource	1 - 10	114	3.18	0.940
	11 - 20	78	2.30	0.762
	21 - 30	42	2.81	1.030
	More than 30	66	2.19	0.912
	Total	300	2.68	.997
Information Resources	1 - 10	114	2.93	1.059
	11 - 20	78	2.43	0.697
	21 - 30	42	2.97	0.936
	More than 30	66	2.07	0.885
	Total	300	2.61	.982
Financial Resources	1 - 10	114	2.75	1.115
	11 - 20	78	2.42	0.884
	21 - 30	42	2.90	1.117
	More than 30	66	2.14	0.920
	Total	300	2.54	1.044

Material Resources	1 - 10	114	2.57	0.943
	11 - 20	78	2.46	0.973
	21 - 30	42	2.94	1.133
	More than 30	66	2.23	0.935
	Total	300	2.51	.990
Technological Resources	1 - 10	114	3.22	1.239
	11 - 20	78	2.45	0.950
	21 - 30	42	2.64	1.097
	More than 30	66	2.19	1.065
	Total	300	2.70	1.180
Strategy and Plans	1 - 10	114	2.73	0.907
	11 - 20	78	2.53	0.902
	21 - 30	42	2.91	1.065
	More than 30	66	2.26	0.929
	Total	300	2.59	0.950
Process System	1 - 10	114	2.32	0.900
	11 - 20	78	2.33	0.774
	21 - 30	42	2.42	1.001
	More than 30	66	1.90	0.639
	Total	300	2.24	0.843
Coordination Relationship and	1 - 10	114	2.67	0.902
	11 - 20	78	2.53	0.710
	21 - 30	42	2.52	0.915
	More than 30	66	2.04	0.954
	Total	300	2.47	0.897
Total Score	1 - 10	114	2.78	0.817
	11 - 20	78	2.41	0.657
	21 - 30	42	2.75	0.923
	More than 30	66	2.12	0.774
	Total	300	2.53	0.823

Table 4.21 above shows the responses of small, medium, and large number of projects executed in the last five years towards each parameter related to monitoring and evaluation process in governmental construction projects. The surveys result summarizes that from small, medium, and large number of projects opinions the leadership factor has many parameters that primary available to influence M&E process of governmental construction

projects, from medium, and large number of projects opinions the human resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from small number of projects opinions the human resource factors availability is weakly, also, it summarizes that from medium number of projects opinions the information resource factor has many parameters which primary available to influence M&E process of governmental construction projects ,but from small, and large number of projects opinions the information resource factor the availability is partially, and that from medium number of projects opinions the financial resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from small and large number of projects opinions the financial resource factors availability is partially. Moreover, from small, and medium number of projects opinions the material resource factor has many parameters that primary available to influence M&E process of governmental construction projects, but from large number of projects opinions the financial resource factors availability is weak. From medium and large number of projects opinions, the technological resource factor has many parameters that primary available to influence M&E process of governmental construction projects, but from small number of projects opinions the technological resource factors availability is weak, And that from small, medium, and large number of projects opinions the strategy and plans factor has many parameters that partially available to influence M&E process of governmental construction projects, and that from small, medium, and large number of projects opinions

the process system factor has many parameters which primary available to influence M&E process of governmental construction projects. Finally, from small, medium, and large number of projects opinions the coordination and relationship factors has many parameters which primary available to influence M&E process of governmental construction projects.

Table (4.22): ANOVA Test for job title differences among participants

Factors		F	Sig.
Leadership	Between Groups	4.004	0.009*
Human Resource	Between Groups	11.601	0.000*
Information Resources	Between Groups	7.837	0.000*
Financial Resources	Between Groups	3.678	0.014*
Material Resources	Between Groups	2.390	0.071
Technological Resources	Between Groups	7.302	0.000*
Strategy and Plans	Between Groups	2.723	0.047*
Process System	Between Groups	2.601	0.054
Coordination and Relationship	Between Groups	3.823	0.011*
Total Score	Between Groups	5.858	0.001*

*. The mean difference is significant at the 0.05 level.

ANOVA test shows that the hypothesis "there is no significant statistical differences at ($\alpha=0.05$) between factors related to material resource, process system refer to degree of satisfaction of main parameters influencing the implementation of M&E process of governmental construction projects in West Bank related to number of projects executed in the last five years" is accepted because p-value is more than (0.05). On the other hand, the hypothesis "there is significant statistical differences at ($\alpha=0.05$) between factors related to leadership, human resource, information resource, financial resource, strategy and plans, coordination and relationship and technological resource refer to degree of satisfaction of main parameters influencing the implementation of M&E process of governmental construction projects in

West Bank related to number of projects executed in the last five years "is rejected because the p-value is less than(0 .05) .

In order to know these differences, LSD test is used and the table below shows the results.

Table (4.23): LSD Test for number of projects executed in the last five years among participants (Leadership)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Leadership	1 - 10	11 - 22	0.406*	0.028*
		21 - 30	-0.024	0.915
		More than 30	0.552*	0.004*
	11 - 22	1 - 10	-0.406*	0.028*
		21 - 30	-0.430	0.072
		More than 30	0.146	0.475
	21 - 30	1 - 10	0.024	0.915
		11 - 22	0.430	0.072
		More than 30	0.576*	0.018*
	More than 30	1 - 10	-0.552*	0.004*
		11 - 22	-0.146	0.475
		21 - 30	-0.576*	0.018*

*. The mean difference is significant at the 0.05 level

LSD test for leader ship factor which influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows the following results:

- There are no differences between small number of project type and medium number of project type.
- There are differences between small number of project type and large number of project type. So small number of project type identifies the availability of leader ship more than large number of project type.

- There are differences between large number of project type and medium number of project type. So large number of project type identifies the availability of leader ship more than medium number of project type.

Table (4.24): LSD Test for number of projects executed in the last five years among participants (Human Resource).

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Human Resource	1 - 10	11 – 22	0.886*	0.000*
		21 – 30	0.375	0.108
		More than 30	0.994*	0.000*
	11 - 22	1 – 10	0-.886*	0.000*
		21 – 30	-0.511*	0.040*
		More than 30	0.108	0.612
	21 - 30	1 – 10	-0.375	0.108
		11 – 22	0.511*	0.040*
		More than 30	0.619*	0.014*
	More than 30	1 – 10	-0.994*	0.000*
		11 – 22	-0.108	0.612
		21 – 30	-0.619*	0.014*

*. The mean difference is significant at the 0.05 level.

LSD test for human resource factor which influence M&E process of governmental construction projects in west bank refer to number of projects executed in the last five years shows the following results:

- There are no differences between small number of project type and medium number of project type.
- There are a differences between large number of project type and medium number of project type. So large number of project type identifies the availability of human resource more than medium number of project type

Table (4.25): LSD Test for number of projects executed in the last five years among participants (Information Resources)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Information Resources	1 - 10	11 - 22	0.499*	0.011*
		21 - 30	-0.040	0.867
		More than 30	0.862*	0.000*
	11 - 22	1 - 10	-0.499*	0.011*
		21 - 30	-0.538*	0.033*
		More than 30	0.363	0.095
	21 - 30	1 - 10	0.040	0.867
		11 - 22	0.538*	0.033*
		More than 30	0.902*	0.001*
	More than 30	1 - 10	0.499*	0.000*
		11 - 22	-0.040	0.095
		21 - 30	0.862*	0.001*

*. The mean difference is significant at the 0.05 level.

LSD test for information resource factor which influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows the results:

- There are no differences between small number of project type and medium number of project type.
- There are differences between large number of project type and medium number of project type. So large number of project type identifies the availability of information resource more than medium number of project type.

Table (4.26): LSD Test for number of projects executed in the last five years among participants (Financial Resources)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Financial Resources	1 - 10	11 - 22	0.324	0.131
		21 - 30	-0.159	0.542
		More than 30	0.610*	0.006
	11 - 22	1 - 10	-0.324	0.131
		21 - 30	-0.484	0.082
		More than 30	0.285	0.233
	21 - 30	1 - 10	0.159	0.542
		11 - 22	0.484	0.082
		More than 30	0.769*	0.007*
	More than 30	1 - 10	-0.610*	0.006*
		11 - 22	-0.285	0.233
		21 - 30	-0.769*	0.007*

*, The mean difference is significant at the 0.05 level.

LSD test for financial resource factor which influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows the following results:

- There are no differences between small number of project type and medium number of project type.
- There are differences between small number of project type and large number of project type. So small number of project type identifies the availability of financial resource more than large number of project type.
- There are differences between large number of project type and medium number of project type .So large number of project type identifies the availability of financial resource more than medium number of project type.

Table (4.27): LSD Test for number of projects executed in the last five years differences among participants (Technological Resources)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Technological Resources	1 - 10	11 - 22	0.776*	0.001*
		21 - 30	0.580*	0.043*
		More than 30	1.038*	0.000*
	11 - 22	1 - 10	-0.776*	0.001*
		21 - 30	-0.195	0.519
		More than 30	0.262	0.317
	21 - 30	1 - 10	-0.580*	0.043*
		11 - 22	0.195	0.519
		More than 30	0.457	0.138
	More than 30	1 - 10	-1.038*	0.000*
		11 - 22	-0.262	0.317
		21 - 30	-0.457	0.138

*. The mean difference is significant at the 0.05 level.

LSD test for technological resources factor which influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows the following results:

- There are differences between small number of project type and medium number of project type. So small number of project type identifies the availability of technological resources more than medium number of project type.
- There are differences between large number of project type and medium number of project type. So large number of project type identifies the availability of technological resources more than medium number of project type.

Table (4.28): LSD Test for number of projects executed in the last five years differences among participants (Strategy and Plans)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Strategy and Plans	1 - 10	11 - 22	0.199	0.313
		21 - 30	-0.189	0.430
		More than 30	0.462*	0.023
	11 - 22	1 - 10	-0.199	0.313
		21 - 30	-0.388	0.129
		More than 30	0.263	0.231
	21 - 30	1 - 10	0.189	0.430
		11 - 22	0.388	0.129
		More than 30	0.651*	0.013*
	More than 30	1 - 10	-0.462*	0.023*
		11 - 22	-0.263	0.231
		21 - 30	-0.651*	0.013*

*. The mean difference is significant at the 0.05 level.

LSD test for strategy and plans factor which influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows the following results:

- There are differences between small number of project type and medium number of project type. So small number of project type identifies the availability of strategy and plans more than medium number of project type.
- There are differences between small number of project type and large number of project type. So small number of project type identifies the availability of strategy and plans more than large number of project type.
- There are differences between large number of project type and medium number of project type. So large number of project type identifies the availability of strategy and plans more than medium number of project type.

Table (4.29): LSD Test for number of projects executed in the last five years among participants (Coordination and Relationship)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Coordination and Relationship	1 - 10	11 – 22	0.132	0.472
		21 – 30	0.141	0.528
		More than 30	0.622*	0.001*
	11 - 22	1 – 10	-0.132	0.472
		21 – 30	0.009	0.969
		More than 30	0.490*	0.018*
	21 - 30	1 – 10	-0.141	0.528
		11 – 22	-0.009	0.969
		More than 30	0.481*	0.048*
	More than 30	1 – 10	-0.622*	0.001*
		11 – 22	-0.490*	0.018*
		21 – 30	-0.481*	0.048*

*. The mean difference is significant at the 0.05 level.

LSD test for coordination and relationship factor which influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows show the following results:

- There are no differences between small number of project type and medium number of project type.
- There are differences between small number of project type and large number of project type. So small number of project type identifies the availability of coordination and relationship more than large number of project type.
- There are differences between large number of project type and medium number of project type. So large number of project type identifies the

availability of coordination and relationship more than medium number of project type.

Table (4.30): LSD Test for number of projects executed in the last five years among participants (Total Score)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Total Score	1 - 10	11 - 22	0.368*	0.027*
		21 - 30	0.024	0.905
		More than 30	0.655*	0.000*
	11 - 22	1 - 10	-0.368*	0.027*
		21 - 30	-0.344	0.110
		More than 30	0.287	0.121
	21 - 30	1 - 10	-0.024	0.905
		11 - 22	0.344	0.110
		More than 30	0.631*	0.004*
	More than 30	1 - 10	-0.655*	0.000*
		11 - 22	-0.287	0.121
		21 - 30	-0.631*	0.004*

*, The mean difference is significant at the 0.05 level.

LSD test for total score which totally influence M&E process of governmental construction projects in West Bank refer to number of projects executed in the last five years shows:

- There are no differences between small number of project type and medium number of project type.
- There are differences between large number of project type and medium number of project type. So large number of project type identifies the availability of total score more than medium number of project type.

Statistical Differences According to Projects Financial Value

According to this study projects financial value as interval, therefore the researcher used One-way ANOVA test to determine the correlation between participant projects financial value and other dependent variables. Statistical differences between projects financial value intervals shows that there is no statistical differences between them is recognizing in all factors where ($P > 0.05$) except Process System.

Tables below show full details about these results:

Table (4.31): Descriptive of statistical differences among participants according to projects financial value.

Factors	Projects financial value	N	Mean	Std. Deviation
leadership	Less than 2 million dollars	78	2.32	0.659
	2 to 5 million dollars	72	2.70	1.062
	5 to 10 million dollars	66	2.43	0.922
	More than 10 million dollars	84	2.24	0.888
	Total	300	2.41	0.898
Human Resource	Less than 2 million dollars	78	2.79	0.678
	2 to 5 million dollars	72	2.81	1.088
	5 to 10 million dollars	66	2.61	0.963
	More than 10 million dollars	84	2.50	1.179
	Total	300	2.68	0.997
Information Resources	Less than 2 million dollars	78	2.59	0.655
	2 to 5 million dollars	72	2.83	1.016
	5 to 10 million dollars	66	2.64	0.875
	More than 10 million dollars	84	2.40	1.242
	Total	300	2.61	0.982
Financial Resources	Less than 2 million dollars	78	2.32	0.823
	2 to 5 million dollars	72	2.72	1.123
	5 to 10 million dollars	66	2.79	1.186
	More than 10 million dollars	84	2.41	1.010
	Total	300	2.54	1.044

Material Resources	Less than 2 million dollars	78	2.34	0.793
	2 to 5 million dollars	72	2.74	1.169
	5 to 10 million dollars	66	2.69	1.090
	More than 10 million dollars	84	2.34	0.873
	Total	300	2.51	0.990
Technological Resources	Less than 2 million dollars	78	2.91	0.910
	2 to 5 million dollars	72	2.74	1.239
	5 to 10 million dollars	66	2.71	1.269
	More than 10 million dollars	84	2.48	1.278
	Total	300	2.70	1.180
Strategy and Plans	Less than 2 million dollars	78	2.51	0.766
	2 to 5 million dollars	72	2.83	1.053
	5 to 10 million dollars	66	2.72	1.014
	More than 10 million dollars	84	2.37	0.932
	Total	300	2.59	.950
Process System	Less than 2 million dollars	78	2.25	0.784
	2 to 5 million dollars	72	2.57	.995
	5 to 10 million dollars	66	2.25	0.879
	More than 10 million dollars	84	1.94	0.616
	Total	300	2.24	0.843
Coordination Relationship and	Less than 2 million dollars	78	2.44	0.814
	2 to 5 million dollars	72	2.69	0.862
	5 to 10 million dollars	66	2.55	0.961
	More than 10 million dollars	84	2.23	0.920
	Total	300	2.47	0.897
Total Score	Less than 2 million dollars	78	2.50	0.617
	2 to 5 million dollars	72	2.74	0.926
	5 to 10 million dollars	66	2.60	.882
	More than 10 million dollars	84	2.32	0.828
	Total	300	2.53	0.823

Table 4.31 above shows the responses of small, medium, and large financial value of projects that executed in the last five years towards each parameter related to monitoring and evaluation process in governmental construction projects. The surveys result summarize that from small, medium,

and large financial value of projects opinions the leadership factor has many parameters that primary available to influence M&E process of governmental construction projects, from medium, and large financial value of projects opinions the human resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from small financial value of projects opinions the human resource factors availability is weak. From medium financial value of projects opinions the information resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from small and large financial value of projects opinions the information resource factor availability is partially, from medium financial value of projects opinions the financial resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from small and large financial value of projects opinions the financial resource factors availability is partially. From small and medium financial value of projects opinions the material resource factor has many parameters that primary available to influence M&E process of governmental construction projects, but from large financial value of projects opinions the financial resource factors availability is weak, from medium, and large financial value of projects opinions the technological resource factor has many parameters that primary available to influence M&E process of governmental construction projects ,but from small financial value of projects opinions the technological resource factors the availability is weak and that from small, medium, and large financial value of projects opinions the strategy and plans factor has

many parameters that partially available to influence M&E process of governmental construction projects .From small, medium, and large financial value of projects opinions the process system factor has many parameters that primary available to influence M&E process of governmental construction projects, also, from small, medium, and large financial value of projects opinions the coordination and relationship factors has many parameters that primary available to influence M&E process of governmental construction projects.

Table (4.32): ANOVA Test for projects financial value differences among participants.

Factors		F	Sig.
Leadership	Between Groups	1.916	0.130
Human Resource	Between Groups	.905	0.440
Information Resources	Between Groups	1.250	0.294
Financial Resources	Between Groups	1.774	0.155
Material Resources	Between Groups	1.812	0.148
Technological Resources	Between Groups	.927	0.430
Strategy and Plans	Between Groups	1.851	0.141
Process System	Between Groups	3.805	0.012*
Coordination and Relationship	Between Groups	1.858	0.139
Total Score	Between Groups	1.761	0.157

*. The mean difference is significant at the 0.05 level.

ANOVA test shows that the hypothesis "there is no significant statistical differences at ($\alpha=0.05$) between factors related to leadership, human resource, information resource, financial resource, material resource, technological resource, strategy and plans, and coordination and relationship refer to degree of satisfaction of main parameters influencing the

implementation of M&E process of governmental construction projects in West Bank related to projects financial value" is accepted because *p-value* is more than .05. On the other hand, the hypothesis "there is significant statistical differences at ($\alpha=0.05$) between factors related to process system refer to degree of satisfaction of main parameters influencing the implementation of M&E process of governmental construction projects in west bank related to projects financial value " is rejected because the *p-value* is less than 0.05 .

In order to know these differences, LSD test is used and the table below shows the results.

Table (4.33): LSD Test for projects financial value differences among participants (Process System)

Factors	(I)	(J)	Mean Difference (I-J)	Sig.
Process System	Less than 2 million dollars	2 to 5 million dollar	-0.326	0.088
		5 to 10 million dollar	-0.008	0.969
		More than 10 million dollar	0.303	0.099
	2 to 5 million dollars	Less than 2 million dollars	0.326	0.088
		5 to 10 million dollar	0.318	0.109
		More than 10 million dollar	0.629*	0.001*
	5 to 10 million dollars	Less than 2 million dollars	0.008	0.969
		2 to 5 million dollar	-0.318	0.00651
		More than 10 million dollar	0.311	0.106
	More than 10 million dollars	Less than 2 million dollars	-0.303	0.099
		2 to 5 million dollar	-0.629*	0.001*
		5 to 10 million dollar	-0.311	0.106

*. The mean difference is significant at the 0.05 level.

LSD test for process system factor which influence M&E process of governmental construction projects in West Bank refer to projects financial value shows the following results:

There is no different between small financial value of project type and medium financial value of project type.

- There are no differences between small financial value of project type and large financial value of project type.
- There are differences between large financial value of project type and medium financial value of project. So large financial value of project type identifies the availability of process system more than medium financial value of project type.

CHAPTER Five

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Construction field is considered the most important field in the world as it develops and achieves the goals of society. The construction field performance is affected by consultants, clients, contractors and others. The main aim of this thesis is to assess, monitor and evaluate process that should be done on construction projects in West Bank governmental projects.

5.2 Summary of Findings

For the objective which was to assess the monitoring and evaluation process in the Palestinian construction industry, the results showed that all responses of (Owner, Contractor, and Consultant) M & E process for governmental construction process in the West Bank were very weak process ,especially, from contractor point of view. The results show that the majority of the respondents indicated that process system and financial resources factors on the project should be given clear allocation and designation by fitting designation methodology of preparing budget and formation of project objectives that influence performance of monitoring and evaluation of governmental projects.

For other objective which was to assess monitoring and evaluation influence performance of governmental construction projects, the study results found that the majority of the respondents agreed to a very high extent

that monitoring and evaluation give evidence of why targets and outcomes are or are not being achieved.

Regarding objective which was to indicate the need to focus on the issues for M&E scientifically to ensure a successful completion of construction projects for public utilities.

For objective which was to examine Strength of Monitoring and Evaluation process and its influence to performance of construction projects in the West Bank, the findings of the study revealed that Majority of the respondents agreed to very high extent that providing support and strengthening of M & E process are signs of good governance which influence performance of government construction projects.

5.3 Conclusion

The main aim of this research was divided into the following objectives:

- To determine owners, consultants and contractors perceptions towards the most important elements of Monitoring and Evaluation Process that should be assessed in governmental construction projects in West Bank.

A structured questionnaire survey approach was considered in order to study the most important elements of Monitoring and Evaluation Process that should be assessed in governmental construction projects in West Bank which should be affecting construction projects performance. The

questionnaire assists to study the attitudes of owners, consultants and contractors towards key elements related to performance indicators in the construction industry. Pilot study of the questionnaire was achieved by a scouting sample which consisted of 300 individuals . These questionnaires were distributed to expert engineers such as projects managers, site engineers, organizations managers and others. They have a strong practical experience in construction industries field. Their sufficient experiences are a suitable indication for pilot study.

Thirty elements were considered and listed in this study under eight groups based on literature review. These groups give a comprehensive summary of the main elements that should be monitored and evaluated because these have major effects on project performance.

The elements were summarized and collected according to previous studies .Others are added as recommended by local experts.

The main groups considered in this thesis section are clients and the related elements are financing and payments of completed works, owner interference, decision making, and contract duration and requirements imposed with respect to contractor with related elements are subcontractors. site management, construction methods, planning, construction stages and mistakes, and experience of contractors, with respect to consultant with related elements are contract management, preparation of drawings, quality assurance/control, and time for approval for test and inspection with respect to

Supply of material with related elements are quality of material . Shortage of material, with respect to Labor and equipment with related elements are labor supply, labor productivity, equipment availability, and equipment failure, with respect to contract and contract relationship with related elements are contract orders (Change), contract documents (Mistakes and discrepancies), major disputes and negotiation, and communication between the parties , finally with respect to external factors with related elements are climate conditions, regularity changes, relationships with neighbors, Unforeseen site conditions.

The targeted groups in this research are contractors, owners, and consultants. 300 questionnaires were distributed as follows: 90 to owners, 96 to consultants and 114 to contractors. 243 questionnaires (81%) were received as follows: 76 (84%) from Owners, 80 (83%) from consultants and 87 (76%) from contractors as respondents. The respondents are classified as organizations managers, site engineers and projects managers as they have a theoretical and practical experience in construction governmental projects. Their large experiences were a suitable indication to find out the perceptive of the relative importance of construction project sections and related elements of the owner, consultant and contractor parties that should be monitored and evaluated. Their experiences included many construction fields such as buildings, roads and electromechanical projects.

The results were analyzed, and discussed in order to obtain the most elements that should be monitored and evaluated. The statistical analyzing method was used here to determine owners, consultants and contractors

perceptions of the relative importance of all elements that should be monitored and evaluated in governmental construction projects in west bank that would be assessed.

➤ **To identify the quality of construction projects factors in the west bank.**

Evaluation the quality of the construction project factors that might success or fail/ delay, .These factors should be monitored and evaluated.

According to owners, consultants and contractors the average delay or fail because of inadequate contractor planning was the most important performance factors that should be focused on monitoring and evaluation process as it has the first rank among all factors through all stakeholder of construction projects. This agreement between all targeted groups is traced to the difficult situation of planning and up-to-date planning program, due to lack of experience of contractor manager. Construction projects in the West Bank are suffering from complex problems because of subcontractor, lack of communication between stakeholders (clients, implementing companies, contractors), Slow decision making, owners finance and payment of completed works, and change orders. These problems can be considered as an obstacle for performance of projects that may cause fail or delay to construction project that should be monitored and evaluated at all stages of projects.

The most important factors agreed as success factors by the owners, consultants and contractors as the main factors affecting the performance of

construction projects in the West Bank were: organization planning, project manager's goal commitment, clarity of the project scope and definition, project manager experience, applied procedure, safety precautions, and strong control system. However, there are some factors which can be considered as more important for one party than for others. This is because contractors are interested with operational and managerial factors. However, the stakeholder considered the organization planning factors to be more important than other ones for success and more effective for monitoring and evaluation.

Organization planning factor has been ranked by the consultant respondents in the first position because consultants are interested with technical factors that affects directly performance of construction projects. Consultants observed that project manager goal commitment and quality of strong control system in project and availability of communication of stakeholders with high qualification affect strongly the quality performance of project.

Clarity of the project scope and definition factors has been first ranked by the contractors respondents because contractors observed that if all definitions of all work stages were identified accurately then there are affecting strongly on productivity, and on performance of contractors. All success factors mentioned have been ranked by the owner respondents as most important, because owners interested with all factors that affect strongly on the project performance.

Owners finance and payment of completed works factor has been ranked by the owner respondents in the last position, has been ranked by the consultant respondents in the medium position, and has been ranked by the

contractor respondents in the first and more important position. This factor is also more important for consultant than for others because the consultant is concerned with planned time for project completion that was affected directly with financial status of construction project which is most factor that reflect final success or delay for project which is mainly purpose of monitoring and evaluation.

- **To assess the degree of availability of monitoring and evaluation process between owners, consultants and contractors regarding all parameters related to construction projects in the west bank, and each factor related to each parameter.**

This part of questionnaire is used to determine whether there is degree of agreement among parameter of construction projects that affects performance and each factors related to these parameters from owners, consultants and contractors opinion. For human resource, information resource, financial resource, material resource, People, technological resource, strategy and plans, coordination and relationship factors, and all parameters together, there is a significant degree of agreement among the consultants, owners, and contractors. This is because all of consultants, owners, and contractors are interested with these factors and related parameters that should be done in projects .But for leadership factors and process system, there is mid degree of agreement among the owners, consultants and contractors. This is because contractors are requested these factors from owners and consultants and more interested with these factors more than consultant and owners. And that is shown contractors are interested with operation and manager related factors. And owners considered the client factors are more important to achieve the scope of project. And consultants considered the

technical factors to be more important than factor that interested with operation aspects of construction projects.

Results are used in order to check out if there are any significant differences according to the point of view of the respondents (owners, consultants and contractors) regarding the levels of each of the factors affecting monitoring and evaluation process of construction projects. It was found that there are significant differences between the organization types (owners, consultants and contractors) regarding their respondent degree to all fields.

5.4 RECOMMENDATIONS

The researcher has the following recommendations to make with regard to Influencing Performance of Monitoring and Evaluation of Governmental construction Projects in the West Bank

1. The factors Influencing Performance of Monitoring and Evaluation of governmental construction Projects in the West Bank have numerous weaknesses, which if not solved, they will affect the success of the project completion, so, it is recommended to develop human resources in the construction industry through proper and continuous training programs about construction projects M&E.
2. Real funds that are required in carrying out some running costs for payments for doing M & E are inadequate that leading to poor execution of M & E activities.

3. Due to inadequate financial resources, M & E process is therefore unable to carry out in continuous way, and M&E can't be developed in a proper M&E system.
4. The teams that do M & E process governmental Projects in the west bank should consider adopting a modern communications and information technology in achieving monitoring and evaluations to take updating right data.
5. There is need to include all stakeholders in project M & E in each stage as they play an active role because they are the customer of the project for the availability and sustainability at all stages of project cycle.
6. Updating M&E team knowledge that can assist them to be more familiar with project management techniques and processes and improving performance of construction projects.
7. Before implementation of any construction project it is recommended for construction organizations to give a strong, clear, and new approach to doing M&E system, which will assist organizations to perform projects successfully and strongly, In addition, construction organizations are recommended to evaluate project overtime through project construction in order to enhance and improve time and cost performance of projects.
8. Owners are recommended to facilitate M&E procedure to other parties in order to overcome delay, disputes and claims. All managerial levels should be participated with this process. Continuous coordination and

relationship between project participants are required through project life cycle, it is recommended to minimize disputes between owner and project parties to facilitate M&E process, and employees in construction industries should be more interested with all activities that helping monitoring and evaluation.

9. Consultants should be more interested with M&E process for controlling technical aspects of projects, and then analysis and choosing the most economic criteria in order to improve their performance and to increase owner's satisfaction.
10. Contractors should increase activities that helping M&E process of projects that cannot be performed successfully if don't making it all the project cycle. There should be adequate resources in order doing proper motivated M&E system, and technological systems should be established for improvement M&E system that will affects productivity performance of construction projects in west bank. Contractor team should be more interested with M&E system to improve cost, time and quality performance. This can be done by applying M&E skills trainings, contractors should have M&E engineer in their projects to control this process successfully.

5.5 RECOMMENDATIONS FOR FURTHER RESEARCH

The study also recommends that further research should be carried out on;

1. Helping team of M&E how to strengthen primary stakeholders participation in governmental construction projects,
2. Starting to ensure the beneficiaries for ability participate effectively in monitoring and evaluating projects.
3. Establishing new plans, strategic method for doing monitoring and evaluation of governmental projects.
4. Increasing influence of information technology system on monitoring and evaluation on governmental construction projects.
5. Finally, it is recommended to develop M&E measurement framework and modeling system in order to measure each stage of M&E of construction organizations and projects.

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Appendix 1:

An-Najah National University

Faculty of Graduates Studies

Engineering Management Program

**Master Program in Engineering Management
(Questionnaire)**

**Assessment of Monitoring and Evaluation Process for
Governmental Construction Projects in the West Bank**

تقدير "عملية المتابعة والتقييم" لمشاريع البناء الحكومية في الضفة الغربية.

The construction industry is one of the major contributing sectors to national economy in many countries. The governmental construction industry in the West Bank is affected by severe events and problems that may happen during implementation of projects. Such effects and events may be positive or negative to the projects, and these events should be monitored and evaluated. The Researcher aims to assess monitoring and evaluation process of these projects to improve quality, efficiency and performance of these projects.

يعد قطاع البناء واحد من أهم القطاعات المساهمة في بناء الاقتصاد الوطني للعديد من الدول. ويعد قطاع البناء والتشييد الحكومي في الضفة الغربية من القطاعات التي تتأثر بالعديد من الأحداث المتغيرة والمعيقات والتي تحدث خلال فترة اعداد وتنفيذ المشروع حتى الانتهاء منه. ومن الممكن أن تكون هذه الأحداث والمؤثرات ذات طابع ايجابي أو سلبي على هذا النوع من المشاريع. والتي من المهم ان يتم متابعتها ومن ثم تقييمها. وبالتالي سيكون هدف الباحث هو تقدير وتقييم عملية المتابعة والتقييم هذه لجميع جوانب المشاريع البنائية لتحقيق أهدافها بجودة وفعالية الأداء لهذه المشاريع.

The Questionnaire's main questions is:

سؤال الاستبيان الرئيسي:

WHAT FACTORS SHOULD BE MONITORED AND EVALUATED, AND WHAT IS THE MOST IMPORTANT FACTOR THAT AFFECTS PERFORMANCE OF CONSTRUCTION PROJECTS?

ما هي العوامل التي يجب ان تتابع وتقيم؟ وكذلك ما هي أهم العوامل التي تؤثر في أداء مشاريع البناء الحكومية؟

As a key stakeholder, you are invited to participate in a Questionnaire about the governmental construction projects.

وكونك شريك أساسي، أنت مدعو للمشاركة في تعبئة الاستبيان عن مشاريع البناء الحكومية.

Your answers will be important in the assessment, monitoring and evaluation process that will provide us with a better understanding of the construction industry in Palestine

اجابتك ستكون قيمة ومهمة في تقدير عملية المتابعة والتقييم والتي ستخدم بشكل أفضل فهم صحيح لمشاريع البناء في فلسطين.

And will accordingly lead to the suggestion of key strategies to improve project success in the future.

والتي سوف تقود لاقتراح استراتيجيات أساسية لتحسين نجاح المشروع في المستقبل

Kindly, this questionnaire is required to be filled with exact relevant facts as much as possible. All data included in this questionnaire will be used only for academic research and will be strictly confidential. After all questionnaires are collected and analyzed, participants in this study/questionnaire will be given feedback on the overall research results, in case they are interested.

وهذا الاستبيان سيكون مطلوب تعبئته بحقائق مناسبة ودقيقة قدر الاستطاعة، وجميع المعلومات الواردة في هذا

الاستبيان ستستخدم فقط في أغراض البحث العلمي وسوف تبقى سرية ، وسوف يتم احاطة كافة المهتمين المشاركين في

هذا الاستبيان بالنتائج المستخلصة بعد انتهاء الدراسة.

I highly appreciate your time to participate and fill in this questionnaire, indicating that the promising results of the study are a new addition to the construction sector's industry and its stakeholders.

أنا أقدر وقتك وأشكرك للمشاركة في تعبئة هذا الاستبيان، مع الإشارة أن نتائج هذه الدراسة ستكون إضافة جديدة
لقطاعات البناء وكافة الأطراف ذات العلاقة.

Sincerely,

Abdulrahman H. Alayasi.

Abed_ayasi@yahoo.com

Submitted by

Abdulrahman H. Alayasi

Supervised by

Dr. Riyadh Awwad

October, 2016

Section A: General Information: Please add (✓) as appropriate:

معلومات عامة

1. TYPE OF ORGANIZATION:

نوع المؤسسة

☐ Owner مالك	☐ Consultant استشاري	☐ Contractor مقاول
----------------------------------	--	--

2. Typical projects of organization:

نوع الاعمال (المشاريع) التي قامت بها المؤسسة

☐ Buildings	☐ Roads and transportation
☐ Electro-Mechanical	☐ Others (specify)

3. Company size :(number of employees) :

حجم المؤسسة (عدد الموظفين)

Number of employees in your company is -----.

4. JOB TITLE OF THE RESPONDENT:

المسمى الوظيفي لمعبئ الاستبيان

☐ Project Manager مدير مشروع	☐ Site Engineer مدير موقع
☐ Organization Manager مدير مؤسسة	☐ Others (specify) آخر (حدد)

5. Experience of the respondent :

الخبرة العامة لمعبئ الاستبيان

Years of experience: ----- Years

6. NUMBER OF PROJECTS EXECUTED IN THE LAST FIVE YEARS: عدد المشاريع المنفذة في اخر 5 سنوات

☐ 1 to 10	☐ 11 to 20
☐ 21 to 30	☐ More than 30

7. Financial value of implemented projects during last five years: (in million dollars)

القيمة المالية للمشاريع المنفذة خلال اخر خمس سنوات (بقيمة المليون دولار).

☐ Less than 2 million dollars	☐ 2 to 5 million dollars
☐ 5 to 10 million dollars	☐ More than 10 million dollars

SECTION B: Important elements of Monitoring and Evaluation Process

الجوانب الرئيسية المهمة لعملية المتابعة والتقييم والتي من المهم

تقديرها

Please rank the elements below in what you consider **to be most important in measuring monitoring and evaluation processes in construction projects.**

الرجاء رتب العوامل المحددة أدناه كأكثر أهمية في قياس عملية المتابعة والتقييم في مشاريع البناء.

Using a scale 1-5, Please tick (□) as appropriate. **1.** Not important. **2.** A small amount. **3.** A moderate amount. **4.** A good deal, and **5.** Extremely important.

ملاحظة: يرجى الانتباه لدرجة التقييم.

Element		1	2	3	4	5
Client العملاء (الزبون)	Financing and payments of completed Works التمويل والدفع للأعمال المنجزة					
	Owner interference. تداخل المالكين.					
	Decision making. اتخاذ القرارات.					
	Contract duration and requirements imposed فترة العقد والمتطلبات المفترضة.					
Contractor المقاول	Subcontractors. مقاولين الباطن.					
	Site Management. ادارة الموقع.					
	Construction Methods. طريقة البناء.					
	Planning. التخطيط.					
	Construction Stages and mistakes. مراحل البناء والأخطاء.					
	Experience of contractors. خبرة المقاول.					
Consultant الاستشاري	Contract Management. ادارة العقد.					
	Preparation and approval of drawings. تحضير والموافقة على المخططات.					
	Quality assurance/control. التحكم بالجودة.					
	Time for approval for test and inspection. وقت الموافقة على الاستلامات والفحوصات.					
Supply of material توريد المواد	Quality of material جودة المواد					
	Shortage of material نقص في المواد					

	Element	1	2	3	4	5
Labor & equipment العمالة والمعدات.	Labor supply . وجود العمالة					
	Labor productivity. ¹ الانتاجية للعامل					
	Equipment availability . وفرة المعدات					
	Equipment Failure. تلف المعدات وتعطلها					
Contract.العقد	Contract orders (Change). تغييرات في العقد					
	Contract documents (Mistakes and discrepancies).. وثائق العقد (أخطاء وغموض)					
Contract relationship أطراف ذات العلاقة بالعقد	Major disputes and negotiation. النزاعات الأساسية والتفاوض.					
	Overall organizational structure linking to project. الهيكل التنظيمي العام للمؤسسة وارتباطه مع المشروع					
	Communication between the parties. التواصل ما بين كافة اطراف المشروع					
External Factors المؤثرات الخارجية	Climate conditions. الاحوال الجوية					
	Regularity changes. التغيرات المنتظمة. للمشروع					
	Relationships with neighbors. العلاقات مع الجيران. المحلي والدولي					
	Unforeseen site conditions. التغيرات الغير متوقعة.					

SECTION C: Construction Project Factors Evaluation.

تقييم عوامل مشاريع البناء

Based on your overall experience in governmental construction projects in general, please evaluate the quality of the following factors that might me success or fail/delay, indicating that such factors that should be monitored and then evaluated.

بالاعتماد على الخبرات العامة في مشاريع البناء والتشييد الحكومية وبشكل عام، الرجاء قيم درجة كفاءة العوامل المذكورة أدناه والتي من الممكن ان تكون عوامل نجاح أو عوامل فشل (تأخير)، مع الاشارة أن هذه العوامل يجب أن تتابع ومن ثم تقييم.

Important: for any additional factors you have experienced, please add and evaluate them to the provided lines in the table. (5=Very good, 4=Good, 3=Fair, 2=Poor, 1=Very poor).

ملاحظة مهمة : اذا كان لديك عوامل أخرى تحب اضافتها من خلال خبرتك رجاء أدخلها خلال الجدول وقيمها مع الانتباه لنوع التقييم.

Success Factor. عوامل النجاح	1	2	3	4	5
Organization planning. تخطيط المؤسسة					
Project manager's goal commitment. التزام مدير المشروع بالهدف					
Clarity of the project scope and definition. وضوح معايير وتعريفات ونطاق المشروع.					
Project manager experience. خبرة مدير المشروع.					
Applied procedure. الاجراءات المطبقة.					
Safety precautions. اجراءات السلامة الوقائية.					
Strong control system نظام تحكم قوي					
Additional factor you have-----.					
Additional factor you have-----.					
Fail Factors. عوامل فشل (تأخير)	1	2	3	4	5
Inadequate contractor planning. تخطيط المقاول الغير كافي					
Inadequate contractor experience. خبرة المقاول غير الكافية					
Subcontractor . مقاولي الباطن					
Lack of communication between stakeholders (clients, implementing companies, contractors, ...) قلة التواصل ما بين جميع الشركاء (المالك والشركات المنفذة -المقاولين،).					

Slow decision making . اتخاذ قرارات بطئ					
Owners finance and payment of completed works. التمويل والدفع للأعمال المنجزة					
Change orders (التعليمات) المتغيرة (المعدلة). الأوامر					
Additional factor you have-----.					
Additional factor you have-----.					

Section D: Major factors experienced in M&E Process in construction projects in the West Bank.
العوامل الرئيسية التي تشهدها في عملية المتابعة والتقييم في مشاريع البناء في الضفة الغربية

Please identify the degree of availability of main factors influencing M&E process of governmental construction projects in West Bank.

الرجاء حدد درجة وجود وتوفر العوامل الرئيسية والتي تؤثر في عملية المتابعة والتقييم لمشاريع البناء الحكومية في الضفة الغربية.

1. Advanced Availability. 2. Primary availability. 3. Partially availability.
4. Weak available. 5. Not available.

Factor		1	2	3	4	5
Leadership الادارة	Top management commitment for M&E. التزام الادارة العليا بعملية المتابعة والتقييم					
	Ability of top management to identify the M&E responsibilities for project that affects performance. قدرة الادارة العليا لتحديد مهام عملية المتابعة والتقييم والتي تؤثر بالاداء					
	Ability to distribute the responsibilities for M&E on the department heads. القدرة على توزيع مسؤوليات المتابعة والتقييم على رؤساء الاقسام.					
	Attached to M&E by the top management in relation to cost and schedule objectives. قدرة الادارة العليا على ربط عملية المتابعة والتقييم بالتكلفة والجدول الزمني					
	Support of M&E in organization culture. دعم عملية المتابعة والتقييم من خلال ثقافة المؤسسة					
	Involvement in M&E objective task definition, budgeting, and measurement. المشاركة في وضع أهداف المتابعة والتقييم ومفهومها وتكاليفها وقياسها.					
Human Resource. الموارد البشرية	Availability of Methodology for collecting and analyzing information to do M&E. وجود منهجية لجمع المعلومات وتحليلها لعمل المتابعة والتقييم					
	Availability of program that employs Suggestions and complaints system in M&E. وجود نظام لتوظيف الاقتراحات والشكاوى في المتابعة والتقييم					
	Taking into account training needs and evaluating skills that may wanted in M&E. الاهتمام بالاعتبار احتياجات التدريب وتقييم المهارات المطلوبة لعملية المتابعة					

Factor		1	2	3	4	5
Information Resource. موارد المعلومات	Availability of Information system for doing M&E. وجود نظام معلوماتي لعمل المتابعة والتقييم					
	Updating Program for specifying the needs for information system of M&E process. تطوير نظام لتحديد احتياجات نظام المعلومات التابع لعملية المتابعة والتقييم					
	Existence of Information system covering most of the all aspects of M&E. وجود نظام معلومات يغطي كافة الجوانب في عملية المتابعة والتقييم.					

Financial Resource. الموارد المالية	Availability of budget for doing the M&E process. وجود الميزانية لعمل المتابعة والتقييم					
	Existence of M&E for methodology of preparing budget over all cycle project . وجود متابعة وتقييم لمنهجية تحضير الموازنة تكون على كافة مراحل المشروع					
	Availability of M& E for Plans to increase income, and decrease expenditures. وجود متابعة وتقييم لخطط زيادة الدخل وتقليل النفقات.					
	Availability of M& E process for meeting allocated budget and control of project cost. وجود عملية متابعة وتقييم للقاءات التي تحدد الميزانية والتحكم بتكلفة المشروع.					

Material Resource. موارد المواد	Availability of M& E for specifying the required materials . وجود متابعة وتقييم لتحديد المواد المطلوبة					
	Availability of M& E for Storage system. وجود متابعة وتقييم لنظام التخزين					
	Availability of M& E for using material resources in best cas . وجود متابعة وتقييم لاستخدام الموارد المادية بأفضل شكل					
Technological Resource. الموارد التكنولوجية	Availability of technologies that can employ in M&E process. وجود مصادر تكنولوجية والتي يمكن توظيفها في عملية المتابعة والتقييم					
	Availability of M&E for corrective actions to improve the technical. وجود متابعة وتقييم للإجراءات التصحيحية لتحسين الجانب التقني في المشروع.					
Strategy and Plans. الاستراتيجيات والخطط.	Availability of M&E for project goals. وجود متابعة وتقييم لاهداف المشروع					
	Availability of M&E for customers and their need. وجود متابعة وتقييم للزبائن واحتياجاتهم					
	Availability of strategic base on the concept of M&E. وجود قاعدة استراتيجية تقوم على مبدأ المتابعة والتقييم.					
	Availability of M&E for analysis of internal and external environment. وجود متابعة وتقييم لتحليل كافة الظروف الداخلية والخارجية					

Availability of M&E for control and improve of plans. وجود متابعة وتقييم لنظام التحكم وتطوير الخطط.					
--	--	--	--	--	--

Factor	1	2	3	4	5
Process system. نظام العمليات	Availability of M&E for Project objectives. وجود متابعة وتقييم لأهداف المشروع.				
	Availability of M&E for Conformance of all aspects of construction projects to codes and standards. وجود متابعة وتقييم لمدى تطابق جميع جوانب المشروع مع متطلبات القوانين والمعايير الدولية.				
	Availability of M&E for Project time. وجود متابعة وتقييم لوقت المشروع.				
	Availability of M&E for Conformance to control. وجود متابعة وتقييم للالتزام بمتطلبات التحكم.				
	Availability of M&E for Conformance to safety process. و وجود متابعة وتقييم للالتزام بعمول الامان				
	Availability of M&E for Conformance to design processes and procedures. وجود متابعة وتقييم للالتزام ومطابقة للتصميم والاجراءات				
	Availability of M&E for Engineering drawings based on local standard. وجود متابعة وتقييم للمخططات الهندسية بالاعتماد على المعايير المحلية.				
	Availability of M&E for Conformance to documentation. وجود متابعة وتقييم للتطابق مع الوثائق.				
	Availability of M&E for Conformance to calculation standards. وجود متابعة وتقييم للتطابق للمعايير الحسابية.				
Coordination & relationship. العلاقات	Availability of M&E for System of needs, suggestions and complaints. وجود متابعة وتقييم لنظام الاحتياجات والاقتراحات والشكاوى.				
	Availability of M&E for mechanism of coordination between different project parties and all stockholders. وجود متابعة وتقييم لالية التعاون ما بين جميع أطراف المشروع.				
	Availability of M&E process towards ensuring good coordination. وجود متابعة وتقييم اتجاه ضمان تعاون جيد.				
	Availability of M&E process to towards ensuring results. وجود متابعة وتقييم باتجاه ضمان تحقيق النتائج				

Section E: Satisfactory of Main parameters of M&E that implemented on construction projects in west bank.

Please identify the degree of satisfaction of main parameters influencing the implementation of M&E process on governmental construction projects in west bank.

Very low Satisfaction=1 low Satisfaction=2 Medium
Satisfaction=3 Satisfaction=4 High
Satisfaction=5

Main Parameter	No.	Factors.	Degree of Satisfaction.				
			1	2	3	4	5
Parameters of M&E Process.	1.	القيادة Leadership.					
	2.	الموارد البشرية Human Resource.					
	3.	Information Resource. موارد المعلومات					
	4.	الموارد المالية Financial Resource.					
	5.	Material Resource. الموارد المادية					
	6.	Technological Resource. المصادر التكنولوجية					
	7.	Strategy and Plans. الاستراتيجيات والخطط					
	8.	Process system. نظام العمليات					
	9.	Coordination & relationship. التواصل والعلاقات					

مع اطيب التحيات

Appendix 2:

Letter for interview (Delphi Group)

Assessment of Monitoring and Evaluation Process for Governmental Construction Projects in the West Bank.

Dear participants

Thank you for interest in my research to assess monitoring and evaluation process on governmental construction projects on west bank, I value the unique contribution that you can make to my study, you have been selected as a number of panel of experts to participate in more than interview and may be on (round group as Delphi group), to be asked about monitoring and evaluation process on governmental construction projects in the west bank. Your participation will enrich my thesis, the research methodology I'm using is a qualitative one of through which I'm seeking comprehensive description of your experience in the construction projects in this way I hope to answer my research question?

What is the current status of M&E and the assessment of this process of governmental construction projects in the west bank of Palestine?

Through your participation and professional experience I hope to formulate a strategy and set of recommendations, you will be asked for opinions based on experience gained within your professional life to best approach the assessment process for monitoring and evaluation I'm investigating.

In long term, this research could help the contract parties complete project on time and highest quality through right assessing most important process

through project (monitoring and evaluation process), all the information you provide will be used only for academic research.

I value your participation and thank you for the commitment of time, energy and effort, if you have any further questions I can be reached at the address below.

Sincerely;

Abdulrahman Alayasi

Abed_ayasi@yahoo.com

Purpose:

The purpose of this interview is to obtain the expert opinion of monitoring and evaluation process on governmental construction project in the west bank that will help assessing M&E process on related process.

Interview questions:

First Part: Infrastructure, tools used:

- What are tools used in monitoring and evaluation process that should be assessed in monitoring and evaluation process in governmental construction in the west bank?
- Are there a need for M&E process?
- Are all construction projects infrastructure ready to the success of M&E?

Second Part: The obstacles faced M&E Process:

- What are the perception of M&E systems in governmental construction projects in the west bank?
- What are the external factors that significantly affecting M&E process?
- What are the obstacles and challenges that facing the implementation of M&E?

Third Part: Administration support for M&E Process:

- Are there is a model being applied on construction projects for M&E process?
- Are there is commitment from senior management in the adoption and implementation of M&E process on construction projects on the west bank?
- In your view, is there enough support from project administration for doing M&E process?
- Does there is adequate financial support for doing M&E process on construction projects?

جامعة النجاح الوطنية
كلية الدراسات العليا

تقدير عملية المتابعة والتقييم في مشاريع البناء الحكومية
في الضفة الغربية

اعداد

عبد الرحمن حسني العيسة

اشراف

د. رياض عبد الكريم

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية،
بكلية الدراسات العليا، في جامعة النجاح الوطنية، في نابلس - فلسطين.

2018

تقدير عملية المتابعة والتقييم في مشاريع البناء الحكومية في الضفة الغربية

اعداد

عبد الرحمن حسني العيسة

اشراف

د. رياض عبد الكريم

الملخص

تهدف هذه الرسالة الى تقدير عملية المتابعة والتقييم في مشاريع البناء الهندسية وتحديد كافة الفرص والتحديات التي تواجه هذه العملية من وجهة نظر المتخصصين مثل أصحاب المشاريع المالكين، المقاولين، الاستشاريين، والهندسيين العاملين بالمواقع، وتقديم تصور كامل لكافة الجوانب التي تخص المشروع من بداية التخطيط له حتى الانتهاء من تسليمه للمالكين، وكذلك تحديد مدى استخدام هذه العملية من أجل انهاء المشروع بالوقت المحدد وبفعالية ممتازة كما حددتها أهداف المشروع. وكذلك تحديد ودراسة وفحص ان كانت هناك اليات لمتابعة وتقييم المشروع في كافة مراحله.

تم وضع تصور لاطار العمل المتعلق بهذا البحث عن طريق مراجعة الادب والاستعانة بآراء الخبراء في عملية تصميم الاستبانة، ويركز نطاق ومحور البحث على عوامل ومعايير تم ايجادها من خلالها ومستمدة من واقع نجاح وتأخر مشاريع البناء الهندسية الحكومية في الضفة الغربية وكذلك العوامل الخارجية والتي تؤثر بشكل مباشر في هذه العملية.

استخدم الباحث المنهج الكمي والوصفي في الاجابة على اسئلة البحث، حيث تم الاعتماد على استبانة في عينة عشوائية (ن=300) من الفئة المستهدفة المالكين، الاستشاريين، المقاولين، ومهندسي المواقع، أما البيانات الوصفية التي تتعلق بعملية المتابعة والتقييم فقد تم جمعها من خلال اجراء مقابلات معمقة مع خبراء متخصصين في عمليات المتابعة والتقييم.

نتائج تحليل الاستبانة تظهر ضعف واضح في عملية المتابعة والتقييم لكافة مراحل المشاريع في الشق الحكومي للضفة الغربية، باستثناء بعض تلك المشاريع التي تكون مدعومة ماديا من قبل دول أجنبية تكون العملية لها دور في مراحل المشروع النهائية فقط، علاوة على ذلك فان النتائج تشير للمعايير التالية:

الجوانب التي تتعلق بالقيادة والادارة، الموارد البشرية والمادية، والاستراتيجيات والنظم تكون فيها عملية المتابعة والتقييم متخصصة بشكل أكبر ومتبناة من طواقمها الى حد ما.

ونلك التي تتعلق بالموارد المالية وموارد المعلومات تكون متحفظة والاهتمام بعملية المتابعة والتقييم تكون بشكل أقل والاستجابة فيها تكاد تكون صعبة وان كانت فإنها عشوائية ولا يهتم بنتائجها بشكل عام.

من جهة أخرى فان نتائج المقابلة تظهر ان غالبية المالكين والاستشاريين والمقاولين ملتزمين بشكل متوسط بعملية المتابعة والتقييم ودعمها.

وبناء على نتائج البحث فانه يتوجب على كل من له علاقة في مشاريع البناء الحكومية في الضفة الغربية العمل على تعزيز تبني وتقبل عملية المتابعة والتقييم وتطوير البنى التحتية من مصادر مادية وتكنولوجية لعملها، وتقديم كافة الخدمات المتعلقة فيها ذات الجودة العالية، والتنسيق بين كافة الاطراف والشركاء لدعم نتائج عمليات المتابعة والتقييم ونقل كافة الاطارات التي تتعلق بالعملية الى الجانب العملي والتطبيقي وذلك وفقا لاستراتيجيات جديدة يتم تشكيلها لتحقيق هذه الاهداف.