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**BINGOL UNIVERSITY**

**SOCIAL SCIENCES INSTITUTE**

**BUSINESS ADMINISTRATION DEPARTMEN**

# THE ROLE OF TIME MANAGEMENT IN THE IMPLEMENTATION OF ENGINEERING PROJECT MANAGEMENT (CASE STUDY IN THE ERBIL / IRAQ)

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**MASTER THESES**

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**İŞLETME BÖLÜMÜ**

# PROJE YÖNETİMİNİN MÜHENDİSLİĞİNDE ZAMAN YÖNETİM ROLÜ (İRAK / ERBİL BÖLGESİNDE BİR VAKA ÇALIŞMASI)

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**Bingöl–2018**

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# SCIENTIFIC ETHIC

**The thesis project (The role of time management in the implementation of engineering project management Case Study in the Erbil / Iraq), Once the results of the judicial work have been concluded, the scientific ethics and academic rules have been fulfilled, and all the information in the project has been gained on scientific ethics and traditions.**

**I undertake, in this work, that I have done all the work I have done during the preparation of the project correctly or indirectly, and that it works and has been used of the kind that appears on the source.**

**ZANDI JABBAR AZEEZ**

**2018-05-25**

**THESIS ACCEPTANCE AND APPROVAL**

**BINGOL UNIVERSITY**

**SOCIAL SCIENCES INSTITUTE**

This work entitled (THE ROLE OF TIME MANAGEMENT IN THE IMPLEMENTATION OF ENGINEERING PROJECT MANAGEMENT CASE STUDY IN THE ERBIL / IRAQ), prepared by [ZANDI JABBAR AZEEZ], was found to be successful as a result of the thesis defense examination held on the date of ( / / 2018) and accepted by our juror as the Master's Degree in the Department of Business Admiration.

THESIS JURY MEMBERS

**Chair: Dr. Öğr. Üyesi Mehmet AYTEKİN** **Signature: .....**

**Supervisor: Prof. Dr. Sait PATIR** **Signature: .....**

**Member: Dr. Öğr. Üyesi Nazif DEMİR** **Signature: .....**

**CONFIRMATION**

The jury determined in the ( / / 2018) have accepted this thesis, Session of the Board of Directors of the Institute of Social Sciences of Bingol University.

**Director of the Institute**

**Doç. Dr. Yaşar BAŞ**

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I thank God Almighty for providing me with the health and intellectual ability to complete this message.

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Thank you very much, everyone

**Researcher**

**ZANDI JABBAR AZEEZ**

# ÖZET

**Bingöl Üniversitesi Sosyal Bilimler Enstitüsü Yüksek Lisans Tez**


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| **Title of the thesis: PROJE YÖNETİMİNİN MÜHENDİSLİĞİNDE ZAMAN YÖNETİM ROLÜ (İRAK / ERBİL BÖLGESİNDE BİR VAKA ÇALIŞMASI)** |
| **Tezin Yazarı: Zandi Jabbar Azeez** |
| **Danışman: Prof. Dr. Sait Patir** |
| **Anabilim Dalı: İşletme** |
| **Bilim Dalı:** |
| **Kabul Tarihi: / /2018** |
| Bu çalışma, zaman yönetiminin proje yönetiminin etkilerini belirlemeyi amaçlamıştır. Bu hedefe ulaşmak için, çalışmanın hedef popülasyonu analiz için uygun olan rasgele seçilmiş 90 mühendislik işçisidir. Zaman yönetiminin projenin etkinliği üzerindeki ilişkisini ve etkisini tespit etmeye çalıştık. Daha sonra SPSS kullanarak anketin sonuçlarını analiz edip ve konuyu ele almak için bilgi ve veri toplamak üzere anket uyguladık. Ana mesaj gibi; çalışma da şu konuları belirlemeye çalışacağız:<br>• Zaman yönetiminin doğasını ve yönetim faaliyetleriyle ilişkisini belirlemek .<br>• Mühendislik sözleşmesi dahil olmak üzere proje sürecini belirlemek.<br>• Projede zaman yönetimi tanımlamak, şeklihdedir.<br>Çalişmanın en önemli sonuçları şu şekilde açıklanabilir:<br>1-Zaman başarılı bir şekilde planlan dığıda, yönetimin günün her saatin en iyi şekilde değerlendirir. Bu, planladığımız günün her saatinin, ihtiyaç duyduğumuz tüm işleri en verimli şekilde yerine getirmesi için idarenin hazırladığı programa göre kullanılması anlamına gelir.<br>2. Zaman yönetimi ve verimliliğinin mühendislik projelerinin verimliliğini artırmaya katkıda bulunduğunu göstermektedir.<br>3.Zaman yönetimi ve mühendislik proje yönetimi arasındaki bağlantı, organizasyonun üst yönetiminin zaman kaybını azaltmaktadır. |
| Anahtar kelimeler: zaman yönetimi , proje yönetimi , yönetimi. |

# ABSTRACT

**Bingol University, institute of social sciences, Abstract of Master's thesis**


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|---|
| **Title of the thesis: The role of time management in the implementation of engineering project management (Case Study in the Erbil / Iraq )** |
| **Author: Zandi Jabbar Azeez** |
| **Supervisor: Prof. Dr. Sait Patir** |
| **Department: Business Administration** |
| **Sub-field:** |
| **Date: / /2018** |
| This study aimed to determine the effects of project management on time management. To achieve this goal, the target population of the study is 90 randomly selected engineering workers suitable for analysis. We tried to determine the relationship and influence of time management on the effectiveness of the project. We then used SPSS to analyze the results of the survey and to conduct a survey to gather information and data to address the issue. Like the main message. We will also try to determine the following topics:<br>• Determine the nature of time management and its relation to management activities.<br>• Identify the project process, including the engineering contract.<br>• It is the way to define time management in the project.<br>The most important results of the study can be explained as follows:<br>1- Time is best when successful plans are out, management is always on time every day. This means that every hour of the day we plan is to be used according to the program the instructor has prepared to fulfill all the work we need most efficiently.<br>2. It shows that time management and efficiency contribute to increasing the efficiency of engineering projects.<br>3. The link between time management and engineering project management reduces the time loss of the senior management of the organization. |



Key words: Time Management, project Management, Management.

# SHORTCUT WORDS

| | |
|---|---|
| **PMM** | **Project Management Methodology** |
| **SPSS** | **Statistical Package for the Social Sciences** |
| **MMP** | **Mixed Member Proportional** |
| **T.C** | **Türkiye Cumhuriyeti** |
| **KMO** | **Kaiser – Meyer - Olkin** |

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# 1. INTRODUCTION

Time is an important element in our daily lives, since everything are owned by the organization is linked to the time If the time to purchase, use or dispense with, Therefore, time management is one of the basics that managers must be concerned with in managing their business. Most of the studies on time management confirm that time management is closely related to performance and to improving the productivity and effectiveness of the project.

So is poor time management of the most important behavioral manifestations that lead to the pressures of work, although this is why often linking workload, but basically due to the same individual in the work environment in terms of its inability to organize his time in the absence of workload, As the time management may not be associated with an increase or decrease of these tasks, but go back to the same person as a result of his inability to organize his time while working.

Where the nature of spending time during task performance vary from job to other It is not in all cases that managers can control their time either because of themselves or because of their duties or because of others, this imbalance may increase the level of work pressure of managers, supervisors or department heads. This increase in the level of work pressures can lead to negative results such as lack of satisfaction with work, poor performance, low productivity and an increase in workload.

From this point of view, the study attempts to determine the degree of relationship between time management and project effectiveness, and department heads in business organizations.

# CHAPTER ONE

## 1.1. RESEARCH AIM

The research objective this project is to assess the time the project management system for a selected sample of construction projects, will provide the basis for understanding how to use time management in the maturity of project management to improve project management process. The research output will include:

1. Provide a clear understanding of the time management of the MMP model.

2. A comprehensive review of literature on project management maturity levels Measurement and evaluation of the maturity level of project management.

3 - Study time management and its role in the efficiency of construction projects.

## 1.2. OBJECTIVES OF THE STUDY

This study aims to achieve the following objectives:

1. Crystallization of clear theoretical frameworks on the subject of time management and in such a way that the researcher can put the procedural concept of the variables.

2. Identifying the level of perceptions of managers in business organizations for the study sample of time management principles.

3. Determine the level of time management skills of managers in business organizations for the study sample.

4. Identify the time and self-waste of managers in business organizations for the study sample.

5. Know about the correlation and effect relationship between some study variables.

## 1.3. THE IMPORTANCE OF STUDYING

This study gains its importance through the following:

- Time management is an essential component of all the organization's activities, whether at the planning, management, or operational levels. By tackling poor time management and effective time management at all these levels of management, we can achieve the tasks and objectives of organizations, while at the same time developing the performance of human resources in accordance with the time available to them, which in turn improves the services performed by those Organizations.

- An interest in the study of time management and the pressures of working in the private sector and enrich the administrative thought and scientific heritage in this area by determining the relationship between time management and work pressures from heads of departments and heads of departments in the field.
- The study of the relationship of time management in organizations will allow the administrative leaders the opportunity to discover this relationship and to identify the recommendations that will be studied in the study of wasting time and levels of work pressure and then take advantage of them in the treatment of poor time management.
- Addressing a vital and important issue for administrators in academic institutions regarding the exercise of the administrative process towards the element of time.
- The results of the study contribute to the preparation of programs to train managers on how to manage time, to take advantage of them in the optimal use of time.
- To show the role of managers in maintaining time and good management to develop this aspect and benefit from it.
- The possibility of analyzing the problem of waste of working time and investigating its causes in order to avoid it in the future.
- Help business organizations in general diagnose the weaknesses of their departments in time management for better use.

## 1.4. STUDY HYPOTHESES

There is no statistically significant relationship between the time management organization and level effectiveness of the project.

From the main hypothesis, the following sub-assumptions are derived

1. There is important for effect the time management on project effectiveness.
2. There is important for paragraphs for the loss of time in the management of the project.
3. There is important for the effective use of the methods of time management by project management.
4. There is important for paragraphs on time management skills in the management of the project.
5. There is effect for time management on project effectiveness.
6. There is effect for the loss of time in the management of the project.
7. There is the effective use of the methods of time management by project management.
8. There is effect for time management skills in the management of the project.
9. There is correlation between time management and project effectiveness.
10. There is Correlation between the losses of time and the management of the project.
11. There is Correlation between the effective uses of the methods of time management and project management.
12. There is correlation between time management skills and the management of the project.

## 1.5. PROBLEM OF THE STUDY

Time is a rare and unchangeable element. It requires managers to control their management by understanding and mastering the administrative principles of time and making better use of their tasks. The misuse of time by managers leads to the suspension of serious thinking and innovation of working personnel; even if the manager has time management skills, may face self-problems or That reduce the chances of applying this skill. The researcher found through a preliminary study in a group of engineering projects in the study sample that most managers suffer from the

inability to accomplish their tasks in an attempt to convince others that if there is enough time to do more, some managers complete their formal work at home on Calculate their own time, while others delay work after hours to finish their work. Although this is evidence of loyalty and commitment to work and belonging to the job, but this may mean something else, especially those who have the same time opportunity, but some of them better investment, may involve negative and personal, social and official problems, the official working time does not Invest an active investment in the organization, because the problem in time management is not only at the same time, but in how individuals use their time and work done.

Accordingly The success of managers often leads to the success of organizations in achieving their goals, This in some respects is due to the skill of managers in their management of their times and in the field of work,. Such time-related behavior is not limited to managers alone, but extends to subordinates as well as affected by the guidance and behavior of their managers.

As the subject of this research relates to the directors of departments and heads of departments in the Organization, Who impose their roles great burdens can increase the level of work pressures have in the case of not directing enough attention to time management and thus influence the performance of their work properly.

Based on what is said, the researcher conducted a survey in the institutions surveyed, which lasted up to two months from 1/7/2017 to 1/9/2017. This led to the failure of the management skills of some managers in real time, resulting in the presentation of a number of questions in order to detect the parameters of this problem represented as follows:

1. What is the level of time management skills of managers in business organizations for the study sample?
2. What are the areas of effective use of time management methods (from the point of view of senior management)?
3. Do business organizations have effective mechanisms to manage their time?
4. What is the most important loss of time outside managers in business organizations?

## 1.6. METHODOLOGY

The methodology section describes the research framework in clarifying the method of conducting the research by designing and from the theoretical and practical side and analyzing the data As follows:-

### 1.6.1. Research Methodology

It is certain that any scientific study will not be able to reach its goal accurately and objectively without using a set of general rules that guide the researcher to reach the correct goal in a scientific way to ensure the accuracy and integrity of the results, will be used descriptive and analytical approach, and in fact there is a quantitative and qualitative expression, Which not only relies when collecting data on the interpretation of study variables in order to investigate the finding of the value of the effect and relationship, but also based on the analysis of the phenomenon and its interpretation and access to the results actually contribute to the development and improvement.

This study was adopted in all data and information on two types of sources:
Library theoretical sources: by reference to books, scientific research, periodicals and previous studies in addition to the reports and publications related to the study.

Field sources: This is done by collecting field data and information by means of a research questionnaire that will be distributed to the study sample.

Limits of the study the study exist determined in following areas:
In the human field, the human field was limited to department heads.
Spatial domain, the field of study was limited to departments of construction organizations (contracting) in the Erbil / Iraq.

### 1.6.2. Research Design

We need search design because it makes it easy to start different searches with regard to, and thus makes the search as effective as possible in producing the required information with minimal effort. Just as we need a plan (or so-called map) designed by an expert architect when building an attractive economic home, accordingly we need a similar research design plan before you begin collecting and

analyzing information and data in the research study. Induction design means the road planning that we will follow in gathering the appropriate data and techniques that we will use in their analysis, taking into account the research objectives.

In order to conduct an evaluation of the maturity of projects in a selected organization, the design of case study design research is selected. The reason behind the design of the case study ,that the research aims to capture the practices of people who participate in project management processes for selected organizations in Iraq / Erbil as time management within the requirements of good management and use the best time in managing the construction projects for a sample of selected projects in the study.

### 1.6.3. Search Method

Pretorius, has identified the search method as a method of data collection. This is done using a specific tool such as structured interviews or self-survey questionnaire (Pretorius,2012:4).

The objective of this thesis is to identify time management practices in construction projects by conducting evaluation and making recommendations for improvement. For this purpose, the study of the relevant literature is carried out. A questionnaire is prepared for the purpose of achieving the objective of the research.

### 1.6.4. Data Collection

The data was collected during the visits of the construction contractor for the research sample in Erbil. Where a group of people involved in project departments participated through survey questionnaires. In the questionnaires to the participants in administrative positions within the construction projects. The indirect and informal observations, which were useful in their use in the study of the impact of time management on the engineering project..

### 1.6.5. Surveys

There are several ways to collect data to study search variables. This includes surveys and interviews to members of the organization and direct observation and analysis and use as described by Bryman, A. (2012).

The research in this thesis focused on data collection through the use of the form to supervise the questionnaire from the surveys and study the internal documents prepared for this research. Direct and informal surveillance was also held while the discussions were held with the company's participants.

A set of questions were used in the survey questionnaire to conduct a search to compose the message. Initially, a small set of questionnaire was sent to the project management team from both departments within a selected company. The answer to this questionnaire was used to prepare a complete and relevant questionnaire.

As for the second round, a questionnaire was sent to achieve the goal of the research by selected participants from the selected construction sections. The researcher was present with each participant during the survey. In order to provide support and clarity if there is any understanding required on any given question. In order to maintain the confidentiality of the internal data of the company and the responses of the questionnaire

### 1.6.6. Document Study

A model was taken from the engineering construction companies in the Erbil / Iraq Region of to answer the questions of questionnaires prepared and prepared for the realization of the hypotheses of the identified research, in order to document and confirm the answers through the presence of the researcher to the work sites and also to attend the administrative meetings in the projects and to give queries by the sample of respondents**.**

## 1.7. THE LIMITS OF THE STUDY

The study included the following limits:

**1. Spatial boundaries of study:** The study was conducted in Erbil governorate. The study included business organizations and represented a number of construction contracting companies.

**2. Study Time Periods:** The period covered by the study during the years (2017-2018). The questionnaire was distributed and obtained during the period (1/10/2017 to 1/5/2018)

**3. The Human Limits of the Study:** The study was conducted on a sample of managers in business organizations.

**4. Scientific boundaries:** The study was scientifically defined according to its objectives, importance and questions.

## 1.8. STUDY TOOLS

The research tools used to complete the theoretical and practical aspects were as follows:

**1. Theoretical side:** The theoretical aspect was based on many foreign sources, such as scientific references from conferences and studies, periodicals research books and the internet.

**2. The applied side:** The questionnaire used for this research was used.

## 1.9. LITERATURE REVIEW

The relevant studies are an important resource for the orientations of the ideas of the future researchers. This is because these studies provide them with sequential pathways to study specific problems and how to analyze them, the purpose and importance of these studies, the conclusions and recommendations reached,

**1. Cooper Study (1991):** in their study entitled, Time Management Skills of Managers in State-Owned Companies, A sample was taken from(50) managers of government companies and used the researcher in this study tool interview and observation The importance of the study is to identify the work performed by managers in light of their use of time and how to organize it.

**2. Gouging and Yonzin (2000):** studied the combined in the manager's time management skills attributed to the gender and was conducted on a sample of (170) directors (126 males and 44 females). The study concluded that females are less skilled in time management than males, The weekly work for males is higher than that of females, and there are no statistically significant differences between males and females in relation to the factors that lead to the loss of official working time, since both male and female workers in the organization share these factors, In order to identify where the differences.

**3. Steven E. Stock (2002):** The study aimed to enhance independent time management skills for individuals to achieve greater autonomy when they acquire many basic skills, including time management and skill scheduling, during which the use of a scheduling system was tested to increase autonomy and self-management in time management for individuals. The study was applied to (45) Italian business observers. The test included the identification of a number of questions, and each participant was asked to try to complete a table of eight paragraphs using both the scheduling assistance system and the traditional editorial table. The results of the analysis of the data using the double comparisons of t-tests showed significant differences in the variables between the two scheduling methods. The results contributed to support the hypothesis that the use of an automated scheduling system can increase the ability of individuals to initiate and start activities that are scheduled independently and at appropriate times. In addition, the results contributed to enhancing information about the possibility and efficiency of these individuals to participate in time management and self-management activities. Participants demonstrated their conviction in their success in using the system and preferred to use the scheduling assistant to use the written scheduling method.

**4. Rasa China (2007):** The study sought to review the methods and technologies available for the time management of the director in the organization. The researcher adopted the method of direct interview in American companies. The study reached a number of conclusions, the most important of which are:

**A.** In order for the manager to succeed professionally and personally, he must organize his time and management efficiently, and learn the techniques and methods of time management.

**B**. Develop a detailed chart of the organization's objectives, and assess it systematically.

**5. Bhuta and Huang (2008):** Study, The study aimed to identify the effects of time management in working individuals. A sample of 99 employees of the University of Georgia on their skills in time management and academic performance. The study found that the differences between individuals in time management skills is one of the most important reasons to consider Differences in the extent of the possibility of individuals working during the years of service at the university, and the two researchers showed the relationship between the method of work and time spent, and the tool used questionnaire, the study reached a set of conclusions, the most important of which:

- The possession of personnel working for time management skills has a significant impact on the alleviation of functional stress.
- People working at lower levels generally suffer from a lack of time management skills that have a negative impact on the performance of their work.
- The areas that have benefited from the current study can be summed up from the following studies after the study:

1. Identification of some references, sources and research that the researcher was unable to know and know before.
2. Contribute to the construction of some elements of the theoretical framework of the study.
3. Contribute to the formulation of the problem of the study and its objectives and hypotheses.
4. Formulation of the paragraphs of the questionnaire related to the variables of the study.

5. Review the methods of honesty and consistency used in these studies, through which it is possible to identify the variables of the current study.

- Previous studies and what distinguishes the current study:

- A review of previous studies, on the subject of time management skills, shows that previous studies have confirmed the need for further studies on the subject of time management skills with different types of institutions.

- The studies varied in their approach to the subject of time management skills. Each researcher studied his / her research vision in terms of objectives, methodology, results, and recommendations.

- The present study was distinguished from the previous studies as one of the studies that discusses the effect of the time tool on the management of projects in the Iraqi society / Erbil and in the engineering construction companies. The study was also a measurement of the relationship between time management and the efficiency of engineering projects through the independent variables of study (Time management approach, effective use of time management techniques, time management skills, and common time waste).

# CHAPTER TOW

# TIME MANAGEMENT

This chapter deals with the theoretical framework of the concept of time, related concepts, characteristics of time, types, and the origin and development of time management, as it was based on the literature of the subject in this area,

⟹**The first topic:** the concept of time, its importance.

⟹**The second topic:** the concept of time management, its inception,

1- The importance of time management,

2- Time management objectives,

3- Time management relationship with some management methods,

4- Effective time management,

5- Time management keys.

⟹**The third topic:** time management relationship with some management ethods, effective time management.

## 2.1. THE CONCEPT OF TIME, ITS IMPORTANCE

### 2.1.1. The Concept of Time

The time of the most important elements of management is the basis for the success of any working individual. Time is the most precious resource if it affects the way other resources are used. However, most people do not invest it in the right investment and then live in a vicious cycle that has no end until they discover that their dreams and hopes, and their goals are still far from them despite their efforts. Time is a unique resource that is equally available to all human beings, regardless of any special deals, and it always goes at a limited and constant speed.

This course aims at clarifying the concept of time, its importance, characteristics, types, distribution points, and the criteria used in its distribution.

that It may be difficult to define a specific concept of time, especially since a logical relationship from an activity or event is usually expressed to another activity or event in the past, present or future tense (Dyke, Bardon,2013:389–409),

Time is one of the common, rare and precious resources of any human being, which in turn confirms that there is a close relationship between time and economic status anywhere, anytime. In the developed societies, for example, we find a greater interest and more attention to the subject of time and a better concern about how to distribute it and exploit it to ensure the achievement of the objectives both public and private, and less attention and concern in developing or less developed countries in general (Bluedorn, 2002,8–9).

He described it as the material from which life was made. In his writings (Vodanovich, 1997: 211-215)emphasized the investment of working time for managers by saying: Some managers speak But in fact if they spend their money as they spend their time, they will end up in poverty. (Mark,2006,p23).

Emphasizes that time is one of the most important administrative processes of any organization, reflecting the cultural concepts in the use of time and the nature of social interactions (Johns,2002.16). noted that time is the art of allocating the time of the manager by setting objectives, priorities, knowledge and identification, waste of time, and the use of management techniques to achieve goals efficiently.

Rau,(2004:67) stated that time is movement, time, work, unless it is time, and no movement leads to a specific time. The importance of time as a dimension of time is reflected in all areas of life. In the presence of man are time and space.
Obradović,(2004, pp. 1-7) defined it as the period during which the process or act was completed, Emphasized that the time is an hourly unit and its parts and that it is running in a straight line( Premović,2010. pp. 1-11).

The researcher believes that time represents the age of man and his real capital, which is the most precious thing he has in life so it was very important to think deeply and plan it accurately and try to exploit it best to achieve its goals and demands that aspire to achieve.

Based on the above, it is clear that there are two fundamental elements: time and work that must be done through this time. If no work is accomplished during this limited time, this time has become a time of no avail, and the essence of this talk is based on the amount of value obtained through the exploitation of this specific time.

### 2.1.2. The Importance of Time

The importance of time stems from being one of the core resources that should be taken into account as the administrative body in general and improving the efficiency and effectiveness of production and service institutions in particular.

Time is one of the most fundamental elements upon which the modern scientific management stage was based. It was founded by the pioneer of scientific management Frederick Taylor in the twentieth century in his study of movement and time to determine the best way to perform the work and the subsequent stages of development of the science of management. Taylor has contributed significantly to the organization of time and increase the efficiency of productive activities through the redistribution of work components and the development of the capabilities and capabilities of workers and physical motivation and the removal or reduction of lost time at the very least, and redesigning the work site in an appropriate manner to ensure the work without obstacles (Helmer,2006,P21).

It is time-consuming and inexpensive - unless it is wasted or misused - it is very expensive - so it does not need funds or overhead guidance to support its allocations, it is a resource that is almost constant and renewable at the time It urgently needs a management to identify and invest in it, improve its distribution and use, rationalize it and increase its efficiency, which will be reflected in increasing the efficiency and effectiveness of the institutions themselves.

## 2.2. TIME MANAGEMENT / THEORETICAL FRAMEWORK

### 2.2.1. The Concept of Time Management and Its Inception

The time management of the time dates back to the sixth century with the monks of St. Benedict, who confirmed and encouraged the activities that were planned at all times. "The concept of competence was introduced in the time of the Scottish economist Adam Smith who developed the assembly line system for factory workers (Poly, 2003, p. 135) Administrative work is an activity that seeks to achieve the objectives in the light of the possibilities and circumstances available, and the achievement of the objectives is linked to a specific timetable and plan..

The emergence of the science of management was relatively recent; the reason for interest in time management. The first time management marks were the ideas and efforts of Fred Rick Taylor, which was present in the ideas of production, achievement and control to achieve the best performance to meet the needs of developing societies (Chang,Nguyen,2011.p190). That it is an important element in modern management. As an administrative process that can't be dispensed with, especially in the field of analysis and planning. Time management depends on the number of specific factors. Controlling these factors increases the effectiveness and efficiency of good management.

There are several concepts of time management.(Ojo,2003,p128,) say that time management we can arrange time, so that we can take a constructive reading and be effective in the management of the organization.(Hashemzadeh,2011,p2538) say that the Time management has taken time as a process of planning, organizing and controlling time to avoid waste in working hours. It deals with the perspective of the main functions of the administration.

The methods that enable the organization to make the most of the time to achieve its goals and create a balance in its legitimate life are the integration of duties, desires and goals. It is one of the processes through which you can accomplish the tasks and objectives that enable you to be effective in the work of the organization and include the process in stages. Which are aimed at identifying the needs and requirements of

time and resources available and possible, from a ranking and organization perspective (Eruteyan,2008,p23), investigated the effects of three factors, "time management, effectiveness and job motivation on job performance" in one of the industrial states of Nigeria. According to the results obtained from this study, the organizational employees and managers who appropriately used time had better satisfaction in their performance and success in organization level.

Investigated time management and personal satisfaction in job and found that by time control and management, individuals are more satisfied with their job, which in effect leads to effectiveness and increase of insight in their performance and organizational effectiveness in this regards (Claessens,2009,p28).

Accordingly the time management is synonymous with order and organization and daily working procedures programmed. Although these elements are very effective, others believe that time management is more complex than that and it is a psychological state and willingness to personal commitment and more importantly, Prioritizing and adapting the various work processes, while selecting the time management as the art of rationalizing and using the time of the manager by setting goals, identifying time waste, setting priorities and using administrative methods to achieve goals efficiently and effectively.

The concept of addressing by identifying the waste and the use of methods And that the use of the official working language is effectively used to accomplish the various tasks and activities related to the official work. Thus, it is the official working language

Made reference to Taylor's efforts in studying movement and time in order to determine how best to perform the work, as well as to eliminate or reduce lost time, taking into account a certain amount of time to cover the probability of interruption, interrupts or delay To rest, all this was for the purpose of increasing production and therefore did not reflect his ideas clearly on the concept of modern time management (Hellsten,2009,p17).

The theories of management then referred to the issues of time management in part as much as the previous theory of scientific management, so that these signals cannot be described as comprehensive and is not a major beginning of the thought of time management is currently recognized in the science of modern management, From different perspectives with the approach of scientific management.

Emphasized this in terms of time management in the theory of human relations, in which time attention was given to the worker by giving him a chance to rest and to work, Reflecting its morale and its productivity, as well as the decision-making theory that used time to solve production and planning problems, and the biological theory that considered the organism a living organism that is born, grows, dies, there is a close relationship between time and management, as successful management optimizes its time, which in turn leads to the goals set in the given time period (Zemetakis,2010,p25).

The researcher believes that the management of time can be defined as: the ability of the manager to plan and organize the process of construction and management efficiently by setting goals and setting priorities and solutions to the problems encountered during a certain period of time and guidance and follow-up employees to complete the work specified to them according to the times planned in advance.

### 2.2.2. The Importance of Time Management

The good management of time is the sound and efficient management of human resources and gives a progressive dimension to the need to progress and general advancement of both project workers and the project itself. We look at the unlimited ability to increase saturation, abstinence and effectiveness. Through good time management, the importance of time management can be illustrated by (Mathew.Blessy,2015,2420).

1. A good, effective, fair and clear definition of competencies prevents, conflict and conflict of competencies and at the same time prevents interference in the work of others and impedes them.

2. Conscious and aware of the positive responsibility towards the overall success of the project and to promote the realization of the utmost necessity for the success of individuals.

3. The use of prior coordination and early methods of participation and interaction and human activation and increase the sense of others working in the project and they are partners and not competitors.

4. The integrity of planning is aware of the value and wealth of time and time.

5. Integrity of flexible organization accommodated to changes and developments and aspirations of individuals in promotion and career and skill development.

6. Motivation and the abundance of motives and incentives, whether self or external and the ability to move and persuade and urged workers to provide the best they have.

7. Close to follow-up, that is to follow up closely and properly, whether spatially or temporally or actively and deepen the sense of security, not terrorism.

8. Integrity of positive guidance to the best ways and the least effort to achieve the required achievements.

9. Provide wider areas of individual initiative and personal creativity, and better expression of skills and talents, and achieve and encourage innovations and proposals, whether in the areas of production, marketing or finance or the development of human cadres.

Asserts that time management is always important, but it is more important than ever before, inter alia (Macan,1996,p 200).

1. Need for balance between profession, family and social life A growing number of people realize that the profession alone is inadequate.

2. The explosion of informatics has become impossible, just looking at all the available information.

3. Competition pressures because beneficiaries want good quality and are now responding to it.

4. Because people who discover ways to limit time to doing almost anything in the market are making a lot of money.

Time is gold, but it is more precious than gold because it is priceless and it is one of the five basic resources in business: materials, information, individuals,

primary resources, as well as the time it prepares them more importantly because the more the individual controls In his time skillfully and positively he was able to invest him in maximizing the return of other resources that the manager when he manages his time effectively he actually manages his life and himself and his work effectively.

### 2.2.3. Time Management Objectives

It is agreed that each action is the result of the result of the individual or organization or society to achieve according to what is planned and then everyone is doing all the energy and effort and the potential in order to reach what he wants with the least effort and the fastest time and objectives of time management have a positive return on everyone Public. And the fact that the individual part of the organization and society, his success in achieving the goals of time management has a positive return reflected on it first and then reflected on the organization and society to which he belongs. One of these objectives is (Hanel,F,1982,pp72).

1. Stress, where time management contributes to preventing a lot of stress.
2. Balance, where good habits in time management contribute to a more balanced life, and provide the right time for work, family and self.
3. Productivity, since time in the business world is equal to productivity, and if a person is more effective with his time, he can increase his production.
4. Goals In order to achieve progress towards personal and professional goals, a person will need time to do so if something is not achieved.

## 2.3. TIME MANAGEMENT RELATIONSHIP WITH SOME MANAGEMENT METHODS

### 2.3.1. Principles of Time Management

There are several time management principles developed as a result of reviewing some writings and articles in time management, the most important of which are the following:

### 2.3.1.1. Planning Principles

Planning is one of the alternatives available. Using a time plan for an individual involves knowing how to use it, deciding how to use it the way you want it, but how to use the current time. Most people do not know what is running their time. Some thinkers have suggested ways to find out where their time goes: With a time note or ask someone else to observe the time and record the work activities. There are several principles that govern the time planning process for engineering projects, including (Kerzner, 2002,27),(James Lewis, 2000.124-125).

Time analysis of time management requirements, as the basis for this analysis, it is necessary to maintain the daily schedule of activities to record over periods of 15 to 30 minutes and over two consecutive weeks. This procedure achieves an effective time management commitment to the construction project. If the project management system does not understand how to spend its time normally it will not be able to choose from them and should first determine how its time is currently spent using the common procedure and are accepted to analyze the individual's use of time through the data collected over a period of time. The basis of time analysis is usually a table format in which the individual writes his daily activities and records with his time. A person's daily time should be divided into intervals of 15 minutes to accommodate all the time used. After enough recording, the person is able to know if there is any direction or pattern in his daily activities. The analysis can be performed. Has been lost or not originally calculated due to postponement or interruption or lack of plan or any other reason (Kathy Schwalbe, 2013, 254-257).

### 2.3.1.2. Principle of Daily Planning

It is necessary to do daily planning after the end of the day or before the start of work the next day, in line with short-term goals and tasks, in order to effectively take advantage of personal time. Poor planning is the root cause of poor time management. Effective planning would eliminate the problem of wasting time, and recommendations for preparing plans take different forms, and it seems that in determining the daily plan priorities must be prioritized to carry out the planned work. So set your priorities and follow your decision, a study was done by Kaming et

al. (1997) in Indonesia. They noted that design changes, poor labor productivity, and inadequate planning are key delay factors (Kaming,1997.85).

### 2.3.1.3. Principle of Allocation of Time by Priority

The time available on the day should be devoted to the completion of those works, which is a top priority. We do this after we write the work to be done in the daily plan, in accordance with their priorities and allocate the time available to accomplish them. The method of prioritization has been thoroughly studied by thinkers who are proposed to classify the task in three ways to help prioritize is based on the phenomenon that things we consider urgent are not always important. Important things are not always urgent. He recommended that businesses be classified according to urgency and necessity, using a scale ranging from "very important" to "importance". The third classification recommended that actions be delegated to others and those that could not be delegated. It is clear, therefore, that the most priority work is that which cannot be delegated, urgent and at the same time very important. (Sambasivan, 2007:521).

### 2.3.1.4. Flexibility Principle

Flexibility should be a key consideration when selecting plans for time use. This means that time should not be overestimated or reduced. When preparing the daily plan, the individual should be aware of the limits of the amount of time on the working day that can be scheduled It has tasks. The individual who plans to fill every minute of the working day will find that inflexibility in the table cannot make him be able to follow him. We should be aware that 50% of the workday can be scheduled with selected work to be completed within half a day and at the same time. Example: If there are tasks scheduled during a recession or quiet of the day and take less than half a day, what happens is that we extend the work and relax until we fill half of the day available to us, which leads us to acquire bad habits in time management, maintain the same strict discipline for the use of time when there are periods of stagnation or quiet in the workflow, These preventive measures should be implemented in order to prevent overstaying and delaying work to fill the time available.

### 2.3.2. Principle of Delegation

The delegation of all possible actions commensurate with the limits of the work of the individual is necessary to provide the time required carrying out administrative functions, the process of prioritizing and arranging work in the daily plan begins by determining which of these actions can be delegated. All actions that can be delegated should give the individual a free time during which he can do other work that no one else can do, and in order to determine which actions can be delegated, the individual should follow the well-known and established principles of delegation (Marume,2016.10-14).

### 2.3.3. Principles of Time Management and Organization

The function of regulation is concerned with how the individual organizes his time and environment so that he becomes more effective in using his time. The most important of these principles are.

#### 2.3.3.1. Principle of Delegation

The delegation of all possible actions commensurate with the limits of the work of the individual is necessary to provide the time required to carry out administrative functions, starting the process of prioritizing the work and arrange in the daily plan to be first identified any of these actions can be delegated. All actions that can be delegated should give the individual a free time during which he can do other work that no one else can do, and in order to determine which actions can be delegated, the individual should follow the well-known and established principles of delegation.

#### 2.3.3.2. The Principle of Division of Activity (Work)

All actions that are similar in nature and require a similar environment and resources for their achievement should be grouped together into sections of the daily work plan.

### 2.3.3.3. The Principle of Controlling Obstacles

It is very important for time management to have some kind of control over activities and arrange them so that the number and duration of non-essential provinces is less.

### 2.3.3.4. The Principle of Reducing Routine Work

Everyday work of a routine nature, which is a simple value to achieve general goals, should be greatly reduced. No one can rid himself of routine work altogether, but it should be minimized. Routine work is defined as many small actions occurring in the organization (Eruteyan,2008. 21-26).

## 2.3.4. Principles Relating to Oversight

After planning and organizing the work in accordance with the relevant principles, only the implementation of the plan and the daily follow-up. The idea of control through the plans and tables is the basis for sound management and to increase efficiency to achieve the goal as planned, comparing the real expenditure of the supplier to the plan and the table, Relating to the plan, schedule and performance, and allows it to modify these three things to suit the objective and the circumstances it faces.

The following principles are required:

1. The Principle of Implementing Daily Plan and Daily Follow-Up is Necessary for Time Management.

Implementation of the plan is necessary for the oversight function, as this function can only be accomplished if there is a plan or a standard that compares the expected results. The follow-up to the adjustment plan, schedule and performance in line with the objectives and ambient conditions is the same control.

2. The Principle of Re-Analysis**.**

The use of time should be re-analyzed at least once every six months so as not to return to bad habits in time management. It has been found that difficulties in implementing the daily plan make most people revert to their old practices. To avoid this, use time analysis should be repeated from time to time (Claessens,2009.40).

## 2.4. SUMMARY TIME MANAGMENT

Time is a rare and unalterable element. It requires managers to master their management by understanding and mastering the administrative principles of time and making better use of them. The misuse of time by managers leads to the suspension of serious thinking and innovation for the working individuals, Even if a manager with time management skills is confronted with subjective or external issues that reduce the chances of applying this skill, he argues that the importance of time management lies in the correct distribution of the time available for the construction project by managing time through the main management functions in the Planning, guidance, motivation, monitoring and evaluation of the time available to the organization.

And that the availability of sufficient time to achieve more business and administrative activities, in reducing the loss of time by some of the managers complete his work at home at the expense of his own time, and some of the delay in work after the official working hours to end the official work, on Although this is evidence of loyalty and commitment to work and belonging to the job, but this may mean something else, especially those who have the same time opportunity, but some of them better investment, and may entail negative and problems on the personal, social and official, and then did not find the time Sufficient to understand In fact, the official working time does not invest an active investment in the organization, because the problem in time management lies not only in the time, but in how individuals use their time and the work done.

# CHATER THREE
# PROJECT MANAGEMENT

Accelerated implementation of projects depends on the principle of integrating the design and implementation phases in parallel with maintaining the basic elements of the project in time, cost and quality. This method developed with the global scientific development, where new management methods were reached to complete the projects in a pressure and reduce the duration of the total project without affecting the cost or quality. The accelerated implementation experiences adopted by some construction companies in Iraq, including in the province of Erbil, And sometimes failure due to increased cost or low quality, as demonstrated by the field survey in addition to the confusion of methods of work and waste of large in the construction materials, which led to the lack of accumulation of sufficient experience in this area, despite the growing importance now and especially in the circumstances of the structural development of this region. Therefore, this chapter aims to develop and implement the general planning mechanisms of the project with detailed plans to control the time factor in conjunction with controlling the cost of the project and the quality of the executed works.

## 3.1. THE CONCEPT OF THE PROJECT

Projects are one way of developing communities and organizations in a balanced manner, whether they are profitable or service oriented projects. The philosophy of the project comes from the comprehensive development of individuals with capacities and organizations to upgrade. Project workers must evaluate, manage or supervise their affairs. Must have basic skills in project selection, management and resource allocation. The role of project management has become more important and follow-up and activate the use of resources and access to the best cases of use (Davies,2002.186).

Management is also one of the clearest indicators that can distinguish between developed and developing societies. Experience has shown that good plans can fail under bad management, and that weak plans can be improved and enhanced through

successful management. Good management may compensate for its efficiency and effectiveness from lack of resources and capabilities while also addressing the weaknesses and shortcomings of the plan, therefore, the management is the function of the implementation of the work through others through the use of planning, organization, direction and control in order to achieve the objectives of the organization efficiently and effectively taking into account the internal and external effects on the work environment has become increasingly important project management because of the development of companies and organizations and contracted so that the supervision of activities that Accompanied by this development and complexity greater than the capacity and capabilities of the individual has emerged the need to pay attention to the administrative aspects of the organization (Kwezner,2013.p144).

### 3.1.1. Project Definition

What has been sorted out by the changing business environment and different industries and the constant need to develop new markets and products has resulted in the concept and concept of the project at present, which in turn require new organizational patterns. Projects have always been the management tool for such patterns.

The definitions of the concept of the project have varied according to the person's background as well as the purpose for which the project will be carried out Create a project and will mention them to name a few:-

Kamel (2000) sees a full range of activities and processes that consume specific resources, which are expected to generate other revenues or returns, cash or non-cash ( Kamel,2000 .p90). and (Henry 2003). defined the legislator as a goal to be achieved, involving several parties within a given framework, over a certain period of time using limited means and requiring the adoption of appropriate methodology and tools ( Henry,2003,2003).

Project management consists of the knowledge, skills, methods, techniques, and tools used to plan and manage project work. It as well establishes a sound basis for effective planning, scheduling, resourcing, decision making, management, and plan revision (Richard,2001.12).

Say that The goals and principles of construction management are summarized in the investment, the best recruitment of resources and the completion of the project within its basic requirements. Each project has specific objectives or specific requirements called project limits, namely,( quality; cost and time), where these three elements are important criteria in the project management process and constitute the central and important point of completion of the project manager. (Triangle of Project Constraints) or Triangle Project Integration (Triangle Project Management) (Gareis,2011.33).

Constraints of the construction project:-

**1. Cost:** The Cost is one of the three basic pillars of project management and construction. The cost (%) of 60% to 30% of the project shall be considered in advance by specialists who have the experience in making estimates and upon completion of the designs. The completion of the designs taking into account the availability of the necessary materials and the conflict of prices and market conditions as well as labor and the impact of surrounding circumstances, and if the estimates are more than what is the case in the budget Jeb reconsider designs or change some parts or modified.

**2. Time:** Time is one of the important resources of the administration, which has the responsibility to achieve the best investment for working time if it wants to continue growth and development, and that if management is unable to use the time available to work efficiently, the productivity will lead to reduction and lead to the destruction of economic and moral damage. In each construction project, a timetable should be prepared, which is the cornerstone of the planning documents to guide and guide efforts and to determine the impact of the major changes on the work plan. The schedule starts at the start of work and ends with the promise of receiving the project. to her .

**3. Control:** As an important function and an essential component of the management process, on the basis of examining the results of actual performance and comparing them in advance with the planned objectives identified by project management in the pre-prepared and objective plan of the project.

**4. Quality:** The third pillar complementary to the management triangle, and must be in each project construction control and control of quality and assumes the management of the project to follow the paragraphs of the work in terms of quality and reference to the technical specifications and general and special conditions adopted in the project contract.

## 3.1.2. Nature and Characteristics of Engineering Construction Project

The talk about the importance of the construction industry of axioms has emerged this industry with the emergence of man and grew and flourished with the flourishing of civilization, which was the best expression of the achievements of civilization.

On the economic side, the construction industry is of great importance in the national economy of all countries of the world. The products of the fertile land and the solid foundation necessary for the process of development are low in developing countries and high for developed countries (Michael,1997,36).

The construction industry differs from other industries in the physical nature of its products. The product is characterized by great volume and the need to manufacture it in the place of its investment, which requires the transfer of the workshop and execution to the construction site. As a result( Chan ,2007), the organizational evidence and management methods vary Contractors and engineering contracting partners, and design and engineering consulting offices, with an administrative staff to organize the work and the route of the port constructed according to technical specifications.

Because of the huge volume of construction industry products and the high costs of completing their projects and the need to invest a large amount in the construction and construction, as well as the external effects of most of its products,

especially in terms of infrastructure and the general nature of them, which constitute the growing demand and to provide economic returns after the completion of the port built by Public and private sector, and to achieve a balance between the triangle based on cost, time and quality (Nitithamyong et at. 2004).

Accordingly we can conclude Nature and characteristics of engineering construction project are:-

1- Project based:-

Project management is the preparation and design through the planning and organization of resources in such a way as to enable the completion of construction of the project according to the specified time, taking into account the quality and cost standards. In addition to finding indicators of critical situations when they arise, and flexibility in the reorganization and planning of the engineering project through its analysis into several activities, follow up these activities, and estimate the time required for each activity.

2- Fragmentation:-

It is a process of dismantling the elements and activities of the construction project into smaller outputs and components in a way that is easy to control, handle and look at the full scope of the project through its engineering design(Widen ,2002).

3- Risky:-

Construction projects have a high degree of risk in both cost and time estimates compared with other types of projects. Each construction project is a unique product, and most often it is not an opportunity to establish an initial model for checking the applicability of engineering designs to the engineering legislator. The risk assessment required by the engineering design team will be assessed as the cost of error correction increases as the project life cycle progresses, while the cost is minimized when it is in the engineering design phase of the project (Zhang.2007)

As technical complexity factors, changing markets and uncontrolled environmental forces complicate what was previously considered reliable, the three dimensions are interrelated and must be addressed simultaneously. Taking one separately will reduce the other. When we try to meet the timetable and project

completion requirements, we will be forced to increase costs and vice versa. When we try to fix the costs, the quality of the work will decrease.

The quality of achievement will decrease, and in the past it has been allowed to change a goal or two so that the third most specific goal is achieved. Most projects currently do not have such a level of control. It is necessary to focus on the three objectives at the same time and try to find a level of balance between them. In a systemic perspective, project management is a kind of integration between sources and focuses on the overall view of the project objectives

## 3.2. THE IMPORTANCE OF THE SITE CONSTRUCTION MANAGEMENT

Market competition leads construction companies to a plant on the organization and good management of construction sites To ensure a rate, good production and new margins of profit, site management generally includes many tasks, such as site verification before starting construction, Materials, managing their acquisition, continuing to improve the status of the site's records, maintaining good site contact and flow of information at the desired level, regular performance monitoring and coordination between the different parts (Elbeltagi 2002).

Engineers and researchers in the construction industry have acknowledged planning the use of the construction site as a vital process in construction planning, which can be defined by planning the use of a well-supplied vacuum, Most of the construction sites that faced problems were related to administrative factors rather than because of technical problems. Site management can lead to significant cost improvements and save time during the construction process without requiring additional labor costs. The role of site managers is to control the site and maintain performance by working to repair unsatisfactory performance (Chan, 2007.8).

Construction scheduling and site scheduling are essential to project management, which directly affects the operation of equipment, material deployment, power distribution, cost and construction. There is a strong need for more efficient planning and management of vacuum and temporary accompanying

parts of the site planning can affect the rate of production and is critical to the success of the project, since the lack of proper site planning management will result in a loss of production rate in the form of overheads due to transfer costs.

Neglecting site planning during the early stages of planning for construction projects can lead to inappropriate plans that need to be corrected. It may cost more than correcting and avoiding error at first. Planning problems is inappropriate does not appear during the early stages of the project, but often appear during the later stages because of the extensive changes that have occurred, where planning has been unable to accomplish the requirements of the site at that time .(kerzner, 2002.29).

### 3.2.1. The Importance of Managing the Site in Resolving Disputes Over the Empty Spaces Available on the Site

The site engineer arranges the daily activities at the site according to the planned schedule. However, this requires the allocation of empty spaces to different transactions within a given time frame. Differences arise over the space available in the construction site because of the lack of formal procedures or the absence of a specific methodology to identify all problems of potential vacuum interference. Even a project manager with experience and experience may not be able to identify all those problems, so traditionally problems are dealt with as they arise

Therefore, the activity may involve several tasks and requires different empty spaces in the construction to work and a road for workers and equipment and storage of materials related to the activity, which may increase the risk of differences on those areas in the construction site between different activities during certain periods of project time. As problems may not appear in the initial period, but with the progress of the project overlap activities and work on the site, which may cause delay in the completion of one of the activities, and the sharp differences over empty spaces in the site in case the overlapping work belong to different contractors.

### 3.2.2. Construction Site Planning

An important task for site management is to set up a site map. In large-scale construction projects where the number of workers is large and many secondary contractors and many complex equipment and mechanisms, can be lost time and cost increases if there is no effective methodology and organization of site planning, Detailed planning of the site plan and location of temporary construction parts can enable management to achieve significant improvement by reducing time on site navigation, waiting time and increasing moral spirit through the best and safest working environment (Elbeltagi, 2002).

The vacuum in the site is a resource no less important than the other resources available for the project construction of money, time, raw materials, working equipment, where site planning in the construction work is a very important planning problem. The planning of the site is intended to obtain the correct geographical position of the temporary construction parts at the right time and thus can serve the construction process satisfactorily, at the lowest cost and time possible, and to improve the safety and working environment (Mawdesley & Al-.Jibouri, 2003).

Therefore, the problem of planning management in construction can be portrayed as a multi-objective problem. It is essential to distinguish the ideal layout of the construction waste, which integrates the requirements and constraints of the project, reduces the cost of material flow and improves building safety. The layout of the temporary construction parts is unique in each construction project because of the changing process requirements because the site arrangements and conditions are different for each project. As the construction varies in the nature of the company, project designs, time constraints, environmental impacts, etc., each site planning plans projects that becomes unique, is affected by many variables and requires the most construction resources in the construction site. This is the case for materials organizing and preparing to support the infrastructure of the construction and the allocation of the location vacuum of the resources so that it is possible to achieve the liquidity of the access and the function required of them during construction is the problem known as site planning management. The creation of schemes that change over time during the progress of construction is called dynamic scheme planning (Alagarsamy, 2012).

## 3.3. IMPORTANT CONSTRUCTION AND SERVICES AT THE CONSTRUCTION SITE

The following is a presentation of the most important services and construction facilities on-site construction **(**Elbeltagi & Hegazy, 2002)

1- Site Entries and Exits

Easy access to the site will keep drivers and equipment drivers feeling high Reduces the chance of accidents, and saves time in maneuvering to enter and exit the project. In large projects Roads should be properly planned to direct roads to the nearest highway, inland roads and places stand up to organize the work.

2- Offices Location:

The site must be provided with a work desk, general contractor offices, secondary contractors, and consultants. The offices of the site must be close to each other, close to the place of construction and in a safe area, and be location with a good vision with the least exposure to noise generated by the construction.

3- Essential sanitation:

Construction sites must be provided with the necessary sanitary facilities with general health and safety. This may include: toilets, washrooms, changing clothes, personal storage areas, workers' rest areas and staff working in the construction project. These facilities must be accessible and adequately equipped with adequate heating, ventilation and lighting.

4- First aid:

First aid must be available for medical care when needed.

5- Cleaning the site:

Molds, wood planks, with raised nails, and all other debris from work areas, corridors, drawers, buildings or other structures should be continually removed during construction.

6- Workshops:

Workshops are used where materials are made and where equipment is located on site. This includes mechanic, carpentry, carpentry workshops, paint shops, and inspection and testing shops, which are used for the necessary tests of equipment and people.

7- Storage and transfer of materials:

It is necessary to plan and store material stores so multiple movement is avoided Store the materials used to store the materials and be as close to the work site as possible. The use of appropriate equipment for moving material and planning to reduce the multicast operation will result in savings in direct cost and time.

## 3.4. THE IMPORTANCE OF FOCUSING ON MATERIAL MANAGEMENT IN CONSTRUCTION SITE PLANNING

The studies showed that the materials constitute 66% of the total project costs and control 86% of the project schedule. The project contributes additional savings (Perdomo, 2004).

Material management is the process of planning, implementation and control of materials in the construction site, aiming to provide building materials at the point of use when needed. The material management system achieves the right quality, proper selection of materials, and the purchase, receipt and handling of materials at the site in an appropriate and affordable manner..

Material management is a system of planning and control of all the necessary efforts to ensure the correct quality and to determine the quantity of materials and agendas properly and in a suitable manner, and to acquire them at a reasonable cost (Patil, 2013).

The management of materials in the construction site is not easy at all.

Materials cannot be ordered in large quantities at an early date during the implementation of the project because they result in financial loss due to the cost of storage and securing the appropriate place in addition to the space you will occupy. Worse, the quality of the material deteriorates while storing or being stolen. At the same time, it is not possible to delay the application of materials, which may result in delayed delivery of materials and consequently shortages when needed and the related work interruption, resulting in delays in the project and obstruction of work. The material management functions in the construction industry are currently

implemented with minimal communication; it does not clearly define responsibilities among the parties concerned.

This fragmentation creates gaps in the flow of information, resulting in delays in requesting and receiving materials, increasing costs, over-stockpiling of materials and delays in the project.

Materials management ensures the quality of material storage within the site, since the marking of structural materials and components on the site is fraught with obstacles that can generally affect the levels of production rate. Construction materials often require a large storage capacity that is rarely available at the site. Storage facilities are usually temporary vehicles, and often the conditions surrounding the materials cause damage such as weather and movement of the people, thus delaying the construction of these materials (Perdomo, 2004).

## 3.5. REDUCE RISK IN THE ACCELERATED IMPLEMENTATION OF PROJECTS

The rapid implementation method by testing a project management system and its ability to manage business execution, programming and distribution of financial and human resources at predetermined intervals from the beginning of the design until the completion of all operational requirements and the delivery and operation of the project. Management relies on identifying and studying critical project phases and events whether they are designed or run for the purpose of determining the methods to be followed for in-site control of the successive critical events, taking into account the requirements of the employer during the design and implementation phases of the staff, financial and material resources, and the provision of training teams, To complete the work required (Griffith, 2004,25).

Engineering leadership must distribute resources in an organized and thoughtful manner. Reducing the effectiveness of the project often requires the addition of additional funds, funding and resources. The success of the accelerated implementation approach depends on the possibility of reducing the additional costs. The principle of starting point of effectiveness should depend on the time of completion of the effectiveness that precedes it. Therefore, it has unstable and

fluctuating potential. Therefore, a clear vision and professional commitments must be adopted so that all members of the company work with one team. The primary responsibility of the leadership is to assemble and develop teams Specialized and unified individuals representing the various parties to adopt the project from shareholders, contractors, processors and manufacturers. The work is preferred within a hierarchical organizational structure with a small leadership with the availability and creation of communication methods among the different working groups at all levels in the enterprise and project leadership Y quickly find a precise budget, including through the technical resource planning work and taking into account the details of the critical events. In an accelerated implementation approach, management has significant risks and responsibilities (Richard,2001.18).

## 3.6. MANAGEMENT SUCCESS IN FAST TRACK

The success of the project is to meet the requirements of the employer. The project management should be effective and efficient. It is easy to identify the priorities of the project by providing all the resources to manage the project in a well thought out and suitable manner to complete any paragraph with optimum utilization of time in execution, the nature of the work and the different orientation of the staff to be one effective team, therefore, the motivation and moral and physical motivation of the staff working in the project requires the love of work for the purpose of completing the construction project while adopting the principle of taking initiatives that come from the staff working in the project (Bruce,1988.166).

In addition, successful management should initiate the following

1. Holding coordination meetings between the two parties for the project of the executors and designers, supervision and follow-up to change designs and solve problems and obstacles and accelerate the use of alternatives and reduce time.
2. The projects that use this type of implementation of the time are considered an influential element in the project first, quality II and III cost, which must balance the three elements.
3. This is due to the emphasis on time factor in accelerated construction projects usually show the following defects: -

A - Quality is affected by poor implementation due to speed.

Increase the rate of waste in construction materials and in the use of specialized equipment for permissible limits

C - Drain the capacity of workers by working overtime hours, which negatively affects the quality of productivity and performance of employees.

D - The re-implementation of some work due to poor implementation due to speed (Yassiah,2000,126).

## 3.7. RISK REDUCTION IN FAST TRACK

The idea of expediting project implementation despite its good economic returns, but high risk decision, as the risk ranges from the levels of inability and ability to terminate the project in the estimated or expected time period, resulting in increased project costs due to the time pressure of events. Systematic changes in project implementation are accelerated through a mini-software model, improving time, and making appropriate use of each work and effectiveness will reduce risks. Shortening any duration has a positive economic impact on the project but at the same time considers it a major risk by project management and the employer (Frans Van Der Linden,1992.67).

Therefore, the engineering project is a particular type of technological systems, prepared in the context of technological systems for engineering projects in many countries, as these companies have a license or a license to carry out works such as design and construction of buildings and electrical stations and utilities, and the installation and construction of electricity networks, Etc. The scope of this project is determined by the contract between the owner and the engineering and construction parties, as a general rule, ie the engineering project is divided into the core stages and construction, where the design process outputs are drawings, calculations, Implementation of the next stage is the establishment.

## 3.8. PLANNING AND CONTROL IN ACCELERATED IMPLEMENTATION: FAST TRACK PLANNING & CONTROL

Clearly, today's requirements need more planning than ever before Companies face significant shifts in various fields, challenges and increased pressures, and an environment Rapid change in all areas, increasing the degree of environmental uncertainty about what will happen to it Future conditions, and what the future will be, and this in turn applies to construction companies in Management of construction projects.

The initial project plan is in the form of variables from the initial idea of design, which forms the basic information for the preparation of the implementation. The application planning and flexible control method results in rapid design and project execution by preventing the impact of unexpected variables in the timing of a non-stop main project. Different ideas are used, developed and evaluated for the project plan based on different working methods. Planning and control of the organization of work under the rapid implementation based on the actual delivery price, thus shortening the project's actual completion time compared to the proposed completion time (Thomas G. Atkinson,2002.145).

The success of planning requires achieving compatibility and integration between all types of plans and objectives, between strategies, tactical plans, operational plans and long, medium and short term plans. As for engineering project planning, integration and homogeneity is achieve this by aligning all elements of the project and achieving the balance between project implementation duration, project cost and quality of implementation.

## 3.9. FIELD SURVEY

Prior to the preparation of the engineering project plan, the following information should be available:

• Contract documents for the purpose of obtaining information and using documents. These documents include project plans, general and specific specifications of the project, schedules of quantities and prices, and official correspondence between the

contracting parties (owner, consultant, contractor and official bodies), decision to implement the project by the owner and other documents required to start the project plan.• Project Timetable: This stage includes.

• Division of the project into activities.

• Determine the relationship between activities.

• Representing activities and relationships and estimating the times for each activity.

Duration of activity:

= Amount of work in this activity / Number of resources * Performance rate

= The amount of work in this activity / resource productivity used

The field survey was carried out through a specific sample representing the engineering community and included the cadres of the Ministries of Construction, Housing, Water Resources, and the advisory offices of universities, employers and executive companies from the public and private sectors who have worked in an accelerated implementation manner and focused mainly on employers, consultants and implementers. The field experience and the interviews that were conducted enriched the research with many opinions and suggestions. The following conclusions were reached:

1- Lack of a practical and scientific formula for the effect of time when using accelerated implementation.

2- Not provide the advisory staff of designers and supervisors in the continuous follow-up work.

3- Not rely on the implementers who have experience and knowledge of previous projects.

Lack of funding for project implementation.

4- Not relying on a management with expertise and administrative and financial powers for the purpose of saving time.

5- Not to consult the specifications by the Advisory Group to reduce the change orders

6- Not involve the implementers and designers in the preparation of designs and take the ideas of the executive staff.

7- The speed of assignment of completed works and reliance on inefficient contractors and processors.

8- Lack of public services at the workplace and lack of speed of communication between the parties to the project.

9 - Not to adopt time programming and follow deviations and correct them.

## 3.10. PROPOSED OVERALL PROJECT PLANNING: PROPOSED FAST TRACK PROJECT PLANNING

The overall planning of the accelerated implementation project is related to all the vocabulary and the construction process for its completion in time. It is an integrative process for all the detailed plans that have been developed since the preparation of the initial idea, design, referral, implementation, supervision and delivery of the project within the basic requirements of the employer.

In the markets and technological expertise in the means of production. The main objective of the overall planning of the project is to establish a control system that can be applied from control of the basic resources of the project and scheduling of operational processes to the central plan of action and then total control over production and implementation in the project and then integrated all plans within the overall vision of senior management.

General of the project means that the senior management of the company to respond quickly and decisively to all the potential problems that affect the work in the project or to resolve disputes between the parties concerned or to provide all the necessary needs in a timely manner and therefore must be characterized.

The central plan of the project as:

1.Adequate with engineering construction experience for accelerated implementation.

2. Meet all the basic requirements of the project as soon as possible.

3. Determine the production efficiency and technical specifications required.

4. Reduce the cost to the minimum (Kerzner,2002,P.43).

## 3.11. SUMMARY PROJECT MANAGEMENT

Project Management Science is based on the principle of judging logic when deciding on a project by dividing the operations required by project management into five phases, first defined by the project launch phase. It is at this stage to study and analyze the reasons that created the need for the project to be launched. Any knowledge of the benefit that will return this project when it starts operation after completion with the estimated cost of the project and economic feasibility. This is recorded in a document known as the "Project Charter", which is the actual approval by the senior management to provide the resources that the project may require, including the appointment of the project manager.

After completing this stage, the project planning phase begins, which includes specifying the requirements and content of the project and the timeframe to be followed for its implementation. All resources of all kinds are identified from employment, materials and equipment that may be required to implement such a plan, in addition to the material cost to be monitored and the quality requirements that the project should adhere to and achieve. Finally, when planning the project, it is necessary to identify all parties involved in the project and how to deal with these parties. The project implementing agency will be appointed as well as the responsibilities and duties assigned to each individual who has a role in the project, such as responsibility for doing the work and following up on it. The most important thing to be identified at this stage is the risks that the project may face, whatever the cause, source and how to deal with it, which may include deciding to assign some tasks to external parties to mitigate those risks and transfer some to any other party to strengthen Implementation.

In order for the project team to begin its implementation after the planning phase has been completed, all data developed during the planning phase are being examined to ensure that they are complementary and that there is no conflict between them. This results in the acquisition of the so-called "approved operational project plan", which all parties directly involved in the project should study and then agree on the data, plans and statement of commitment to the content of the plan.

The project plan is followed by two simultaneous phases through which the approved project plan is implemented. The first is defined as the "implementation phase" and the second is the "control stage". These phases are based on the principle that the success of an action plan depends on the provision of all the necessary resources and all that is required by the approved plan. It is thus ensured that the outcome of the work accomplished has met the specific objectives of the action plan, taking into account any changes that may occur or May be required by the original plan of action and the impact on what has been achieved in the project and what remains to be done.

# CHAPTER FOUR
# STATISTICAL TREATMENT METHODS

The researcher has unloaded and analysis of the questionnaire through the statistical Program SPSS was used the following statistical tools:

- The arithmetic mean and weighted, median and standard deviation.
- Kaiser-Meyer-Olkin (KMO) –Test.
- Bartlett's test of Sphericity.
- One-Sample mean test.
- Kolmogorov-Smirnov test for Normal distribution.
- One-Sample-Chi-Square test for Normal distribution.
- Pearson correlation coefficient (parametric).
- Factor analysis.
- Rotated Component Matrix.
- Extraction Method and Communalities.

## 4.1. TEST HYPOTHESES OF THE STUDY

1- There is important for effect the time management on project effectiveness.

2- There is important for paragraphs for the loss of time in the management of the project.

3- There is important for the effective use of the methods of time management by project management.

4- There is important for paragraphs on time management skills in the management of the project.

5- There is effect for time management on project effectiveness.

6- There is effect for the loss of time in the management of the project.

7- There is the effective use of the methods of time management by project management.

8- There is effect for time management skills in the management of the project.

9- There is correlation between time management and project effectiveness.

10- There is Correlation between the losses of time and the management of the project.

11- There is Correlation between the effective uses of the methods of time management and project management.

12- There is correlation between time management skills and the management of the project.

## 4.2. RELIABILITY STATISTICS

The table below shows that the more the evidence is extracted into one, the more it will be interpreted as inaccurate in the questionnaire or in the coordination between the questionnaires.

**Table (1) Reliability Statistics**

| **the hub** | **Cronbach's Alpha** | **N of Items** |
|---|---|---|
| Time Planning | 0.83 | 5 |
| Time regulation | 0.89 | 5 |
| Time directive | 0.76 | 5 |
| Time control | 0.79 | 5 |
| Reasons for wasting time | 0.81 | 5 |
| Effective use of time management methods by project management | 0.74 | 10 |
| Time management skills sections of senior management | 0,79 | 10 |

## 4.3. THE RESEARCH SAMPLE

The questionnaire was distributed as a group to test hypotheses and presentation the results and recommendations of the study on a sample of (90) companies in Erbil and the results are as follows:

**First: Described the research variables and diagnosis:**

Will be in this analysis to calculate the number of frequencies, percentages and the cumulative percentages to the questionnaire which included (5) variables, Answers of researches were summarized her through the tables and figures of the following:

**-The First variable**: Effect the time management on project effectiveness

The arithmetic means of each of the equation from questionnaire study evaluated by Likert scale (pentagon), is calculated by dividing the four distances

over (5) that result in the length of the class (0.8) and becomes a distribution evaluating the weighted mean according to the following table:

**Table (2): Weighted mean levels**

| Weighted Mean | The level |
|---|---|
| 1 – 1.79 | Strongly Disagree |
| 1.8- 2.59 | Disagree |
| 2.6 – 3.39 | Neutral |
| 3.4 – 4.19 | Agree |
| 4.2 – 5 | Strongly Agree |

On this basis, the level question means according to the importance and the degree of agreement with the assumptions of the thesis and summarized in the following table:

**Table (3): Descriptive Statistics for First variable**

| Questions | Minimum | Maximum | Mean | Std. Deviation | The level |
|---|---|---|---|---|---|
| Q10 | 1 | 5 | 3.7222 | 1.0603 | Agree |
| Q8 | 1 | 5 | 3.6778 | 1.0687 | Agree |
| Q20 | 1 | 5 | 3.6222 | 1.0766 | Agree |
| Q6 | 1 | 5 | 3.5667 | 1.1421 | Agree |
| Q2 | 1 | 5 | 3.5444 | 1.1432 | Agree |
| Q16 | 1 | 5 | 3.5222 | 1.0937 | Agree |
| Q15 | 1 | 5 | 3.5111 | 1.1242 | Agree |
| Q18 | 1 | 5 | 3.5000 | 1.1343 | Agree |
| Q17 | 1 | 5 | 3.5000 | 0.9972 | Agree |
| Q3 | 1 | 5 | 3.5000 | 1.1143 | Agree |
| Q11 | 1 | 5 | 3.5000 | 1.1243 | Agree |
| Q19 | 1 | 5 | 3.4667 | 1.0407 | Agree |
| Q9 | 1 | 5 | 3.4667 | 1.0189 | Agree |
| Q5 | 1 | 5 | 3.4556 | 0.9260 | Agree |
| Q4 | 1 | 5 | 3.4111 | 1.1889 | Agree |
| Q7 | 1 | 5 | 3.4111 | 0.9932 | Agree |
| Q13 | 1 | 5 | 3.4111 | 1.1698 | Agree |
| Q12 | 1 | 5 | 3.4111 | 1.1207 | Agree |
| Q14 | 1 | 5 | 3.3667 | 1.1163 | Neutral |
| Q1 | 1 | 5 | 3.3556 | 1.1048 | Neutral |
| Valid N (list wise) | 90 | | | | |

Through a table (3) we note that all the answers to the questionnaire questions ranged from the number one (Strongly Disagree) and number five (Strongly Agree), the (10) question has a higher average agreement reached (3.7222) and level (Agree), followed by the (8) question with an average agreement reached (3.6778) and level (agree), while the first question is in ranked last with an average agreement of (3.3556) and level (Neutral). The following figure illustrates this.

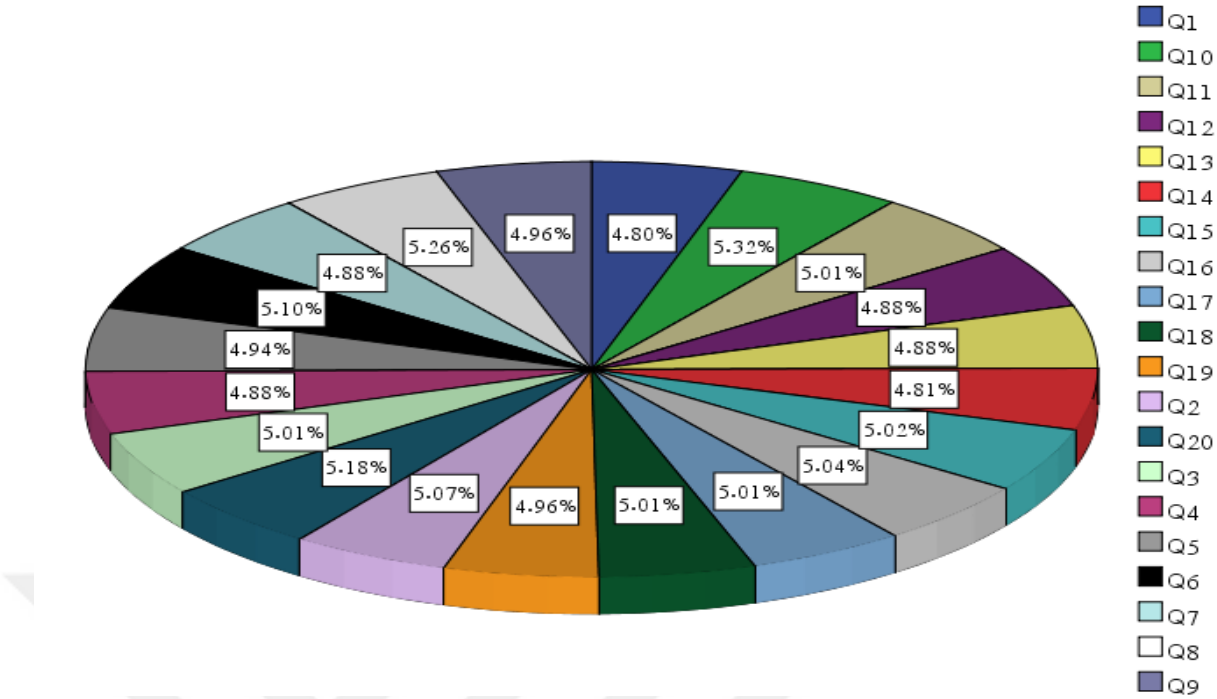


**Figure (1): Pie Chart for means of first variable**

**- The Second variable**: Paragraphs for the loss of time in the management of the project

The level question means according to the importance and the degree of agreement with the assumptions of the thesis and summarized in the following table:

**Table (4): Descriptive Statistics for Second variable**

| Questions | Minimum | Maximum | Mean | Std. Deviation | The level |
|---|---|---|---|---|---|
| Q21 | 1 | 5 | 3.6556 | 0.9962 | Agree |
| Q23 | 1 | 5 | 3.5667 | 1.1617 | Agree |
| Q22 | 1 | 5 | 3.4333 | 1.1616 | Agree |
| Q24 | 1 | 5 | 3.4111 | 1.0694 | Agree |
| Q25 | 1 | 5 | 3.3444 | 1.0827 | Neutral |
| Valid N (list wise) | 90 | | | | |

Through a table (4) we note that all the answers to the questionnaire questions ranged from the number one (Strongly Disagree) and number five (Strongly Agree), the (21) question has a higher average agreement reached (3.6556) and level (Agree), followed by the (23) question with an average agreement reached (3.5667) and level (agree), while the (25) question is in ranked last with an average agreement of (3.3444) and level (Neutral). The following figure illustrates this.

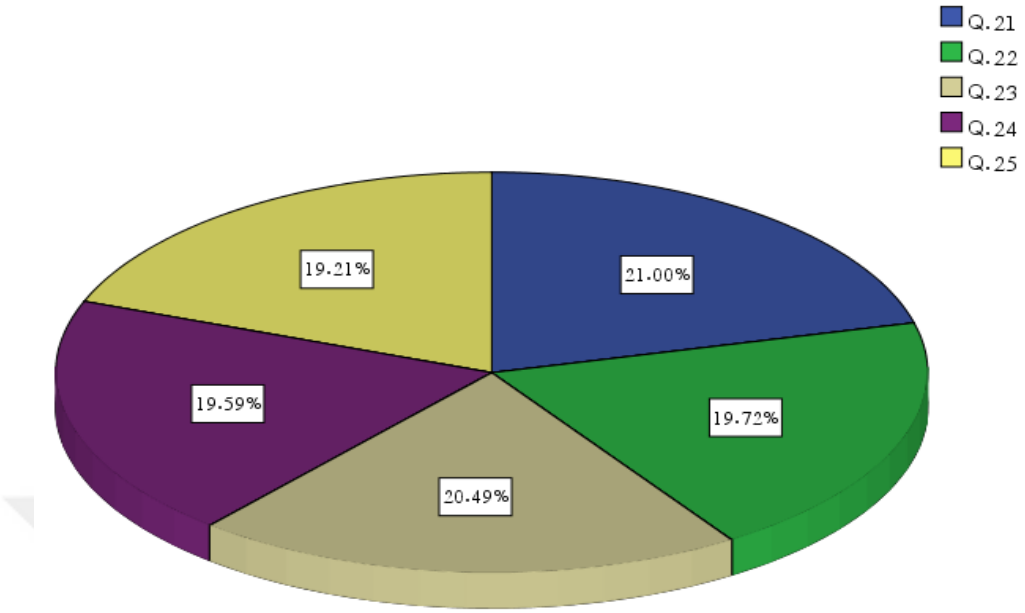


**Figure (2): Pie Chart for means of Second variable**

**- The Third variable**: The effective use of the methods of time management by project management:

The level question means according to the importance and the degree of agreement with the assumptions of the thesis and summarized in the following table:

**Table (5): Descriptive Statistics for Third variable**

| Questions | Minimum | Maximum | Mean | Std. Deviation | The level |
|---|---|---|---|---|---|
| Q27 | 1 | 5 | 3.5444 | 1.1914 | Agree |
| Q26 | 1 | 5 | 3.4667 | 1.1823 | Agree |
| Q31 | 1 | 5 | 3.4667 | 1.1138 | Agree |
| Q29 | 1 | 5 | 3.4444 | 1.1329 | Agree |
| Q35 | 1 | 5 | 3.4333 | 1.1122 | Agree |
| Q34 | 1 | 5 | 3.4333 | 1.2091 | Agree |
| Q28 | 1 | 5 | 3.4222 | 1.1512 | Agree |
| Q32 | 1 | 5 | 3.3667 | 1.1263 | Neutral |
| Q33 | 1 | 5 | 3.3667 | 1.1262 | Neutral |
| Q30 | 1 | 5 | 3.3444 | 1.1032 | Neutral |
| Valid N (list wise) | 90 | | | | |

Through a table (5) we note that all the answers to the questionnaire questions ranged from the number one (Strongly Disagree) and number five (Strongly Agree), the (27) question has a higher average agreement reached (3.5444) and level (Agree), followed by the (26) question with an average agreement reached (3.4667) and level (agree), while the (30) question is in ranked last with an average agreement of (3.3444) and level (Neutral). The following figure illustrates this.

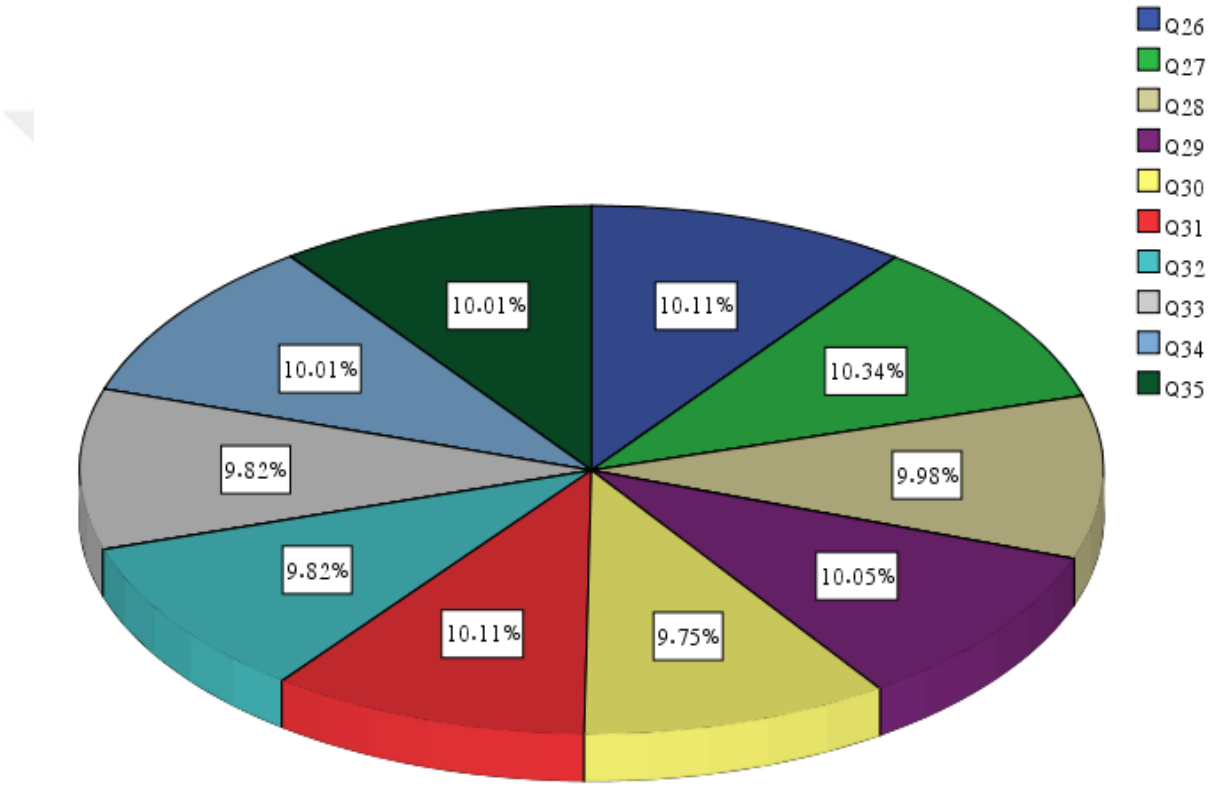


**Figure (3): Pie Chart for means of third variable**

**- The Fourth variable**: Paragraphs on time management skills in the management of the project:

The level question means according to the importance and the degree of agreement with the assumptions of the thesis and summarized in the following table:

**Table (6): Descriptive Statistics for Fourth variable**

| Questions | Minimum | Maximum | Mean | Std. Deviation | The level |
|---|---|---|---|---|---|
| Q41 | 2 | 5 | 3.9444 | 0.9405 | Agree |
| Q36 | 1 | 5 | 3.7667 | 1.1223 | Agree |
| Q38 | 1 | 5 | 3.6889 | 1.1182 | Agree |
| Q39 | 1 | 5 | 3.6778 | 1.0475 | Agree |
| Q40 | 1 | 5 | 3.6333 | 1.1751 | Agree |
| Q42 | 1 | 5 | 3.6000 | 1.1097 | Agree |
| Q37 | 1 | 5 | 3.5556 | 1.2189 | Agree |
| Q43 | 1 | 5 | 3.4889 | 1.1041 | Agree |
| Q45 | 1 | 5 | 3.4444 | 1.2462 | Agree |
| Q44 | 1 | 5 | 3.4444 | 1.2641 | Agree |
| Valid N (list wise) | 90 | | | | |

Through a table (6) we note that all the answers to the questionnaire questions ranged from the number one (Strongly Disagree) or the number two (Disagree) and number five (Strongly Agree), the (41) question has a higher average agreement reached (3.9444) and level (Agree), followed by the (36) question with an average agreement reached (3.7667) and level (agree), while the (44) question is in ranked last with an average agreement of (3.4444) and level (agree). The following figure illustrates this.

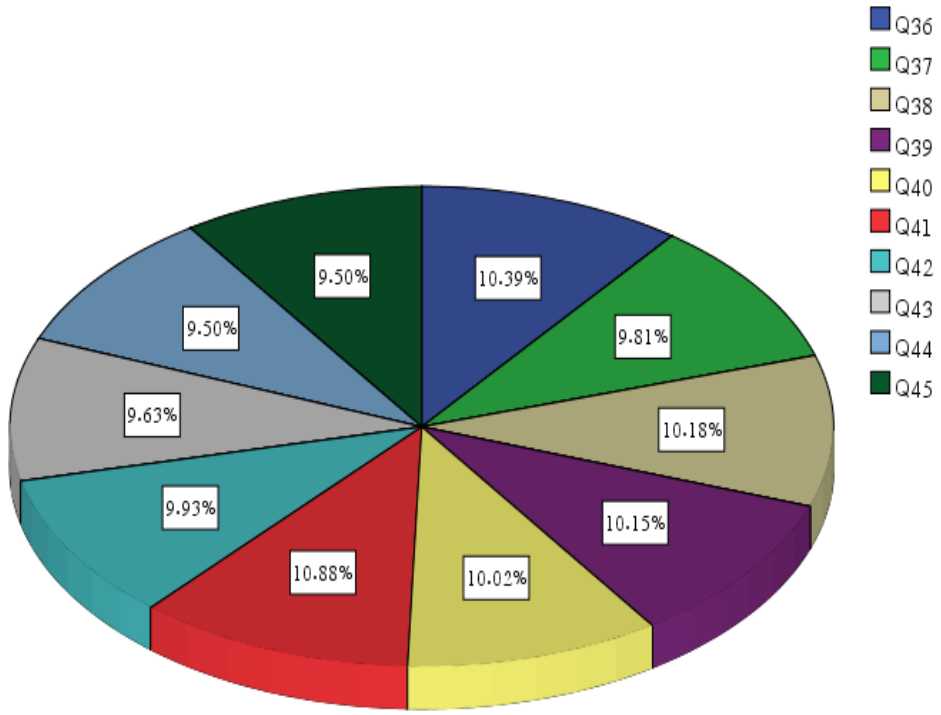


**Figure (4): Pie Chart for means of Fourth variable**

**Second: Test data distribution:**

Here will test questionnaire variables and means have a normal distribution or not through the use of non parametric test (Kolmogorov-Smirnov) and parametric test $\chi^2$ (by using Easy Fit program) on which determines the tool and the appropriate test to test the research hypotheses, test the following hypotheses:

$H_0$ : The means of the questionnaire variables have normal distribution.

$H_1$ : The means of the questionnaire variables have non-normal distribution.

The test results are summarized under the significance level (5%) by the following table:

**Table (7): Test of Normality**

| Variables Means of study | K.S. | | | Chi-Squared | | | Result |
|---|---|---|---|---|---|---|---|
| | Statistic | P Value | Critical Value | Statistic | p Value | Critical Value | |
| **First variable** | 0.0846 | 0.5123 | 0.1412 | 15.522 | 0.0084 | 11.07 | Non Normal |
| **Second variable** | 0.0998 | 0.3104 | 0.1412 | 17.921 | 0.0031 | 11.07 | Non Normal |
| **Third variable** | 0.1042 | 0.2641 | 0.1412 | 3.0444 | 0.5504 | 9.488 | Normal |
| **Fourth variable** | 0.0757 | 0.6531 | 0.1412 | 0.3279 | 0.9971 | 11.07 | Normal |

Through a table (7) we note that by using Chi-Squared test the means of the First and Second variables are not distributed normally because the p-value equal to (0.0084) and (0.0031) which is less than the significance level (0.05), and Statistic are greater than (11.07) and on this basis will be selection tests of the nonparametric To test the significance of the means and estimate correlation.

By using (K.S.) and Chi-Squared tests the means of the Third and Fourth variables are distributed normally because the p-value equal to (0.2641, 0.5504) and (0.6531, 0.9971) which is greater than the significance level (0.05), and Statistic are greater than (0.1412) and (9.488, 11.07) respectively and on this basis will be selection tests of the parametric to test the significance of the means and estimate correlation.

**Third: Test hypotheses of the study:**

The study covered the test three types of basic hypotheses concerning means first, the effect second and third studies the relationship, as follows:

**A: Hypotheses of the means:**

We have four variables so we will test four hypotheses of importance as follows:

**- First variable:**

$H_0$ : There is no important for effect the time management on project effectiveness.

$H_1$ **:** There is important for effect the time management on project effectiveness.

Will be here to test there is important for effect the time management on project effectiveness by testing the importance of the means to the questionnaire questions which were answered by the (90) Researched according to Likert scale quintet depending on the extent of their agreement with the hypothesis of the research and specifically test arithmetic mean equal to the (3) of the respondents (because mean of Likert equal to 3) against the arithmetic mean is greater than the number (3), But here will be equal to the median test (3) rather than the arithmetic mean of the distribution because the data do not have a normal distribution, and on this basis test was used non parametric Wilcoxon to one sample under a significance level (0.05), It summarized the results in the following table:

**Table (8): One-Sample Wilcoxon Signed Rank Test for first variable**

| Median test value = 3 | | | | | | |
|---|---|---|---|---|---|---|
| Median | P value | T tabulated | t calculated | Standard Error | Dif. of medians | Result |
| 3.5 | 0.000 | 1.660 | 7.991 | 236.14 | 0.5 | Sig. |

Through a table (8) note that median of the Answers agreement with the hypothesis for effect the time management on project effectiveness is equal to (3.5), the largest median by Likert scale (0.5) While the p-value equal to (0.000) which is less than the level of significance of 5% (t-calculated was (7.991) which is greater than the t-tabulated value (1.660)) Which means rejection of the null hypothesis and accept the alternative hypothesis which states that there is important for effect the time management on project effectiveness by the surveyed sample views and tested.

**- Second variable:**

$H_0$: There is no important for Paragraphs for the loss of time in the management of the project.

$H_1$**:** There is important for paragraphs for the loss of time in the management of the project.

Will be here to test there is important for paragraphs for the loss of time in the management of the project by testing the importance of the means to the questionnaire questions, But here will be equal to the median test (3) rather than the

arithmetic mean of the distribution because the data do not have a normal distribution, and on this basis test was used non parametric Wilcoxon to one sample under a significance level (0.05), It summarized the results in the following table:

**Table (9): One-Sample Wilcoxon Signed Rank Test for second variable**

| Median test value = 3 | | | | | | |
|---|---|---|---|---|---|---|
| Median | P value | t tabulated | t calculated | Standard Error | Dif. of medians | Result |
| 3.50 | 0.000 | 1.660 | 5.980 | 200.098 | 0.50 | Sig. |

Through a table (9) note that median of the Answers agreement with the hypothesis for paragraphs for the loss of time in the management of the project is equal to (3.5), the largest median by Likert scale (0.5) While the p-value equal to (0.000) which is less than the level of significance of 5% (t-calculated was (5.980) which is greater than the t-tabulated value (1.660)) Which means rejection of the null hypothesis and accept the alternative hypothesis which states that there is important for paragraphs the loss of time in the management of the project by the surveyed sample views and tested.

**- Third variable:**

$H_0$: There is no important for the effective use of the methods of time management by project management.

$H_1$**:** There is important for the effective use of the methods of time management by project management.

Will be here to test there is important for the effective use of the methods of time management by project management by testing the importance of the means to the questionnaire questions which were answered by the (90) Researched according to Likert scale quintet depending on the extent of their agreement with the hypothesis of the research and specifically test arithmetic mean equal to the (3) of the respondents (because mean of Likert equal to 3) against the arithmetic mean is greater than the number (3), because the data do have a normal distribution, and on

this basis test was used parametric t-test to one sample under a significance level (0.05), It summarized the results in the following table:

**Table (10): One-Sample Test for third variable**

| Mean test value = 3 | | | | | | |
|---|---|---|---|---|---|---|
| Mean | P value | t tabulated | t calculated | Standard Error | Dif. of means | Result |
| 3.4289 | 0.000 | 1.660 | 9.483 | 0.0452 | 0.4289 | Sig. |

Through a table (10) note that mean of the Answers agreement with the hypothesis for the effective use of the methods of time management by project management is equal to (3.4289), the largest mean by Likert scale (0.4289) While the p-value equal to (0.000) which is less than the level of significance of 5% (t-calculated was (9.483) which is greater than the t-tabulated value (1.660)) Which means rejection of the null hypothesis and accept the alternative hypothesis which states that there is important for the effective use of the methods of time management by project management by the surveyed sample views and tested.

**- Fourth variable:**

$H_0$: There is no important for paragraphs on time management skills in the management of the project.

$H_1$**:** There is important for paragraphs on time management skills in the management of the project.

Will be here to test there is important for paragraphs on time management skills in the management of the project by testing the importance of the means to the questionnaire questions which were answered by the (90) Researched according to Likert scale quintet depending on the extent of their agreement with the hypothesis of the research and specifically test arithmetic mean equal to the (3) of the respondents (because mean of Likert equal to 3) against the arithmetic mean is greater than the number (3), because the data do have a normal distribution, and on this basis test was used parametric t-test to one sample under a significance level (0.05), It summarized the results in the following table:

**Table (11): One-Sample Test for fourth variable**

| Mean test value = 3 | | | | | | |
|---|---|---|---|---|---|---|
| Mean | P Value | t tabulated | T calculated | Standard Error | Dif. of mens | Result |
| 3.6244 | 0.000 | 1.660 | 14.786 | 0.0422 | 0.6244 | Sig. |

Through a table (11) note that mean of the Answers agreement with the hypothesis for paragraphs on time management skills in the management of the project is equal to (3.6244), the largest mean by Likert scale (0.6244) While the p-value equal to (0.000) which is less than the level of significance of 5% (t-calculated was (14.786) which is greater than the t-tabulated value (1.660)) Which means rejection of the null hypothesis and accept the alternative hypothesis which states that there is important for paragraphs on time management skills in the management of the project by the surveyed sample views and tested.

**B: Hypotheses of the effects:**

To test hypotheses of the effects, we must using factor analysis because the original questions are at least moderately correlated; the basic dimensionality of the system is less than *p*. The goal of factor analysis is to reduce the redundancy among the variables (questions) by using a smaller number of factors.

Suppose the pattern of the high and low correlations in the correlation matrix is such that the questions in a particular subset have high correlations among themselves but low correlations with all the other questions. Then there may be a single underlying factor that gave rise to the questions in the subset. If the other questions can be similarly grouped into subsets with a like pattern of correlations, then a few factors can represent these groups of questions. In this case the pattern in the correlation matrix corresponds directly to the factors.

**- First variable:**

The first step of the factor analysis is to measure the adequacy of the data, Kaiser-Meyer-Olkin (KMO), which measures the appropriateness of the data for the factor analysis. The greater the value of (KMO) than 50%, the more appropriate the data for factor analysis, and the (KMO) is the partial correlation between the questions to ensure that strong associations are between all or most of the questions and not only among a few. Bartlett's test of Sphericity will be used to test the strength of these correlations. The null hypothesis of this test is that there are no correlations between the questions. Therefore, the factor analysis requires that this hypothesis be rejected so that the data is suitable for this analysis. It summarized the results in the following table:

**Table (12):KMO and Bartlett's Test for First variable**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .510 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 734.282 |
| | Df | 190 |
| | Sig. | .000 |

The (KMO) measure should be greater than 0.50 and is inadequate if less than 0.50. The KMO test tells us whether or not enough questions are predicted by each factor. Here it is 0.51 so that is good. The Bartlett test should be significant (i.e., a significance value of less than .05); this means that the questions are correlated highly enough to provide a reasonable basis for factor analysis as in this case (p-value is less than .05, indicating that the correlation matrix is significantly different from an identity matrix).

- The result is statistical analysis through respondents' responses. The correlation between the study axes is strong. We can explain the correlation between the variables, Management of the time and effectiveness of the projects Construction of the research sample as in Table (12)

The Communalities table shows the Initial commonalities before rotation.

**Table (13): Communalities for First variable**

| Questions | Extraction |
|---|---|
| Q1 | .698 |
| Q2 | .586 |
| Q3 | .408 |
| Q4 | .493 |
| Q5 | .589 |
| Q6 | .580 |
| Q7 | .915 |
| Q8 | .792 |
| Q9 | .905 |
| Q10 | .819 |
| Q11 | .601 |
| Q12 | .935 |
| Q13 | .839 |
| Q14 | .929 |
| Q15 | .867 |
| Q16 | .581 |
| Q17 | .826 |
| Q18 | .690 |
| Q19 | .877 |
| Q20 | .657 |

Note that all the initial communalities are above .30, which is good.

The Total Variance Explained table shows how the variance is divided among the 20 possible factors.

**Table (14): Total Variance Explained for First variable**

| Comp-onent | Initial Eigenvalues | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.681 | 13.403 | 13.403 | 2.108 | 10.540 | 10.540 |
| 2 | 2.585 | 12.924 | 26.327 | 2.085 | 10.427 | 20.967 |
| 3 | 2.183 | 10.915 | 37.242 | 1.948 | 9.740 | 30.707 |
| 4 | 1.862 | 9.308 | 46.551 | 1.943 | 9.717 | 40.424 |
| 5 | 1.648 | 8.242 | 54.793 | 1.900 | 9.502 | 49.926 |
| 6 | 1.524 | 7.618 | 62.411 | 1.840 | 9.198 | 59.123 |
| 7 | 1.087 | 5.437 | 67.847 | 1.439 | 7.193 | 66.316 |
| 8 | 1.020 | 5.100 | 72.947 | 1.326 | 6.631 | 72.947 |
| 9 | .876 | 4.380 | 77.326 | | | |
| 10 | .820 | 4.100 | 81.426 | | | |
| 11 | .799 | 3.996 | 85.423 | | | |
| 12 | .738 | 3.690 | 89.112 | | | |
| 13 | .603 | 3.017 | 92.130 | | | |
| 14 | .426 | 2.130 | 94.260 | | | |
| 15 | .406 | 2.030 | 96.290 | | | |
| 16 | .265 | 1.326 | 97.616 | | | |
| 17 | .178 | .892 | 98.508 | | | |
| 18 | .152 | .760 | 99.268 | | | |
| 19 | .095 | .473 | 99.741 | | | |
| 20 | .052 | .259 | 100.000 | | | |

Note that eight factors have Eigen values (a measure of explained variance) greater than (1), which is a common criterion for a factor to be useful (Eigenvalues refer to the variance accounted for, in terms of the number of "questions worth" of variance each explains. So, first factor explains almost, Note that 10.540% of the variance is explained by the first component after rotation, (as much variance as in three questions), 10.427% of the variance is explained by the Second component, 9.740% of the variance is explained by the Third component, 9.717% of the variance is explained by the Fourth component, 9.502% of the variance is explained by the Fifth component, 9.198% of the variance is explained by the Sixth component, 7.193% of the variance is explained by the Seventh component and 6.631% of the variance is explained by the Eighth component. When the Eigen value is less than (1) the factor explains less information than a single question would have explained. The following figure illustrates this.

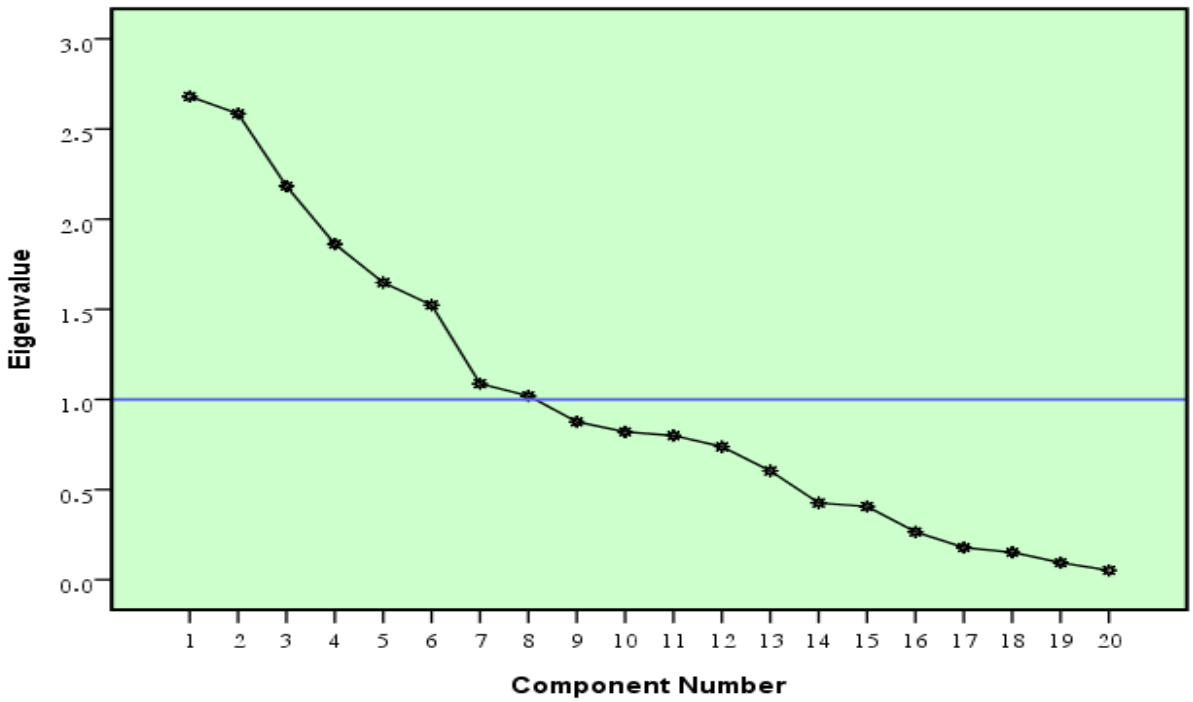


**Figure (5): Scree plot for first variable**

The Scree plot shows that after the first eight components, differences between the Eigen values decline (the curve flattens), and they are less than (1), Cumulative Percent of variance among questions accounted for by each factor before and after rotation 72.947% from the variance is accounted for by the first eight factors Questions asked.

Factors are rotated so that they are easier to interpret. Rotation makes it so that, as much as possible, different questions are explained or predicted by different underlying factors, and each factor explains more than one question. This is a condition called simple structure. Although this is the goal of rotation, in reality, this is not always achieved. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved. It summarized the results in the following table:

**Table (15): Rotated Component Matrix[a] for First variable**

| | Component | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Q15 | .910 | | | | | | | |
| Q13 | .885 | | | | | | | |
| Q6 | .456 | | | | | | | .391 |
| Q7 | | .934 | | | | | | |
| Q9 | | .920 | | | | | | |
| Q19 | | | .923 | | | | | |
| Q17 | | | .884 | | | | | |
| Q12 | | | | .964 | | | | |
| Q14 | | | | .951 | | | | |
| Q20 | | | | | .768 | | | |
| Q18 | | | | | .765 | | | |
| Q16 | .412 | | | | -.578- | | | |
| Q3 | | | | | -.429- | | | |
| Q10 | | | | | | .886 | | |
| Q8 | | | | | | .875 | | |
| Q2 | | | | | | | -.733- | |
| Q4 | | | | | | | .636 | |
| Q11 | | | | | | | | .687 |
| Q1 | | | | | | | .464 | .641 |
| Q5 | | .406 | | | | | | -.440- |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Note that the analysis has sorted the (20) questions, between Q1 to Q20 into (8) somewhat overlapping groups of questions. The questions are sorted so that the questions that have the highest loading (not considering whether the correlation is positive or negative) from factor-1 (three questions in this analysis) are listed first, and they are sorted from the one with the highest factor weight or loading (i.e., question-15, with a loading of 0.910) to the one with the lowest loading from that first factor (question-6 with a loading of 0.456), this factor also included question-13. And every question from every factor that has some loading, but we requested for loadings less than |.30| to be excluded from the output, so there are blanks where low loadings exist. (|.30| means the absolute value or value without considering the sign).

On the two questions that have their highest loading from factor-2 are listed from highest loading of question-7, to lowest as in question-9, factor-3 consist (question-19 and question-17), factor-4 consist (question-12 and question-14), factor-

5 consist (question-20, 18, 16 and question-3), Factor-6 consist on question-10 and question-8 , factor-7 consist in question-2 and question-4. Finally, the three questions on which factor-8 loads most verey highly are listed in order (question-11, 1 and question-5). Loadings resulting from an orthogonal rotation are correlation coefficients between each question , so they range from −1.0 through 0 to + 1.0.

Usually, the Values of the factor loadings lower than |.30| are considered low, which is why we suppressed loadings less than |.30|. On the other hand obverse, that the loadings of |.40| or greater are typically considered high.

The multiple regression model will be estimated between the independent variables (questions of the first variable) represented by (8) principle components as formed in the previous analysis and the dependent variable, which represents the general mean of the first variable and the following hypothesis test:

$H_0$ : There is no effect for time management on project effectiveness.

$H_1$ : There is effect for time management on project effectiveness.

- The hypothesis of nullity and acceptance is tested based on the analysis of the method of statistical analysis and the extraction of the value of (T) test with the extraction of the results of Coefficients of regression, using the sample model of some questions with some and then using the values in determining the reality of hypotheses (H1,H0)

- To test the significantly the hypothesis, an estimate for multiple linear regression and calculate the coefficient of determination and the results are summarized in the following table:

**Table (16): Effect the time management on project effectiveness**

| Model | | Coefficients of Regression | t | Sig. | F | R |
|---|---|---|---|---|---|---|
| | (Constant) | 3.496 | 389.165 | .000 | 154.588 | 0.939 |
| PC1 | Q15, Q13, Q6 | 0.186 | 20.618 | .000 | | |
| PC2 | Q7, Q9 | 0.139 | 15.344 | .000 | | |
| PC3 | Q19, Q17 | 0.138 | 15.264 | .000 | | |
| PC4 | Q12, Q14 | 0.086 | 9.555 | 0.000 | | |
| PC5 | Q20, Q18, Q16, Q3 | 0.028 | 3.141 | 0.002 | | |
| PC6 | Q10, Q8 | 0.114 | 12.568 | 0.000 | | |
| PC7 | Q2, Q4 | 0.045 | 5.027 | 0.000 | | |
| PC8 | Q11, Q1, Q5 | 0.069 | 7.668 | 0.000 | | |

a. Dependent Variable: First variable

Through a table (16) we note that the time management (coefficient of determination) explains 93.9% of the changes in project effectiveness and linear regression appropriate model for such data because F-value equal to (154. 588), It is the largest of tabulated value under the 5% significantly level and degrees of freedom (8 and 81) which is equal to (2.06). And all the parameters of the regression of the principle components are significant because the p-values less than the 5% significantly level, thus there is a significant effect of questions of the time management on project effectiveness.

- According to the results obtained from Table (16), we note that the sample of respondents with the opinion that there is a time management effect on the effectiveness of the project, as in the hypothesis of acceptance (H1), and this indicates the existence of this effect of time management as a key element in the effectiveness of project management construction, Other factors that were not used in the course of the research.

**- Second variable:**

KMO and Bartlett's Test for Second variable summarized the results in the following table:

**Table (17):KMO and Bartlett's Test for Second variable**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .534 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 46.443 |
| | Df | 10 |
| | Sig. | .000 |

The (KMO) measure should be greater than 0.50 and is inadequate if less than 0.50. The KMO test tells us whether or not enough questions are predicted by each factor. Here it is 0.534 so that is good. The Bartlett test should be significant (i.e., a significance value of less than .05); this means that the questions are correlated highly enough to provide a reasonable basis for factor analysis as in this case (p-value is less than .05, indicating that the correlation matrix is significantly different from an identity matrix).

The Communalities table shows the Initial commonalities before rotation.

**Table (18): Communalities for Second variable**

| Questions | Extraction |
|---|---|
| Q21 | 0.724 |
| Q22 | 0.381 |
| Q23 | 0.533 |
| Q24 | 0.556 |
| Q25 | 0.752 |

Note that all the initial communalities are above .30, which is good.

The Total Variance Explained table shows how the variance is divided among the 5 possible factors.

**able (19): Total Variance Explained for Second variable**

| Comp-onent | Initial Eigenvalues | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 1.702 | 34.037 | 34.037 | 1.701 | 34.013 | 34.013 |
| 2 | 1.244 | 24.871 | 58.908 | 1.245 | 24.896 | 58.908 |
| 3 | .835 | 16.694 | 75.602 | | | |
| 4 | .813 | 16.255 | 91.857 | | | |
| 5 | .407 | 8.143 | 100.000 | | | |

Extraction Method: Principal Component Analysis.

Note that two factors have Eigen values (a measure of explained variance) greater than (1), which is a common criterion for a factor to be useful (Eigenvalues refer to the variance accounted for, in terms of the number of "questions worth" of variance each explains. So, first factor explains almost, Note that 34.013% of the variance is explained by the first component after rotation, (as much variance as in two questions) and 24.896% of the variance is explained by the Second component. When the Eigen value is less than (1) the factor explains less information than a single question would have explained. The following figure illustrates this.

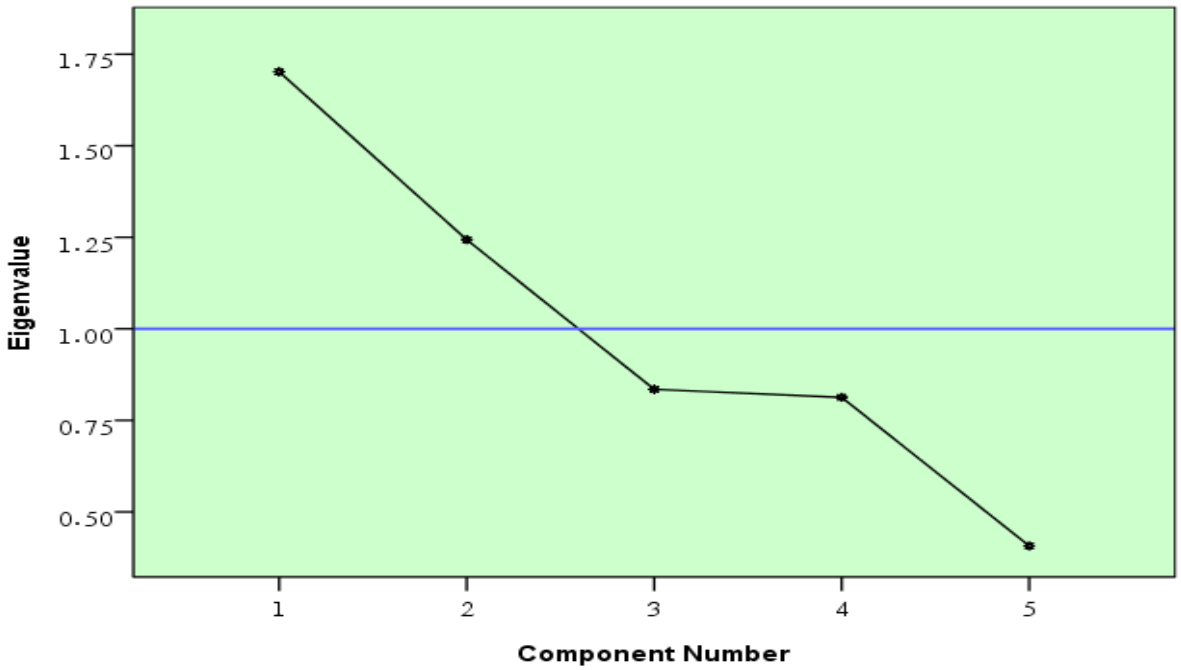


**Figure (6): Scree plot for second variable**

The Scree plot shows that after the first two components, differences between the Eigen values decline (the curve flattens), and they are less than (1). This again supports a two-component solution. Note that both the Scree plot and the Eigen values support the conclusion that these (5) questions can be reduced to two components. Note that the Scree plot flattens out after the two components.

Cumulative Percent of variance among questions accounted for by each factor before and after rotation 58.908% from the variance is accounted for by the first two factors.

To facilitate the interpretation of the worker by rotation. Rotation makes it so that, different questions are explained or predicted by different underlying factors, and each factor explains more than one question. This is a condition called simple structure. Although this is the goal of rotation, in reality, this is not always achieved. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved. It summarized the results in the following table:

**Table (20): Rotated Component Matrix[a] for Second variable**

| | Component | |
|---|---|---|
| | 1 | 2 |
| Q25 | .866 | |
| Q21 | .844 | |
| Q22 | .480 | .388 |
| Q24 | | .745 |
| Q23 | | .726 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Here, the first five response questions are sorted, with the aim of achieving the overlap between the questions 21 to 25 into tow somewhat overlapping groups of questions, and they are sorted from the one with the highest factor weight or loading In question-25, with a loading of 0.866 to the one with the lowest loading from that first factor (question-22 with a loading of 0.480), this factor also included question-21. Actually, every question has some loading from every factor. Next, the two questions that have their highest loading from factor-2 are listed from highest loading (question-24) to lowest (question-23).

And when analyzing the other, as in a "clean" factor analysis almost all of the loadings that are not selected that we have drawn on the Rotated Factor Matrix will be low (blank or less than |.30|). The fact that both factors-1 and 2 load highly on question-22 is common but undesirable.

The multiple regression model will be estimated between the independent variables (questions of the second variable) represented by two principle components as formed in the previous analysis and the dependent variable, which represents the general mean of the second variable and the following hypothesis test:

$H_0$ : There is no effect for the loss of time in the management of the project.

$H_1$ : There is effect for the loss of time in the management of the project.

To test the significantly the hypothesis, an estimate for multiple linear regression and calculate the coefficient of determination and the results are summarized in the following table:

**Table (21): Effect the loss of time in the management of the project**

| | Model | Coefficients of Regression | T | Sig. | F | R |
|---|---|---|---|---|---|---|
| | (Constant) | 3.482 | 890.55 | 0.000 | 11551.8 | 0.996 |
| PC1 | Q25, Q21, Q22 | 0.454 | 115.53 | 0.000 | | |
| PC2 | Q24, Q23 | 0.388 | 98.78 | 0.000 | | |

a. Dependent Variable: Second variable

Through a table (21) we note that the loss of time (coefficient of determination) explains 99.6% of the changes in the management of the project and linear regression appropriate model for such data because F-value equal to (11551.8), It is the largest of tabulated value under the 5% significantly level and degrees of freedom (2 and 87) which is equal to (3.11). And all the parameters of the regression of the principle components are significant because the p-values less than the 5% significantly level, thus there is a significant effect for the loss of time in the management of the project.

**- Third variable:**

KMO and Bartlett's Test for Third variable summarized the results in the following table:

**Table (22):KMO and Bartlett's Test for Third variable**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.514 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 187.076 |
| | Df | 45 |
| | Sig. | 0.000 |

The (KMO) measure should be greater than 0.50 and is inadequate if less than 0.50. The KMO test tells us whether or not enough questions are predicted by each factor. Here it is 0.514 so that is good. The Bartlett test should be significant as

in a significance value of less than .05; this means that the questions are correlated highly enough to provide a reasonable basis for factor analysis as in this case (p-value is less than .05, indicating that the correlation matrix is significantly different from an identity matrix).

The Initial Communalities shows before rotation, as in the table below

**Table (23): Communalities for Third variable**

| Questions | Extraction |
|---|---|
| Q26 | 0.582 |
| Q27 | 0.901 |
| Q28 | 0.472 |
| Q29 | 0.655 |
| Q30 | 0.490 |
| Q31 | 0.553 |
| Q32 | 0.628 |
| Q33 | 0.610 |
| Q34 | 0.854 |
| Q35 | 0.545 |

Our table widths are pointing to all the initial communalities are above The calculated value .30,This is a good explanation. Where The Total Variance Explained table shows how the variance is divided among the 10 possible factors.

**Table (24): Total Variance Explained for Third variable**

| Comp-onent | Initial Eigenvalues | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.189 | 21.893 | 21.893 | 2.155 | 21.554 | 21.554 |
| 2 | 1.512 | 15.121 | 37.014 | 1.512 | 15.119 | 36.673 |
| 3 | 1.337 | 13.366 | 50.381 | 1.327 | 13.265 | 49.938 |
| 4 | 1.250 | 12.502 | 62.883 | 1.294 | 12.945 | 62.883 |
| 5 | .890 | 8.896 | 71.779 | | | |
| 6 | .798 | 7.979 | 79.758 | | | |
| 7 | .671 | 6.714 | 86.473 | | | |
| 8 | .656 | 6.564 | 93.036 | | | |
| 9 | .588 | 5.881 | 98.917 | | | |
| 10 | .108 | 1.083 | 100.000 | | | |

And here it was that four factors have Eigen values greater than (1), which is a common criterion for a factor to be useful (Eigenvalues refer to the variance accounted for, in terms of the number of "questions worth" of variance each explains. So, first factor explains almost, Note that 21.554% of the variance is explained by the first component after rotation, (as much variance as in two questions) and 15.119% of the variance is explained by the Second component, 13.265%, and then explained by the Third component, 12.945%, and variance is explained by the Fourth component. When the Eigen value is less than (1) the factor explains less information than a single question would have explained. The following figure illustrates this.

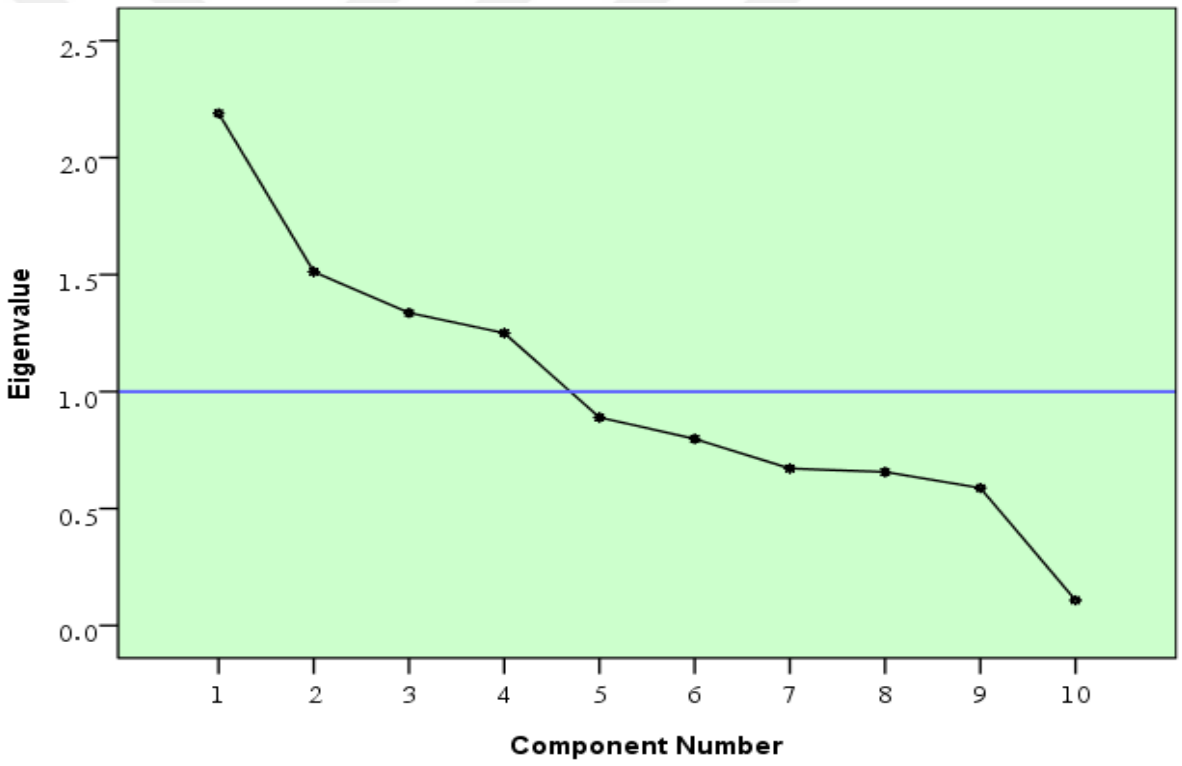


**Figure (7): Scree plot for Third variable**

The Scree plot shows that after the first four components, differences between the Eigen values decline (the curve flattens), and they are less than (1). This again supports a four-component Respondents' answers. This explains that both the

Scree plot and the Eigen values support the conclusion that these (10) questions can be reduced to four components of the four factors as in the questionnaire questions.

Cumulative Percent of variance among questions accounted for by each factor before and after rotation 62.883% from the variance is accounted for by the first four factors according to respondents' answers

In the following table are it summarized the results, and interpreted where that Factors are rotated so that they are easier to interpret, and as much as possible, different questions are explained or predicted by different underlying factors, and each factor explains more than one question. This is a condition called simple structure. Although this is the goal of rotation, in reality, this is not always achieved. One thing to look for in the Rotated Matrix of factor loadings is the extent to which simple structure is achieved:-

**Table (25): Rotated Component Matrix[a] for Third variable**

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Q27 | .946 | | | |
| Q34 | .923 | | | |
| Q33 | | .750 | | |
| Q31 | | .709 | | |
| Q32 | .326 | .614 | -.379- | |
| Q29 | | | .762 | |
| Q28 | .328 | | .589 | |
| Q26 | | | | .695 |
| Q30 | | | | -.632- |
| Q35 | | | -.385- | .581 |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Note that the analysis has sorted the (10) questions (Q26 to Q35) into (4) somewhat overlapping groups of questions. The questions are sorted so that the questions that have the highest loading (not considering whether the correlation is

positive or negative) from factor-1 (two questions in this analysis) are listed first, and they are sorted answers to questions from the one with the highest factor weight or loading as in question-27, with a loading of 0.946, to the one with the lowest loading from that first factor as in question-34 with a loading of 0.923.

Next, the three questions that have their highest loading from factor-2 are listed from highest loading of question-33 to lowest of the question-31, this factor also included question-32, factor-3 consist on question-29 and question-28, factor-4 consist of question-26, question-30 and question-35 according to respondents,

And here It is explained for the every question, it has a weight or loading from every factor, but in a "clean" factor analysis almost all of the loadings that are not selected that we have drawn on the Rotated Factor Matrix will be low (blank or less than |.30|). The fact that both factors-1 and 3 load highly on question-32 and question-28 (also factors-3 and 4 load highly on question-35) are common but undesirable, Therefore, it is tested only one factor to predict each question.

The multiple regression model will be estimated between the independent variables (questions of the third variable) represented by four principle components as formed in the previous analysis and the dependent variable, which represents the general mean of the third variable and the following hypothesis test:

$H_0$ :There is no the effective use of the methods of time management by project management.

$H_1$ : There is the effective use of the methods of time management by project management.

- Here is the validity of the null hypothesis, which states that "there is no effective use of time management methods by project management." According to the respondents, the highest answer rate for question 27 was that the legitimate administration does not attempt to provide an environment that ensures independent work without wasting time, The Project Management Construction does not take into account the causes of waste time in the project.

In the analysis of the sample of the respondents, as in question 32, it states that the project management does not constitute committees with technical expertise and high efficiency to prevent loss of time, but only depends on some supervisors of the work team in the project and thus does not contribute to prevent the loss of time available to complete the construction project as in the table (25)

To test the significantly the hypothesis, an estimate for multiple linear regression and calculate the coefficient of determination and the results are summarized in the following table:

**Table (26): The effective use of the methods of time management by project management**

| | Model | Coefficients of Regression | t | Sig. | F | R |
|---|---|---|---|---|---|---|
| | (Constant) | 3.429 | 175.26 | 0.000 | 97.65 | 0.821 |
| PC1 | Q27, Q34 | 0.207 | 10.509 | 0.000 | | |
| PC2 | Q33, Q31, Q32 | 0.288 | 14.633 | 0.000 | | |
| PC3 | Q29, Q28 | 0.132 | 6.725 | 0.000 | | |
| PC4 | Q26, Q30, Q35 | 0.090 | 4.561 | 0.000 | | |

a. Dependent Variable: Third variable

Through a table (26) we note that the effective use of the methods of time management (coefficient of determination) explains 82.1% of the changes in the project management, and linear regression appropriate model for such data because F-value equal to (97.65), It is the largest of tabulated value under the 5% significantly level and degrees of freedom (4 and 85) which is equal to (2.49). And all the parameters of the regression of the principle components are significant because the p-values less than the 5% significantly level, thus there is a significant for the effective use of the methods of time management by project management.

- Here, the statistical analysis of the respondents on the listed questions explains, as in Table (26), that the project management construction is concerned with using the project time efficiently and effectively. This is explained in question

33, which states that the project management has achieved the objectives set in advance according to its programs the following tool takes into account the administration in using the best time available for the construction project

**- Fourth variable:**

KMO and Bartlett's Test for Fourth variable summarized the results in the following table:

**Table (27):KMO and Bartlett's Test for Fourth variable**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.502 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 126.121 |
| | Df | 45 |
| | Sig. | 0.000 |

We note in the above table that the value extracted here is 0.502. This is good compared to the KMO scale, which is greater than 0.50 and is not appropriate if it is less than 0.50, and we conclude whether all the questions are sufficient or not, The Bartlett test is important for the results of the graph analysis (ie a value of significance less than 0.05); this means that the questionnaires established for the research are sufficiently high enough to provide a reasonable basis for factor analysis as shown in (p) value less than 0.05, indicating that Link matrix differ significantly from the identity matrix).

- As explained in Table (27), the questionnaire is placed in a manner that can be applied to the responses of the sample of the researcher in determining the effect of the independent variable on time management on the dependent variable, the effectiveness of the project management. The questions were clear and in which the collective effect of the variables

The Communalities table shows the Initial commonalities before rotation.

**Table (28): Communalities for Forth variable**

| Questions | Extraction |
|---|---|
| Q36 | 0.816 |
| Q37 | 0.787 |
| Q38 | 0.730 |
| Q39 | 0.714 |
| Q40 | 0.639 |
| Q41 | 0.766 |
| Q42 | 0.721 |
| Q43 | 0.454 |
| Q44 | 0.700 |
| Q45 | 0.778 |

Note that Table (28) shows us that all the initial communalities are above .30, which is good, This explains that the Variance Explained table shows how the variance is divided among the 10 possible factors for the questionnaire.

**Table (29): Total Variance Explained for Forth variable**

| Comp-onent | Initial Eigenvalues | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 1.978 | 19.782 | 19.782 | 1.747 | 17.465 | 17.465 |
| 2 | 1.578 | 15.776 | 35.558 | 1.730 | 17.298 | 34.763 |
| 3 | 1.444 | 14.443 | 50.001 | 1.224 | 12.237 | 47.000 |
| 4 | 1.055 | 10.551 | 60.552 | 1.215 | 12.152 | 59.152 |
| 5 | 1.049 | 10.485 | 71.037 | 1.189 | 11.886 | 71.037 |
| 6 | .863 | 8.629 | 79.666 | | | |
| 7 | .766 | 7.656 | 87.322 | | | |
| 8 | .563 | 5.631 | 92.953 | | | |
| 9 | .400 | 3.997 | 96.950 | | | |
| 10 | .305 | 3.050 | 100.000 | | | |

Note that five factors have Eigen values (a measure of explained variance) greater than (1), which is a common criterion for a factor to be useful (Eigenvalues refer to the variance accounted for, in terms of the number of “questions worth” of variance each explains. So, first factor explains almost, Note that 17.465% of the variance is explained by the first component after rotation, (as much variance as in

two questions) and 17.298% of the variance is explained by the Second component, 12.237% of the variance is explained by the Third component, 12.152% of the variance is explained by the Fourth component and 11.886% of the variance is explained by the fifth component. When the Eigen value is less than (1) the factor explains less information than a single question would have explained. The following figure illustrates this.

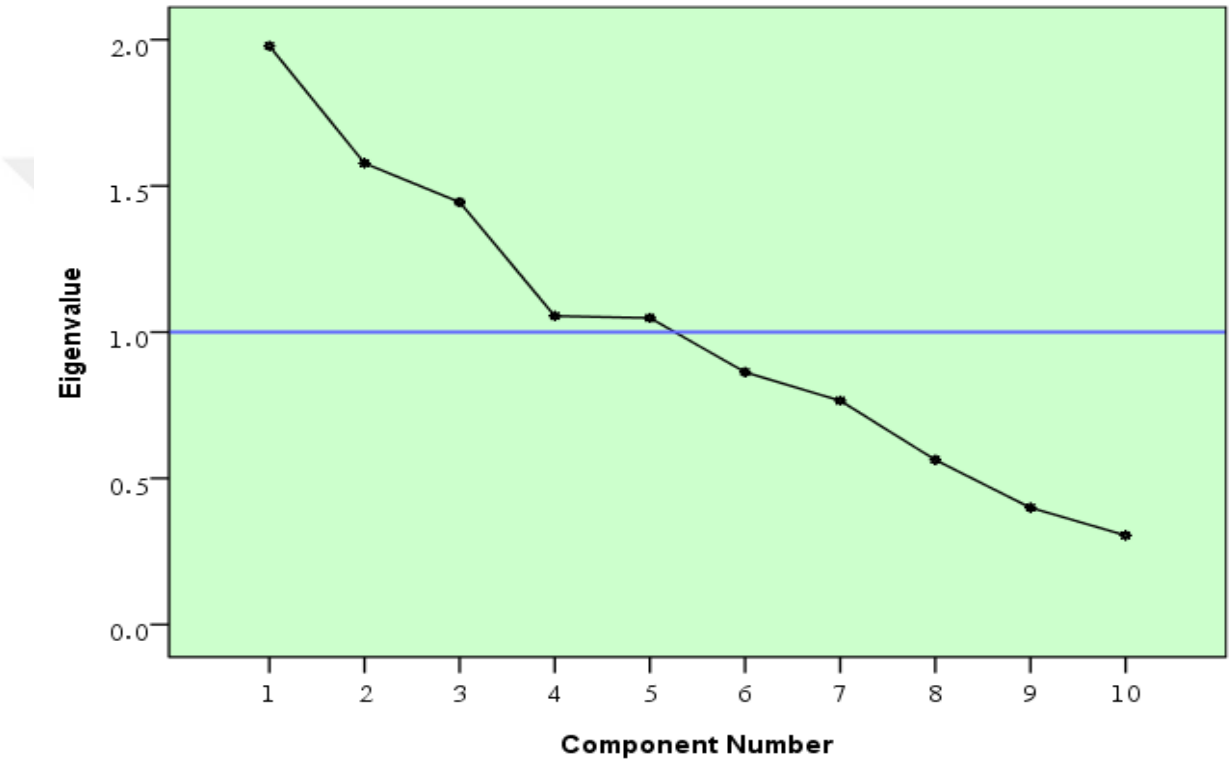


**Figure (8): Scree plot for Fourth variable**

The Figure (8) shows that after the first five components, differences between the Eigen values decline (the curve flattens), and they are less than (1). This still supports a five-component solution. Note that both the Scree plot and the Eigen values support the conclusion that these (10) questions can be reduced to five components. Note that the diagram are flattens out after the five components.

Cumulative Percent of variance among questions accounted for by each factor before and after rotation 71.037% from the variance is accounted for by the first five factors.

The first five factors are calculated by the cumulative rate of variance between the questions dealt with by each factor before and after rotation 71,037 in the percentage of variance

and Factors are rotated so that they are easier said than done to interpret. Rotation makes it so that, as much as possible, different questions are interpret or predicted by different underlying factors, and each factor explains more than one question. This is a condition called simple structure. Accordingly this is the goal of rotation, in reality, this is not always achieved. Here are searched on one thing in the Rotated Matrix of factor loadings is the range, to which simple structure is achieved. It summarized the results in the table (29):

**Table (30): Rotated Component Matrix[a] for Fourth variable**

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Q36 | .863 | | | | |
| Q45 | .860 | | | | |
| Q41 | | .850 | | | |
| Q39 | | .840 | | | |
| Q38 | | | .799 | | |
| Q40 | -.320- | | .529 | | .395 |
| Q44 | | -.398- | -.513- | -.487- | |
| Q42 | | | | .829 | |
| Q37 | | | | | .834 |
| Q43 | | | | .301 | .528 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Note that the analysis that has been through the secretion of ten questions among (question 36 to 45) into (5) somewhat overlapping groups ،Where it was The questions are highest loading (not considering whether the correlation is positive or negative) from factor-1 (two questions 36and45) are listed first, and they are sorted from the one with the highest factor weight or loading As it was question-36, with a loading of 0.863, to the one with the lowest loading from that first factor (question-45 with a loading of 0.860).

In next, of the two questions that have their highest loading from factor-2 are listed from highest loading (question-41) to lowest rate (question-39), factor-3

consist (question-38, question-40 and question-44), and the factor-4 consist (question-42), then the factor-5 consist (question-37 and question-43).

All question has a weight or loading rate from every factor, but in a "clean" factor analysis almost all of the loadings that are not selected that we have drawn on the Rotated Factor Matrix will be low (blank or less than |.30|). The fact that both factors-1.3 and 5 load highly on question-40 (also factors-2, 3, and 4 load highly on question-44 and factor-4,and 5 on question-43) are common but undesirable, in that one of them wants only one factor to predict of each question.

The multiple regression model will be estimated between the independent variables (questions of the fourth variable) represented by five principle components as formed in the previous analysis and the dependent variable, which represents the general mean of the fourth variable and the following hypothesis test:

$H_0$ :There is no effect for time management skills in the management of the project.

$H_1$ : There is effect for time management skills in the management of the project.

To test the significantly the hypothesis, an estimate for multiple linear regressions and calculate the coefficient of determination and the results are summarized in the table (30):

**Table (31): Effect of time management skills in project management.**

| | Model | Coefficients of Regression | t | Sig. | F | R |
|---|---|---|---|---|---|---|
| | (Constant) | 3.624 | 206.851 | 0.000 | 86.604 | 0.838 |
| PC1 | Q36, Q45 | 0.234 | 13.261 | 0.000 | | |
| PC2 | Q41, Q39 | 0.108 | 6.151 | 0.000 | | |
| PC3 | Q38, Q40, Q44 | 0.076 | 4.328 | 0.000 | | |
| PC4 | Q42 | 0.047 | 2.671 | 0.000 | | |
| PC5 | Q37, Q43 | 0.245 | 13.909 | 0.000 | | |

a. Dependent Variable: Fourth variable

Through a table (31) we note that the time management skills (coefficient of determination) explains 83.8% of the changes in the management of the project, and

linear regression appropriate model for such data because F-value equal to (86.604), It is the largest of tabulated value under the 5% significantly level and degrees of freedom (5 and 84) which is equal to (2.33). And all the parameters of the regression of the principle components are significant because the p-values less than the 5% significantly level, thus there is effect for time management skills in the management of the project.

- In Table (31), we found that the respondents' answers explained the degree of influence of time management skills in project management. This means that the administration possesses the skills of the time tool through some of the procedures, including the belief of the legitimate management that time is an important resource and must be invested to achieve the objectives in question 36 ), And the effective management of the project to prevent the occurrence of common objections and boycotts during work time such as personal visits, calls and other questions in question 37, and the legitimate management belief that official working hours are sufficient to accomplish all that I am expected to accomplish during the Q38 work time, They do much to know how time management Q39 is, and the project management's interest in implementing commitments in its time limit Q40, and the project management should work to avoid the work pressure which is reflected in pressure in time Q41, and the legitimate management should maintain a list of tasks to be implemented in time. The project management is required to terminate the meetings on time without delay. Q43. It is necessary for the project administration to allocate specific amounts for the mail to answer quickly for not accumulating Q44. Finally, the management believes that the need to prepare a daily work list and order according to their importance and implementation of the most important as soon as possible.

C: **Hypothesis of correlation:**

To test hypothesis of correlation for four variables, we have:

**- First variable**

$H_0$**:** There is no correlation between time management and project effectiveness

$H_1$**:** There is correlation between time management and project effectiveness

It was estimated multiple correlation between all of questions (8-principle components) and the general mean for first variable, then estimate simple correlation between subset of questions (Questions of (8) principle components) and the general mean for first variable by using a non parametric correlation coefficient (because the data do not have a normal distribution) Specifically Spearman correlation coefficient and tested under the 5% significance level and summarized the results in the following table:

**Table (32): Correlation of Spearman for First variable**

| Y | Questions | Correlation | Sig. | Result | Ranking |
|---|---|---|---|---|---|
| All PC | Q1-Q20 | 0.969** | 0.000 | Sig. | |
| PC1 | Q15, Q13, Q6 | 0.568** | 0.000 | Sig. | 1 |
| PC2 | Q7, Q9 | 0.423** | 0.000 | Sig. | 2 |
| PC3 | Q19, Q17 | 0.421** | 0.000 | Sig. | 3 |
| PC4 | Q12, Q14 | 0.263* | 0.012 | Sig. | 5 |
| PC5 | Q20, Q18, Q16, Q3 | 0.087 | 0.417 | Non-Sig. | 8 |
| PC6 | Q10, Q8 | 0.346** | 0.001 | Sig. | 4 |
| PC7 | Q2, Q4 | 0.138 | 0.193 | Non-Sig. | 7 |
| PC8 | Q11, Q1, Q5 | 0.211* | 0.046 | Sig. | 6 |

From the table (32) we note that there is a multiple correlation extrusive (positive) is very significant between all of questions (8-principle components) and the general mean for first variable was 96.9% and there is a significant simple correlation between each subset of questions (except PC5 and PC7) and project effectiveness because p-values are less than a 5% level of significance which means rejection of the null hypothesis and accept the alternative hypothesis, which states that There is significant correlation between time management and project effectiveness, And that the most powerful was 56.8%, a share of set (Q15, Q13, Q6), followed by the set (Q7, Q9) correlation strength 42.3%.

- As the relationship between time management and project effectiveness, this explains that the time available for the construction project is the relationship from which the effectiveness of the engineering project is determined in addition to other factors of raw materials, engineering design and other related factors that have not been addressed in this research

It therefore determines acceptance of the hypothesis "$H_1$**:** There is correlation between time management and project effectiveness"**.**

**- Second variable**

$H_0$**:** There is no Correlation between the losses of time and the management of the project.

$H_1$**:** There is Correlation between the losses of time and the management of the project.

It was estimated multiple correlation between all of questions (2-principle components) and the general mean for Second variable, then estimate simple correlation between subset of questions (Questions of (2) principle components) and the general mean by using a non parametric correlation coefficient (because the data do not have a normal distribution) Specifically Spearman correlation coefficient and tested under the 5% significance level and summarized the results in the following table:

**Table (33): Correlation of Spearman for Second variable**

| Y | Questions | Correlation | Sig. | Result | Ranking |
|---|---|---|---|---|---|
| All PC | Q21-Q25 | 0.998** | 0.000 | Sig. | |
| PC1 | Q25, Q21, Q22 | 0.783** | 0.000 | Sig. | 1 |
| PC2 | Q24, Q23 | 0.602** | 0.000 | Sig. | 2 |

From the table (33) we note that there is a multiple correlation extrusive (positive) is very significant between all of questions (8-principle components) and the general mean for second variable was 99.8% and there is a significant simple correlation between each subset of questions and the management of the project because p-values are less than a 5% level of significance which means rejection of the null hypothesis and accept the alternative hypothesis, which states that there is Correlation between the losses of time and the management of the project, And that the most powerful was 78.3%, a share of set (Q25, Q21, Q22), followed by the set (Q24, Q23) correlation strength 60.2%.

➢ As the relationship between time management and the loss of time and effectiveness of the project, this explains that the loss of time available for the construction project is a significant link between them and the project management construction, as the project management seeks to avoid the loss of time available in the project and this is confirmed by the answers to questions Which is that one of the most important reasons for wasting time is trying to do more than one job at the same time, which is reflected in the priorities of the comprehensive work Q21, and there is a lack of clarity of powers and responsibilities, which adversely affected the project time Q22. The staff are untrained and inefficient work Q23, and suffer engineering projects departments not to give priority to their work, leading to inefficient time management Q24. Lack of project management ability to solve problems related to work in a timely fashion, leading to non-use of time Q25

A hypothesis has already been identified $H_1$ "There is Correlation between the losses of time and the management of the project:

**- Third variable**

$H_0$: There is no Correlation between the effective uses of the methods of time management and project management.

$H_1$: There is Correlation between the effective uses of the methods of time management and project management.

It was estimated multiple correlation between all of questions (4-principle components) and the general mean for Third variable, then estimate simple correlation between subset of questions (Questions of (4) principle components) and the general mean by using a parametric correlation coefficient (because the data do have a normal distribution) Specifically Pearson correlation coefficient and tested under the 5% significance level and summarized the results in the following table:

**Table (34): Correlation of Pearson for Third variable**

| Y | Questions | Correlation | Sig. | Result | Ranking |
|---|---|---|---|---|---|
| All PC | Q26-Q35 | 0.906** | 0.000 | Sig. | |
| PC1 | Q27, Q34 | 0.482** | 0.000 | Sig. | 2 |
| PC2 | Q33, Q31, Q32 | 0.671** | 0.000 | Sig. | 1 |
| PC3 | Q29, Q28 | 0.308** | 0.003 | Sig. | 3 |
| PC4 | Q26, Q30, Q35 | 0.209* | 0.048 | Non-Sig. | 4 |

From the table (34) we note that there is a multiple correlation extrusive (positive) is very significant between all of questions (4-principle components) and the general mean for third variable was 90.6% and there is a significant simple correlation between each subset of questions and the project m

Ianagement because p-values are less than a 5% level of significance which means rejection of the null hypothesis and accept the alternative hypothesis, which states that there is Correlation between the effective uses of the methods of time management and project management, And that the most powerful was 67.1%, a share of set (Q33, Q31, Q32), followed by the set (Q27, Q34) correlation strength 48.2%.

**- Fourth variable**

$H_0$ **:** There is no statistically significant relationship between time management skills and engineering project management.

$H_1$: There is a statistically significant relationship between time management skills and engineering project management.

It was estimated multiple correlation between all of questions (5-principle components) and the general mean for Fourth, then estimate simple correlation between subset of questions (Questions of (5) principle components) and the general mean by using a parametric correlation coefficient (because the data do have a normal distribution) Specifically Pearson correlation coefficient and tested under the 5% significance level and summarized the results in the following table:

**Table (35): Correlation of Pearson for Forth variable**

| Y | Questions | Correlation | Sig. | Result | Ranking |
|---|---|---|---|---|---|
| All PC | Q36-Q45 | 0.915** | 0.000 | Sig. | |
| PC1 | Q36, Q45 | 0.583** | 0.000 | Sig. | 2 |
| PC2 | Q41, Q39 | 0.271** | 0.010 | Sig. | 3 |
| PC3 | Q38, Q40, Q44 | 0.190 | 0.072 | Non-Sig. | 4 |
| PC4 | Q42 | 0.117 | 0.270 | Non-Sig. | 5 |
| PC5 | Q37, Q43 | 0.612** | 0.000 | Sig. | 1 |

From the table (35) we note that there is a multiple correlation extrusive (positive) is very significant between all of questions (5-principle components) and the general mean for third variable was 91.5% and there is a significant simple correlation between each subset of questions and the management of the project because p-values are less than a 5% level of significance which means rejection of the null hypothesis and accept the alternative hypothesis, which states that there is correlation between time management skills and the management of the project, And that the most powerful was 61.2%, a share of set (Q37, Q43), followed by the set (Q36, Q45) correlation strength 58.3%.

- This indicates the realization of the acceptance hypothesis which states (35), there is a statistically significant relationship between time management skills and engineering project management, with the considerations that the time management skill has a relationship and a strong correlation to the effectiveness of time management.

# CHAPTER FIVE
# CONCLUTION AND RECCOMENDATION

## 5.1. CONCLUTION

Time management in engineering projects is the ability to use the available time and to accomplish tasks. When we invest time successfully, the explanation of the management's ability to make the most of every the time the day. This means that every hour of our planned day is used according to the register prepared by the administration to properly accomplish all the tasks we need in the most efficient way. That Increased attention by management to the time fruition more achievement, then knowing the time of delegation and critical rationalistic are essential. There is no shortcut to be effective as well as time management. Precise planning will enable us to minify the number of crises in the project life so that we get the energy and time to react the crisis thither is caused by wasting time..

The aims of this study are at determining the relationship between time management with engineering projects accomplishment in the Erbil. This study comes up with the following:-

1- The results of the study obtained based on the results of the statistical analysis of the effectiveness of time management in the management of engineering projects, it is necessary to grant powers to employees with organizational skills for time management, and using the best time available for project engineering.

2- The study found that among the elements of the effectiveness of time management in engineering projects, the setting the goals is the best indicator of adaptation strategies in the free time in the business organization

3- Planning, regulation, direction and time control in engineering projects are necessary. Engineering projects should consider planning the time available to implement engineering projects, through a table (2) we note that all the answers to the questionnaire questions ranged from the number one (Strongly Disagree) and number five (Strongly Agree), the (10) question has a higher average agreement reached (3.7222) and level (Agree), followed by the (8) question with an average

agreement reached (3.6778) and level (agree), while the first question is in ranked last with an average agreement of (3.3556) and level (Neutral).

4- Time management effectively contributes to the effectiveness of time management, where we note that the time management (coefficient of determination) explains 93.9% of the changes in project effectiveness and linear regression appropriate model for such data because F-value equal to (154. 588), It is the largest of tabulated value under the 5% significantly level and degrees of freedom (8 and 81) which is equal to (2.06). And all the parameters of the regression of the principle components are significant because the p-values less than the 5% significantly level, as in Table (15)

5- The loss of time affects legitimate management negatively, where Through a table (20) we note that the loss of time (coefficient of determination) explains 99.6% of the changes in the management of the project and linear regression appropriate model for such data because F-value equal to (11551.8), It is the largest of tabulated value under the 5% significantly level and degrees of freedom (2 and 87) which is equal to (3.11). And all the parameters of the regression of the principle components are significant because the p-values less than the 5% significantly.

6- Time management skills are important elements of time management and have a positive effect on the management of engineering projects. As we see in an analysis as shown in Table 29, the project management asserts that time is an important resource and must be invested to achieve the goals.

7- The project management must work to avoid the pressures of work, which is reflected in the pressures at time management , where the component of work pressure of the negative elements in the time management and effective as we observe in the analysis table (27 )

8- The administration's interest in engineering projects by delegating some less important work to subordinates contributes to increasing the effectiveness of time management. This is what we observe in the analysis of the answers in Table (4)

9- The exclusion of project management steps and procedures not necessary for the implementation of the work, an important element in time management , which

contributes to the effectiveness of engineering project management, Where analysis shows the answers as in the table (4)

10- The achievement of a lot of work in engineering projects explains the perception of these people with a knowledge of how time management. This is explained in the analytical table (5).

11- The administration believes that the official working hours are sufficient to accomplish all that I am expected to accomplish during the working time. hat that time management and efficient manner during the official working hours contribute to the effectiveness of these projects. This explains in the analytical table (5).

12-The allocation of time is limited to the mail to respond quickly to the lack of accumulation and the preparation of a daily work list and order according to their importance and the implementation of the most important as soon as possible, one of the essentials of time management in the effectiveness of the management of engineering projects, This explains in the analytical table (27).

## 5.2. RECCOMENDATION

Based on the theoretical study, the results of the field study and the questionnaire statistical analysis, we can come up with a number of recommendations:

1. Engineering projects, and in general must pay attention to time management by: -

A - Prepare a good time management plan to increase the effectiveness of the project.

B - Organizing time, this contributes to increase the effectiveness of the project.

C - To clarify the tasks required to implement them in time management, which contribute to the best use and achieve the shortest and best results in engineering projects

D - Monitoring the time available for the completion of the project, thereby contributing to its effectiveness;

2- The engineering projects should search for the causes of the loss of time by means of clarity of powers, powers and responsibilities, which negatively affected the time of the project.

3- Intensify conferences, seminars and meetings, especially international ones, to increase senior management to the importance of time management in engineering projects, and benefit from the experiences of some other countries in the region,

4-The senior management of engineering projects advises employee collaboration by clarifying the organization's tasks and objectives and paying attention to the fact that each outlet must have an executive position by showing the tasks and competencies to be able to provide the floor for the right choice for time management and efficiency.

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## APPENDIXES: QUESTIONNAIRE

| NO | Statement | Strongly Agree | Agree | Uncertain | Disagree | Strongly disagree |
|---|---|---|---|---|---|---|
| | **Time management planning** | | | | | |
| 1 | Daily planning increases the focus of engineering project personnel and thus increases productivity. | | | | | |
| 2 | Determining the priorities of the tasks to be implemented from the most important stages of planning time in engineering projects | | | | | |
| 3 | The extra time planning to prepare the task schedule contributes to the good planning of the time for tasks to be accomplished in engineering projects | | | | | |
| 4 | The time planning prepared by project management is flexible and appropriate to the organization's ability to complete the plan | | | | | |
| 5 | Customization of specific time to work time planning helps to manage time management in engineering projects | | | | | |
| | **Organization for time management** | | | | | |
| 6 | The organization of time between the needs of the process in time management in engineering projects and other needs | | | | | |

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|---|---|---|---|---|---|---|
| 7 | Time is organized according to the importance of the daily agenda in engineering projects | | | | | |
| 8 | The task division works to organize time better, resulting in efficient time management in engineering projects | | | | | |
| 9 | Working on reducing the time devoted to what is urgent allows more time to deal with tasks of high importance in engineering projects | | | | | |
| 10 | Marking or closing dates for tasks in the business table is one important way to organize time in engineering projects | | | | | |
| | **Guidance for Time Management** | | | | | |
| 11 | The distinction between the decisions to postponement and non-postponement in engineering projects | | | | | |
| 12 | The clarification of the tasks required to implement them in guiding time contributes to using the best and achieving the shortest ways and best results in engineering projects | | | | | |
| 13 | Minimizing side-work in engineering projects In time, you bend the right goals better | | | | | |

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|---|---|---|---|---|---|---|
| 14 | The weakness of coordination and organization in the work in engineering projects between engineering departments was a direct cause of time loss | | | | | |
| 15 | Self-direction of engineering project workers leads to better results in time management within the organization. | | | | | |
| | **Control over time management** | | | | | |
| 16 | The task of time control is to compare the actual performance with the planned performance of the engineering projects | | | | | |
| 17 | Time control aims at correcting deviations rather than imposing punishment | | | | | |
| 18 | Increasing the presence of the incentive system in the control of the effectiveness of the performance of workers and to apply the stages of time management better in engineering projects | | | | | |
| 19 | Working control capable time to improve the performance of employees in engineering projects | | | | | |
| 20 | Must be monitored by workers in the engineering projects self-censorship. | | | | | |

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|---|---|---|---|---|---|---|
| | **Paragraphs for the loss of time in the management of the project** | | | | | |
| 21 | That one of the most important reasons for wasting time is their attempt to do more than one job at the same time, reflected in the cross-cutting priorities of action. | | | | | |
| 22 | The lack of clarity of powers and powers and responsibilities, which reflected negatively on the project time. | | | | | |
| 23 | Department time is wasting engineering projects because their employees and staff are untrained and inefficient at work. | | | | | |
| 24 | Engineering project departments suffer from lack of prioritization of their work, which leads to inefficient time management. | | | | | |
| 25 | The inability of project management to solve problems related to work in a timely manner, leading to the lack of time use efficiently | | | | | |
| | **The effective use of the methods of time management by project management** | | | | | |
| 26 | The administration is interested in delegating some less important work to subordinates. | | | | | |
| 27 | The project's management tries to provide an environment that ensures work independently without wasting time. | | | | | |

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|---|---|---|---|---|---|---|
| 28 | The project management works to develop the skills of the workers through training to invest time. | | | | | |
| 29 | The project management determines the priorities of the tasks to be achieved according to the degree of their importance in the project | | | | | |
| 30 | The project management uses the notepad and agenda to record important appointments. | | | | | |
| 31 | Project management excludes unnecessary steps and actions to implement the work. | | | | | |
| 32 | The project administration grants incentives to the time-bound employee. | | | | | |
| 33 | The project management will accomplish what has been achieved from the goals set in advance according to its current programs. | | | | | |
| 34 | The project management is composed of committees with expertise and high efficiency to prevent time loss. | | | | | |
| 35 | The project management determines the objectives to be achieved with accuracy and clarity. | | | | | |

| | Paragraphs on time management skills in the management of the project | | | | | |
|---|---|---|---|---|---|---|
| 36 | The administration believes that time is an important resource and must be invested to achieve the goals. | | | | | |
| 37 | The project administration will make an effective effort to prevent the occurrence of common objections and boycotts during work time such as personal visits, calls, etc. | | | | | |
| 38 | The project management believes that the official working hours are sufficient to accomplish all that I am expected to accomplish during the working time. | | | | | |
| 39 | The project management believes that people who do a lot know how to manage time. | | | | | |
| 40 | The project administration is concerned with the implementation of commitments in a timely manner | | | | | |
| 41 | The project management must work to avoid the pressures of work, which is reflected in pressure in time | | | | | |
| 42 | The project management maintains a list of implementation tasks that are required to be implemented in a timely manner. | | | | | |

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| 43 | The project administration will terminate the meetings on time without any delay. | | | | | |
| 44 | It is necessary for the project administration to allocate specific times for the mail to answer it quickly for not accumulating. | | | | | |
| 45 | The Department believes that a daily working list should be prepared, arranged according to its importance and implemented as soon as possible. | | | | | |
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## APPENDIXE: CURRICULUM VITAE

| Personal Information | | | |
|---|---|---|---|
| Name & Surname | Zandi Jabbar Azeez | | |
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| Degree | Field | University | Year |
| Undergraduate | Engineering | Salahaddin University-Erbil | 2003 |
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| Work Experience | | | |
| Work Place | Position | Year | |
| Erbil | | | |