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ISTANBUL GEDİK UNIVERSITY
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TIME AND QUALITY IN CONSTRUCTION PROJECT IN IRAQ

MASTER'S THESIS

Wisam Mawlood Khudhair AL-AZZAWI

Engineering Management Master in English Program

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Thesis Advisor: Assist. Prof. Dr. Redvan GHASEMLOUNIA

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Not: Öğrencinin Tez savunmasında **Başarılı** olması halinde bu form **imzalanacaktır**. Aksi halde geçersizdir.

DEDICTION

To my father, brothers, sisters, and friends, and their support

To all my teachers throughout my study journey who effectively contributed to lighten my way.

To the people who gave me the glass of doubt to start seeking the truth.

All the mentioned come after the most generous person in my life, my mother.

FOREWORD

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April 2021 Wisam Mawlood Khudhair Al-AZZAWI

TABLE OF CONTENTS

Page

ABBREVIATION

APM	: The Association to Project Management
BIM	: Building Information Modeling
CIOB	: The Chartered Institute of Building
EU	: European Union
GDP	: The Gross Domestic Product
ID	: The identification
ISO	: The International Organization for Standardization
IT	: Information Technology
KPIs	: Key Performance Indicators
MTRCL	: MTR Corporation Limited
PMBOK Guide	: The Project Management Body of Knowledge Guide
PMI	: The Project Management Institute
QMS	: Quality Management System
QMSs	: Different Quality Management System
UK	: The United Kingdom
US	: United States
USA	: United States of America

LIST OF TABLES

Page

LIST OF FIGURES

Page

TIME AND QUALITY IN CONSTRUCTION PROJECT IN IRAQ

ABSTRACT

This research came aiming to focus attention on a declaration of the magnitude of the effect of lack of planning on the delayed completion of construction projects in Iraq at present; through which the factors leading to poor planning in managing time and quality in projects will be customary by conducting a questionnaire on a sample of engineers working in the Iraqi construction sector.

The research sample included a group of engineers working in public and private sectors in all specializations.

Where the research sample included 155 engineers of various specializations and took their opinions on the questions asked, and through statistical analysis of the data of this study, it led to the most important results:

1. The delay in completing engineering projects is due to the lack of a clear understanding of the concept of administrative and engineering planning for contracting companies.
2. The delay in completing engineering projects is due to insufficient awareness of the importance of time planning.
3. The lack of attention of the implementing companies and the supervisory authorities to the importance of the quality component.

Keywords: *Construction management, Time management, Quality management*

IRAK'TA YAPILAN İNŞAAT PROJELERİNDE ZAMAN VE KALİTE YÖNETİMİ

ÖZET

İş çalışma, zayıf planlamanın şu anda yapılan Irak'taki inşaat projelerinin geciken uygulanması üzerindeki etkisinin kapsamını açıklığa kavuşturmak amacıyla yapılmıştır; bu sayede projelerde zaman ve kaliteyi yönetmede yetersiz planlamaya yol açan faktörler, Irak inşaat sektöründe çalışan bir mühendis örneklemi üzerinde bir anket düzenleyerek alışılmış olacaktır.

Araştırma örneklemi, tüm mühendislik ihtisaslarında kamu ve özel sektörde çalışan bir grup mühendis içermektedir.

Araştırma örnekleminin çeşitli mühendislik ihtisaslarından 155 mühendisi içerdiği ve sorulan sorularla ilgili görüşlerini aldığı ve bu çalışmanın verilerinin istatistiksel analizi yoluyla en önemli sonuçlara yol açtı:

1- Mühendislik projelerinin tamamlanmasındaki gecikme, müteahhitlik firmalarının idari ve mühendislik planlaması kavramının net bir şekilde anlaşılamamasından kaynaklanmaktadır.

2- Mühendislik projelerinin tamamlanmasındaki gecikme, zaman planlamasının önemi konusundaki yetersiz bilinçten kaynaklanmaktadır.

3- Uygulayıcı şirketlerin ve denetim makamlarının kalite bileşeninin önemine dikkat etmemesi.

Anahtar Kelimeler: *Inşaat yönetimi, Zaman yönetimi, Kalite yönetimi*

1. INTRODUCTION

The construction industry is one of the oldest known industries of man. Since ancient times, it has prospered and achieved advanced degrees of discrimination in its products and methods of implementing these products.

Administrative and engineering planning is considered one of the most important reasons for evaluating the contracting companies based on the lack of contracting companies and creating techniques, schedules, rules, and timetables required for the rational execution of these project stages. All lead to project delays, poor quality, and financial losses.

The project's administrative and engineering planning process contains rules, controls, and indicators that must be followed to develop specific plans for each project according to the circumstances, needs, and degree of importance.

Administrative work is an endeavor that aims to achieve the goals in the light of the skills and circumstances that were developed to achieve the goals and is connected to a particular timetable and schedule. Who can only recognize success in achieving the required goals if they are within the required time and within the project's specified cost and the specifications and with high quality?

It is noticeable that the projects' delay constitutes huge losses for countries and individuals, a loss of investments, a failure of companies, and resorting to the judiciary to resolve disputes.

This may be due to the contracting companies' wrong administrative policies due to poor organization and lack of awareness of future possibilities, poor estimation of cost, and weakness in resource management.... etc. In addition to the owners' administrative policies, who can be considered the external environment for construction companies.

Whether followed by owners or contracting companies, administrative policies require rules and guidelines to control their mechanisms as a guide for executives to refer to in the face of difficulties that need quick and decisive decisions.

The researcher in this study evaluates project management systems in contracting companies in the public and private sectors, including time and quality management systems for engineering projects. This is done by trying to find out the factors affecting the project management system in Iraq. Develop recommendations and suggest ways to address problems.

1.1 Background

This research took a degree of importance because the construction sector is one of the most important economic sectors.

In terms of activity rates, absorption of employment, creation of employment opportunities, and overlap with sectors

Other economic, and contribute significantly to GDP.

- As the human need to build is an eternal need has evolved on the planet.
- During the years, it was developed into a specialized craft for practitioners to learn, develop, and improve the right ways to practice this in the control area. (time - cost - quality).
- The construction industry is a vital indicator of peoples' development and a measure of the degree of their development, as it is considered.
- Project implementation time is a competitive indicator among developed countries to demonstrate the extent of their engineering capacity and development.
- And technology.

1.2 Context

This research aims to study the reality of time and quality management in construction projects in Iraq and evaluate this reality in the light of global trends and light of the scientific foundations for time and quality management in the construction industry to reach a set of proposals and recommendations that aim to advance this industry to a better level and to developing the reality of time management and quality in the construction sector and improving it in Iraq.

As the construction sector in Iraq suffers from problems in completing the project on time and a decrease in quality

1.3 Purpose

The research acquires its importance because construction projects are closely related to people's lives, and almost all commercial and industrial businesses are parties to the equation as all sectors move with construction works and vice versa. Hence the construction sector is a livelihood source for large apartments, whether supplying materials, equipment, money, or labor.

Also, the completion of these projects is closely related to the growth and development of society, as the delay in completing construction projects and poor quality, especially those related to vital facilities, leads to time wastage, an increase in spending, and a waste of human energies that could be exploited in other projects.

In addition to the construction industry is an indication of the high levels of the state's economy if it contributes to the development of human wealth and works to develop it and improve its condition by implementing infrastructure projects or strategic projects.

1.4 Significance, Scope and Definitions

By informing the researcher about some of the construction projects implemented, the researcher noticed proper administrative and engineering planning for the projects.

Engineering plays a role in the success of construction companies in completing their projects within the allotted time, and in contrast to poor planning and a lack of accurate understanding of both (the concept of planning and its stages, the importance of planning, the elements of effective planning) will lead to a loss of control over the components of control in the engineering project In terms of implementation time, quality of implementation, the fee of implementation, and research on the extent of the impact of poor planning at the time of the project and the delay in completion of construction projects as a result.

The issue of the study follows:

To what extent construction contractors grasp the idea of project preparation, the extent of preparation and recognizing contractors for the specifications of each phase

(the stage of preparing the plan, the stage of approving the plan, the stage of implementing the plan, the follow-up phase of the plan).

- The understanding of the value of project preparation by building contracting firms was relevant in time the significance of coping efficiently with the technological and operational benefits of planning, the effectiveness of adopting the rules of engineering preparation in building projects, the significance of the reliance upon chance, the significance of future aspirations and market surprises. The extent of contracting companies' awareness of effective planning elements through understanding the elements of plan success, understanding the effectiveness of planning and the role of that in project success.
- Shedding light on the administrative and engineering planning obstacles for the contracting companies, it is, in turn, a major reason for the companies' development and delays in completing their projects at that time specific.

1.5 Thesis Hypotheses

The main hypotheses on which the research relied, and it was deduced from previous studies:

- The contracting companies' poor administrative and engineering planning is the key source of delays in the execution of their programs from the viewpoint of research researcher members of project managers and team managers in engineering project administration organizations. Insufficient commitment by the construction company management to make the required efforts to implement successful quality management.

1.6 Thesis Outline

This research content of five main chapters as follows:

- Chapter one: Introduction: this chapter shows the background, context, purpose, main objectives of the research, and the problem of research.
- Chapter two: Literature review: this chapter shows a historical review from
- previous studied to identify the main factors affecting the performance of
- Construction projects.

- Chapter three: Methodology: this chapter shows the methodology used in previous studies and the methodology used in this research to achieve the required objectives.
- Chapter four: Results analysis: this chapter shows analysis, discussion of research results.
- Chapter five: Conclusions and recommendations.
- Appendix
- References

1.6.1 Survey form

In order to gather the information required for the analysis, the questionnaire was authorized. The scope of the bad proposal for the final completion of construction projects in Iraq was spread to some samples of project managers. These include samples are the following categories:

- An elite group of project managers in the competent project management companies, as they are the designated body
- Monitoring the implementation of the project and evaluating it from an administrative point of view to obtain the best quality at the lowest cost and time is reasonable.
- An elite group of project managers in construction companies is the closest party in the project to all those involved in its implementation. They relate to all parties that may negatively affect the project planning process and then delay its implementation.

1.6.2 Validity of the questionnaire test

- Virtual honesty: The questionnaire was created and introduced to a panel of specialist project managers and project administrators after a study of the literature used for science analysis by the previous theses and the technical skills of the researcher, as well as several organizational experts to know the extent of compatibility phrases of this questionnaire with research hypotheses. After taking the previous authorities' observations and recommendations into consideration, the questionnaire was finalized directly.

- Content Validity Test: The Cronbach’s alpha credibility factor was used to verify the reliability and consistency of the answers of the research sample members, and the statistically acceptable value in this test is 60%.

Alpha Cronbach: is a measure of internal consistency, that is, how closely a group of elements is closely related, and the Alpha Cronbach scale is a simple way to measure whether a result is reliable or not. Reliability refers to the amount of real variance calculated by the observed variance in the measurement. Several coefficients for estimating reliability from internal consistency have been suggested, and Cronbach's alpha is the most popular. Alpha Cronbach is one of the most widely used reliability standards in social and organizational sciences.

1.6.3 Statistical methods used in the analysis for analysis data

Who adopted the SPSS statistical program to analyze the results of the questionnaire.

The SPSS Statistical Program: It is a set of lists and tools by which the scientific researcher can enter data through questionnaires, interviews, or observations, and then do their analysis (statistical analysis), and the statistical system depends on digital information, and the program is characterized by its great ability to process data It is supplied with and can be used in all scientific research methods.

2. CONSTRUCTION PROJECT

According to the definition given through the project management institute (PMI), an endeavor has been a stretch attempt grasped to make a new thing, organization, or result. Each adventure must make either a new or a created release of a job, organization, or outcome. Each undertaking must have a particular degree of helplessness in the issue, utmost quality, time, or cost. Else, it has not been an endeavor. The endeavor has an orchestrated beginning and end, along these lines, a definite life-cycle. It may be catapulted as needs be of one of the going with a proceeding:

- The endeavor's goals have been finished.
- The endeavor's budgetary arrangement (money just as time) has been wasted, without achieving the objectives, and it has been not potential or advantageous to raise it.
- The client demand to end the errand.
- Who can never again meet the endeavor's goals?
- There has been not, now, any need to the endeavor (Coronato, 2018).

Various improvement adventures join a high degree, of dull tasks. Such errands fuse high-rise private and business structures, motels, dwelling homes, and system exercises such as avenues, railways, pipelines, and wharves. Line of Balance focuses on the repetitive parts inside such practices. Working from a vital creation yield, the technique calculates the creation rates and resources basic to satisfy adventure time imperatives. The resulting schedule has been commonly appeared in a graphical structure showing the handover time to the completed segments and the creation plan to the essential sub-segments. A structure adventure has been done therefore of a variety of numerous proceeding and interchanges, masterminded or off the cuff, over the life of a creation basic, with changing individuals and methodology in an eternity advancing condition (Sanvido, et al., 1992).

The advancement of business has been immovably related to to monetary unforeseen development and living lifestyles. Building the officials, as one of the fundamental

trains being developed structuring, clearly impacts nature's life and property security. As society makes, advancement broadens regularly create in scale, including vast numbers of of specialists, long life cycles, and complicated interfaces. The sorts and sums of of improvement-related information have gotten tremendous and complex, which has extended the multifaceted nature of of advancement exercises structures. Improvement broadens now require extraordinarily explicit data and experiential information. Standard operational techniques may not now be important to settling specific issues. The board had been made in like manner to these troubles, through empowering undertaking utilization and movement.

Since of, the obliged information scattered through overall endeavor the administrator's educators, the quick changes in the advancement business critically require engineers who can apply adventure the board systems, gadgets, and aptitudes in the work practice. Quick advances in the administrator's science have driven to improvement of adventure the board into a simple structure of data "Indelicato; 2009". From the start of its work, the board has progressed to secure businesses in the same way as national security requirements have been generated in partnerships between separate organizational operations before the life cycle of the board is finished. In building adventures, an improvement undertaking can be miserable down in wording of five guideline steps: credibility assessment, orchestrating, structure, advancement, and action. In like manner, each stage can be inspected as a lone endeavor, which implies a unique thing or organization has been made at each stage.

Convincing errand the officials has been essential in an endeavor arranged industry such turn of events. Perceiving profitable strategies has been indispensable to adventure accomplishment. to improve adventure results (for instance, execution, accomplishment, and satisfaction), A “Guide to the Project Management Body of Knowledge Guide”; PMBOK Guide' had been made through the “Project Management Institute” to recognize general endeavor the board data, structures, methodology, gadgets, and capacities "PMI, 2008". The PMBOK Guide has the focal, benchmark practices which drive results of business to any system, recollecting those relationships for the business's advancement. Through applying these organization strategies, adventure chiefs and undertaking gatherings can bolster the chances of achievement over an extensive range of of adventures (Zwikael, 2009).

Starting late, the improvement business in china has encountered quick new development and perpetual expansion. Concurring to data of the china statistical yearbook, in 2016, improvement added to 6.7% of the country's full national yield, and there had been 83,017 advancement adventures, pondered to 12,585 30 years already. Inside a comparable thirty-year span, the gross yield regard of advancement had raised through numerous occasions, to extend 19,356.68 billion yuan; The continuous improvement of yield shows the Chinese improvement industry will remain amazing as time goes on. Taking everything into account, the flourishing of the improvement business has in like manner driven to absence of worry with deference to product creation and made it progressively problematic to control the quality of advancement adventures. Chen and Luo1 raise some improvement firms give up to the temptation of extended advantage through ignoring noteworthy points of view of quality organization, to model, through enlisting unfit authorities, and through bearing a defective affiliation structure and wrong organization. Subsequently, setbacks have gotten widespread in the Chinese advancement industry, animating broad group apprehension. to model, · A job stage decomposed on the 16 November 2016 awaiting upgrades — to a cooling tower in the area — to Fengcheng in JiangXi Province. Such events recognize, the individual prosperity of inhabitant has been at risk in China due to the low-quality of advancement broadens and should ring cautions to improvement firms, driving them to take incredible measures to give indications of progress adventure quality. This raises the issue as to which administrator should be tended to to progress the quality of expands and decrease the number and likelihood of advancement scene, with explicit reference to the preparation of deftly chain quality organization. The low-quality organization has been reflected in the internal system just as has been altogether dynamically evident in supplier and subcontractor officials. Unacceptable materials or natural subcontractors have achieved most incidents being developed. Beyond question, material suppliers and subcontractors accept critical occupations in the improvement outfit chain, and their assurance and the board have been head to, ensuring adventure quality. Agreeing on to (Khamisi et al., 2018); accepted quality organization in the advancement outfit chain has been crucial considering the way that it has been fit to improve the work efficiency and agent’s prosperity to an improvement association, so planning quality organization and smoothly chain will contribute colossally to empowering balanced advancement in the Chinese advancement work".

2.1 Managing Construction Projects

The project, the executives, has been the overall undertaking in the conveyance of a task. Numerous legitimate writings have been expounded on the hypothesis and practice of venture the board, and along these lines, this content will concentrate barely on the necessities of development ventures. The particular primary case to the past explanation might be to perceive the three old-style measurements of a venture, in another importance, all activities include the three interlinking variables of time, cost, and quality. These have been represented in Figure 1. The relative significance of these elements will change from venture to model, another substation and related circuits to taking care of, state, an Olympic arena may have to be finished through a specific date, and along with these lines, time turns into the common element. By and by, of course, each of the three variables has to is monitored to an undertaking to be esteemed effective (Harker, 2018).

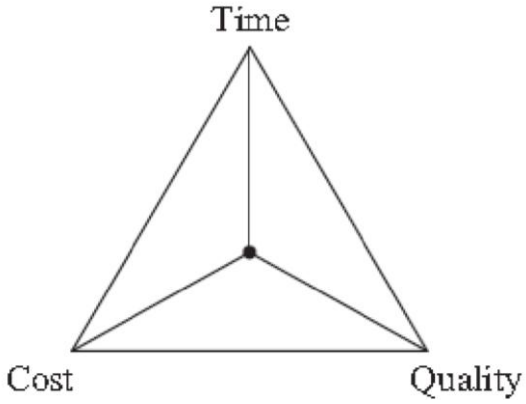

Figure 2.1: Time/Cost/Quality Triangle

Source: (Harker, 2018).

Concurring to (Coronato; 2018) and the institute of project management has characterized venture the board as "the application of information, aptitudes, devices, and procedures to venture exercises to meet the undertaking prerequisites." It has characterized 47 tasks the executive's forms gathered into five classes:

- **It is initiating**: This stage centers on beginning the venture. It targets characterizing the undertaking at an elevated level. The practicality and value of the undertaking has been not generally sure in this stage. As a result, an achievability study, which starts with a business case, might be essential. On the off chance that it has been chosen to begin building up the task, an undertaking sanction plots the reason and necessities of the venture ought to

be figured out. The determination of the undertaking's specialized necessities have been not due in this stage, somewhat, it will be progressively formalized.

- **Planning**: This process involves the concept of "movements for the progress of the business," which requires a definition of the target "movements for the business." in this manner requiring distinguishing proof of the extension, costs, schedule, anticipated quality, and assets fundamental.
- **Executing**: In this stage of venture, the board has been carefully related to the advancement life cycle of the item. From the task, the board point of see, pending this stage, progress in the advancement of the undertaking has been spoken to through the discharge of the deliverable.
- **Monitoring and controlling**: Monitoring was related to the assessment of the risk movement when monitoring has been connected to the ID and implementation of the remedial practices when variations from the plans were tracked. Key success metrics can be used to assess if the mission has been monitored.
- **Closing**: This stage concerns the conclusion of the venture. The project manager, who has been the individual picked through the association to lead the task advancement group all together to accomplish the venture destinations, even though everything has a few exercises to perform, such as recording deliverables and outcomes, announcing the implementation of the undertaking and learning activities.
- With an expanding multifaceted structure, enormous construction projects (both regarding the development work and acquisition and authoritative structure) have been developed, the need to some normalization in plan configuration got expanding evident. It had been broadly remembered it had been unsuitable essentially to create plans for a specially appointed way and present various timetables with various levels of data. It was important to provide a structure in line with the level of the data given by the brief to model, the undertaking degree and goals, the venture schedule, and so on., and choices relating to the task of the executives and revealing prerequisites. The work breakdown structure, action distinguishing proof coding, action content coding, and action cost coding frameworks will impact the plan and

structure of the timetable. Who must set up a reasonable structure to the calendars? The Chartered Institute of Building (CIOB; 2011) suggests five degrees of plan revealing. This number of of levels have been generally acknowledged as the favored number of revealing levels to a solitary venture.

Everybody overseeing, controlling, and working on development ventures have an obligation to guaranteeing the well-being and security of the laborers. All development work must continue under the present laws and enactment identifying with to wellbeing. In the United Kingdom, the accompanying enactment has been especially significant:

- The Health and Safety at Work (Act 1974).
- The Management of Health and Safety at Work, Regulations 1999.
- The Construction (Design and Management), Regulations 2007.

Johnson and MTR Corporation Limited (2008) detailed to the effective administration of railroad development ventures has been the capacity to distinguish and control the dangers related to conveyance of the undertaking. MTRCL has built up a project risk management system, structured to help limit venture hazards, in help of the corporate hazard the executive's procedure. The introduction will give a review of the project risk management structure and a thankfulness of the difficulties and achievement factors in its execution.

2.2 Time Management and Quality on Construction Project

Restricted usability of the assets will affect the time, expense, and efficiency of production exercises. The improvement model of the necessary asset projects was developed, in which the trade-offs between the time of movement and the expense were understood (Afruzi et al., 2014). Interval intervention has been permitted to improve utilization adaptability of available assets for the asset necessary venture planning (Tavana et al., 2014). Asset leveling and congruity of asset use in time and cost exchange off investigation had been examined utilizing least second calculation (Ghoddousi et al.; 2013). A period and cost exchange off improvement model with the chance of utilizing night and night work shifts while keeping up work rationale and asset accessibility requirements had been created to recognize ideal work move plans (Tran et al.; 2016).

Most of the current time and cost tradeoff improvement models gauge action length and cost-based on verifiable records and designing judgment accepting fixed asset use plans and development techniques. In a specific practice, all things considered, unpredicted factors such as climate conditions, spontaneous changes in the plan, and variety in showcase request increment the test of evaluating movement length and cost correctly (Zhang and Xing;2010). Multi-target improvement procedures have helped recognize a set of exchange offs between time, cost, and quality of ventures. Choosing the best undertaking plan among the acquired set of exchange offs has been a difficult assignment, mainly when the recognized exchange offs have been tremendous in number (Monghasemi et al., 2015). Strategies to explain TCQT models can by and large be sorted into two first gatherings: Intended techniques: straight-line programming, complex programming, and branch estimation, and non-precise methods are used to calculate both heuristically and meta-heuristically. (Monghasemi et al., 2017). Special techniques have been productive and can ensure the distinguishing proof of ideal arrangement to single target models. All things considered, they have been constrained in managing multi-target issues and vulnerabilities. on the other hand, heuristic improvement techniques can be computationally effective, manage multi-target enhancement issues, and have greater adaptability in plan of scientific models. By the by, they do not ensure the optimality of the created arrangements, and the presentation has been usually issued subordinate. Heuristic calculations such as hereditary calculations, which have been utilized in this examination, have been productive in distinguishing the worldwide ideal arrangements in a moderately short computational time. A few studies have been done using tertiary formulas so that ideal exchange offs between market priorities can be recognized: cost, time, and efficiency (Monghasemi et al.: 2017).

Notwithstanding the noteworthy commitment of the current research examines, they have been restricted in distinguishing ideal exchange offs among the undertaking goals of time, cost, and quality. Existing models don't break down shortening venture span by expanding working hours while thinking about specialist effectiveness and extra time costs. Existing examinations have been additionally restricted in considering venture quality while limiting time and cost to building ventures. This exploration paper centers around on tending to the confinements of the current investigations in distinguishing the exchange offs among the significant undertaking

goals of time, cost, and quality. It ought to be noticed the current investigation embraces a quantitative research technique that centers around on building up the scientific model and assessing it based on numeric information (Maxim;1999). Not at all like subjective research work, quantitative research strategies bring about the advancement of models that can be utilized through chiefs to create precise and solid outcomes explicitly to subordinate issue situations. Besides, who can lead the quantitative research technique quicker and more affordable? It permits correlation of model outcomes from one issue to another, and effectively replication through different scientists (Babbie; 2015; McNabb; 2015).

2.3 Time Management of Construction Project

“Time Management has been an indispensable part of of Construction Project Management”. (Westland, 2006), gives the accompanying definition to time the executives: "time the board has been the procedure of recording and controlling time spent through staff on the task. (Wideman, 1990) speaks to a more extensive definition to time the executives; “time the executives has been the capacity required to keep up fitting designation of time to the general lead of the undertaking through the progressive stages of its normal life-cycle, “in another importance, idea, improvement, execution, and completing” through methods of the procedures of time arranging, time evaluating, time booking and calendar control." of course, definitions can shift, yet its conspicuous time the board has been about time, its arranging and control pending all stages of the venture. What's more, achievement of the task exceptionally depends on on fitting execution of time the executive's techniques inside an undertaking group. In the course of the most recent quite a while, organizations in architecture, Engineering, and construction industry around the world have met new monetary difficulties, related to emergency in national economies and crumbling of a few critical property bubbles “USA, Ireland, Spain, Eastern Europe, Gulf Bay, China, etc." Specifically, these difficulties have driven changes in mentality of European Union organizations, where a number of contracting openings has been forcefully declined, and a number of organizations accessible on national markets even expanded after the development of the European Union up to 27 nations. As the number of contracting openings has been falling, it has been driven organizations to cost-sparing activities. One of conventional

methodologies to cost-sparing has been cutting work power, expanding remaining burden, and improving general profitability. Late strains in architecture, Engineering, and construction industry related to to decreasing staff had been simple to legitimize. The development business has been known to its low profitability, yet besides as a preservationist industry with customary methodologies to development procedures and low-level of speculations into research and development. The business has been additionally known to an elevated level of nearby and national protectionism and a solid worker's guild impact. The low efficiency has been the old issue of to development. The insights of "United State Bureau of Labor Statistics"; Figure 2" shows the creation of development industry in the United States has been declining pending 1964 to 2003 with normal rate – 0.6%. Simultaneously, regardless of declining inefficiency, the development business, despite everything, has preferred installment conditions over the normal installment conditions in the assembling industry (Teicholz, 2004).

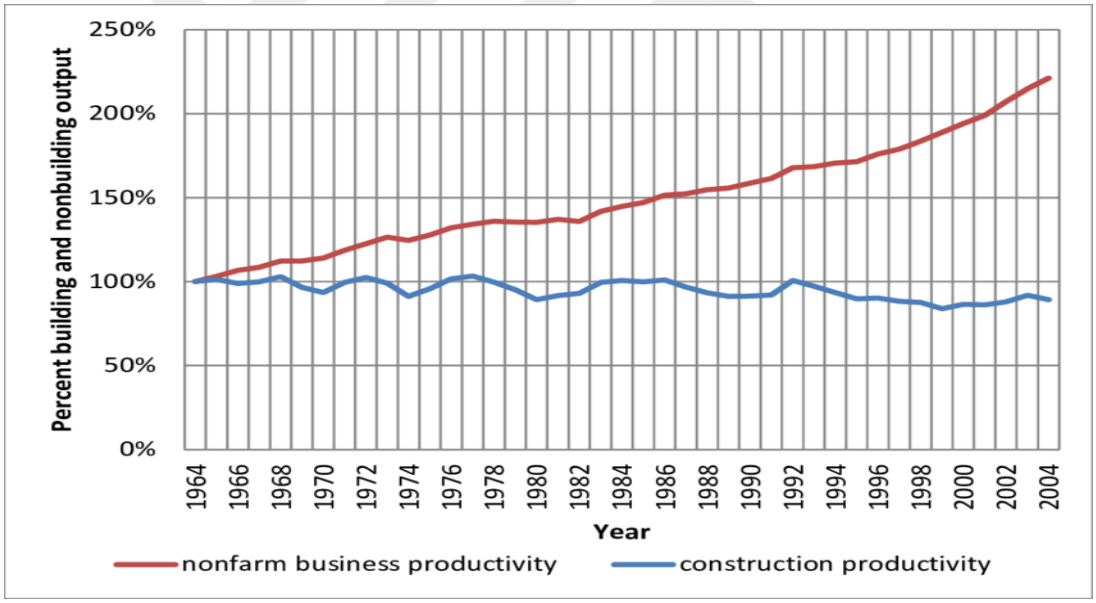

Figure 2.2: List of Shortcomings For the Production of All Non-Companies From 1964 to 2003 "Sources; United State Department of Commerce & the Bureau of Labor Statistics"

Considering such disappointing outcomes from the United States, the efficiency of construction was nevertheless higher than that of construction in several other nations (Merrow et al. 2009). The study reveals that productivity in the United States was 11 percent higher than in the United Kingdom and 6 percent greater than in Western Europe. Another study indicates that efficiency in building in the United

Kingdom has increased relative to the United States, and the difference between them has decreased from 14 percent in 1990 to 5.5 percent in 2001. However, this difference has always been relevant (Griffith et al., 2003). Latest studies and hearings have addressed the issue of poor productivity, waste time, and huge delays in building programs in the United Kingdom. CRINE (1994), Latham (1994), ACTIVE (1996), and Egan (1998) recommended the future cost savings of building materials up to 40%, with a substantial decrease in time taken on projects and a significant increase in the competitiveness of the construction sector in the United Kingdom. According to construction; Excellence"2010" and use of the strategic forum, construction integration toolkits will offer 35 percent time savings and construction excellence presentations have been more than 65 percent more beneficial than the industry average and have more than 40 percent improved natural performance than regular business. Better productivity saves resources and effort, and better environmental management means fewer assets, less pollution, and reduced costs. At present, the strengthening of the productivity and the time-performance of the board processes is essential to the culmination of the beneficial results of the programs and the lasting profitability of the construction enterprise as a corporate framework. Incorrect time management and poor efficiency have a detrimental impact on the state of the undertaking, particularly increased expenses, misfortunes of gain, and damage to notoriety. Powerful time the executives have been essentially significant to the development venture, and yet, the undertaking group should give suitable consideration to different targets of critical path method. The undertaking director has been a key figure in exchanging venture costs, timetables, and degrees. Another sort of exchange offs happens between ventures (Shelf et al.; 2011). For the situation of cutting workforce and execution of concentrated techniques of work and viable time the board, issues of time cost, time security, and time quality exchange off relationship will be dealt with cautiously. After workforce cutting, the assignment of staying scant assets has been getting up most significant to venture results. The cutting of the work power has frequently constrained the development organization to to move from time-restricted asset planning to asset-constrained asset booking. Such asset-constrained booking makes a major issue to time objective through expanding the time to venture execution and spots an organization in peril of paying liquidation harms, late finishing punishment, losing present and future agreements, and friends' notoriety sear. Along these lines, cutting of work power and endeavor to

accomplish higher efficiency must be overseen cautiously related to quality and wellbeing.

Effective period, according to the study by Egan (1998), the board also strengthens the associated primary performance metrics, which had been developed by way of a UK working group − the KPIs.

Figure 3 recognizes a variety of indicators to the United Kingdom construction industry (Takim and Akintiye, 2002).

Egan (1998)	**Construction Productivity Network (1998)**	**Construction Industry Board (1998)**
Construction cost	People	Capital cost
Construction time	Processes	Construction time
Defect	Partners	Time predictability
Client satisfaction (product)	Product	Cost predictability
Client satisfaction(service)		Defect
Profitability		Safety
Productivity		Productivity
Safety		Turnover & profitability
Cost predictability(const.)		
Time predictability(const.)		Client satisfaction
Cost predictability(design)		
Time predictability(design)		

Figure 2.3: Industry Measurements Efficiency Metrics

Source: (Mbugua et al., 1999; Takim and Akintiye, 2002).

(Abdul Hamid & Chin, 2015) reproduced a powerful period in overseeing the danger of the delayed completion project, Also, they showed that the project administrator had the most remarkable rate in the writing and arrangement of meth-d interpretations and the organization of meetings. Most of the participants had their understanding if the agreement was subsequently structured after a debate and formulated method expressiveness, the length of the motion was calculated to some degree. The expense was distributed in separate contingency papers, date constraints were used to restrict the output of the dates given in the contract documents and flat constraints were used to manage the majority lean towards keeping the documents on

the paper, however, had been promptly inserted into the database as the progress notes. Many of them had the experience of allocating extra jobs relevant to labor. At the stage where the resource used was connected to the job undertaken and in which place, it was the experience of the majority of the respondents who accepted the company's preparations for both labor and plant and machinery data. The respondents preferred monitoring the success in reaching the correspondence and what had changed the timetables every month. To conclude, most of them have corrected the reasoning to emphasize to accomplish control of the results of arrangement practice.

"Solís-Carcaño (2015) announced deferrals had been now and again revealed as the reason of a few clashes influence the various gatherings engaged with development ventures. Task Time Management incorporates a number of arranging and controlling procedures suggested to consenting to prerequisites related to venture time. The examination revealed in this paper planned for evaluating the utilization of of venture Time Management procedures and their connection with venture plan execution (in another importance., opportune fruition). Who had distinguished seven venture Time Management procedures and seventy-seven undertakings related to them from the writing has been universally important to venture the executives? The examination incorporated the evaluation of fourteen school development ventures executed through a crowd of people organization in the Yucatan Peninsula, Mexico. These tasks had been observed pending the development stage all together to measure two distinct factors: the utilization of forms related to to venture Time Management (in another importance., plan arranging and controlling procedures) and the undertaking plan execution. to each of these undertakings, the key variable was evaluated by a Usage Matrix, while the following one was estimated by the Schedule Performance Index and the Schedule Variance survey. The outcomes showed there had been measurable reliance between these two factors. Most of the ventures accomplished opportune finishing additionally made more prominent use of the undertaking Time Management forms".

In several ways, Bovteev and Kanyukova (2016) claimed that the project deadline approaches the cataclysmic effects of the points and results of the enterprise. Likewise, they recommended to compute the base potential terms to each venture action and gauge the undertaking length security edge coefficient. Based on the

wellbeing edge coefficient esteem, it has been proposed to characterize the fringe esteems to venture move from one status to another upon standards of its ideal finish probability. The proposed strategy can be suggested to use through development venture supervisors all together to forestall a potential disappointment of venture finish cutoff times. The framework demonstrating primary task time fluctuation empowers to to start the procedure of venture plan alteration before point of no arrival and herewith forestall venture disappointment. Who had executed the considered philosophy in the present-day venture, the board programming circle?

In building projects, there has been a new movement to pay particular attention to the completion of the work and commissioning of the projects. A number of projects can be differentiated where it was important to stop a failure to reach construction targets, for instance, before the beginning of the Olympic Games, it was necessary to finish all the works and commission the Olympic Projects in Sochi, fooball stadiums were completed during the Fooball World Cup 2018 and the like. Commissioning of such project's later than on the fixed date (deadline) results not only in a drastic decrease in project effectiveness but can lead to the total program failure it had been a part of. Thus, when working with crucial project's where deadlines failure has been not acceptable it has been necessary to pay special attention not oonly to comprising and optimization of the Construction project Schedule, but also creation of effective system of monitoring, control, and management of the project.

In accordance with a generally accepted project management principle, efficient timetable control has been shown to be the secret to the successful execution of the program. Therefore, all main approaches of project management stress the importance of calendar preparation and data control activities. "Azarova; 2015 an &b". Project Monitoring, a regularly conducted method of gathering genuine information on success exercises, matching them with the arranged criteria, and including performance status notes on exercises. "De-Marco; 2011". "In the "Project Management Body of Knowledge; Guidance2013" of the Project Management Body, which has become the law for most project managers in the world, its principles lie in the premise of such modern applications as Microsoft Project, Oracle Primavera, Spider Project, Asta Power Project. Procedure 6.7 >> Control Schedule, which advises the use of Critical Path Tool, Critical Chain Method, Received Value Monitoring, and/or Pattern Analysis t-work success status reports, is included in the

new revision five of PMBOK. The board was established within the execution of the project during the 1950s using two equivalent methods of practice. The Simple Route Approach was suggested by the "Schlagbauer and Heck, 2013" administration of major projects in DuPont Plants modernization through the companies DuPont and Remington Rend. From the outset to the end of the initiative, the premise of the approach was to define the longest length of the networks' assignments with respect to their relations. The errands are zero-time-saved in the basic way (basic undertakings) and all project deadlines have been changed as their period has been changed. However, this approach needs additional inquiries into the project schedule control. Program assessment and analysis strategies were carried out by Lockheed Corporation, the US Navy's consulting firm Bz, Allen, and Hamilton before the Polaris-Submarine missile system was developed. Basic Chain project Management (Critical Path Method) had been first portrayed in 1997 in Eliyahu M. Goldratt book «Critical Chain,» the method had been supported through specialists as it had been very close to old-style PERT's method. Program assessment and analysis strategies were carried out by Lockheed Corporation, the US Navy's consulting firm Bz, Allen, and Hamilton before the Polaris-Submarine missile system was developed. It has therefore been seen in the projects, where the cost of specific works makes little value of the cost of the project (for the model, basic way requires works on proposal approval on construction grant), prediction of the overall length of the project will lead to the wrong result in such a project, where the planned value of the fundamental works is comparable to the planned value of non-basic works, the strategy of earned value management will contribute to correct outcomes. The overview of the control point requires details on when the arranged undertakings will be accomplished and what the effect will be of their results (Schlagbauer & Heck, 2013).

The deferrals on the conveyance of construction projects have been viewed as one of the most visit problems in the construction business (Al-Kharashi, and Skitmore, 2009). In a previous study, in a similar explicit location where what had conveyed the current examination out, 28% of the contractors partaking in this investigation pondered construction delays had been visiting, and 61% viewed delays as genuinely visiting. In comparison, only 11% showed they had been rare (González, e al., 2010). Subsequently, in the context concentrated for this situation, it appears to be very

common to have contractors coming up short to complete construction projects on time. The fallout of defers influences all people and organizations involved in the project. This has been particularly obvious to the owner's business since deferring the startup of the project will hinder obtaining the normal project income and will increment money related costs. In addition, the owner may confront a few other troubles coming about from the commitments expected based on the conveyance date set up in the contract (Marzouk, 2008). on the other hand, prolonging the project execution time for the most part results in contractors have to manage cost overruns due to mostly to the following causes: additional costs on the board personnel, cost escalations of materials, increment of money related cost, taking care of contract punishments, and so forth (Singh, 2009). Moreover, given the standard competitive environment in the construction business, contractors fall flat to complete projects on time may get their reputation hurt and become hindered to obtain new contracts. What can also influence Project quality due to to construction delays since the construction group typically commits less time to quality control when the primary concern has been completing the project on time. At the point when this has been the situation, workers have been normally pushed to work overtime and to increment the production rate, which very often involves disappointments and reworks (Woodward, 1997). In developing countries defers pending the construction of crowd resources, such schools, could also result in social hurt given the reality this sort of framework has generally been direly required. Therefore, the sooner those projects have been completed, the better to fulfilling the social needs in these countries. to avoid the aforementioned occurrences, contractors should execute project the board processes lead to achievement in the conveyance of construction projects. project the executives incorporates a few arranging and controlling processes that should be applied to comply with the owners' necessities related to project time, cost, and quality (CIoB, 2002). the project, the board, has evolved towards a sophisticated and comprehensive process that delineates the essential approach to prevail in the conveyance of any project. Since the knowledge of project, the executives have been developing over time, a few professional associations around the world have given rules and measures to put into practice such a process. to occurrence, the Project Management Institute (PMI) has given five editions of the Project Management Book of Knowledge (project Management body of knowledge) Guide, while the association to Project Management (APM) has so far discharged the 6th edition of

the APM body of knowledge. The standardization of the executive phase of the project leads to the diffusion of best practices that constitute a strategy for optimizing project efficiency (Liviu, 2010). (Project Management body of knowledge). Processes such as Task Definition, Activity Sequencing, Activity Capital Estimation, Activity Period Estimating, Schedule Creation, and Schedule Management are included in this information field. (Solís et al., 2009).

Additionally, Nasir et al. (2016) expressed that the development business, especially in Malaysia, battles in accomplishing the status of prominent time the executives to development venture. Venture directors have an incredible duty to hold the task accomplishment under time of venture culmination. By the by contemplates show delays, particularly in the Malaysian development industry still uncertain due to to shortcoming in dealing with the undertaking. Also, quality of time the board on development ventures have been commonly poor. Due to the dynamically broadened defers issue, time execution turns into a significant subject to be investigated to research postpone factors. The strategy of this investigation has been a survey of writing towards issues in the development business which influencing time execution of the venture when all is said in done through centering towards process included to venture the executives. Based on on study, it had been discovered information, responsibility, participation had been the fundamental measures as a general to deal with the undertaking into a smooth procedure pending venture execution until fruition. It tends to be finished up the quality of the venture supervisor and colleagues in these primary rules while leading the undertaking towards great time execution has been profoundly required. In any case, there has been a needed of foundation towards factors of poor time execution which firmly related to venture the board. Thus, this examination has been led to to build up factors of poor time execution and its relations with the investment the board.

Be that as it may, development has been confronting various issues, and one of them has been the time the board issues have caused postponed fruition of a venture (Yusof et al., 2004, Singh, et al., 2007). Agreeing to (Westland, 2006), time the executives has been the procedure of recording and controlling time spent through staff on the venture. The issues have been poor administration of time, decision of obtainment techniques, interest of investors, lack of foresight of development works, need of execution of programming, poor site records, and so on. Consequently, these

issues can lead to to delays that have been guileful regularly, bringing about time invade, cost overwhelm, questions, suit, and complete relinquishment of ventures (Westland, 2006). An examination led through the Chartered Industry of Building (CIOB, 2008) in 2008 has shown the quality of time-the board on development ventures has been commonly weak. The examination likewise indicates the development in preparing, training, and expertise levels inside the business in the utilization of time the executive's methods has not stayed up with the innovation accessible. Furthermore, there have been additionally not many ventures have been as of now oversaw through reference to present-day techniques of time control. Ahmed et al. (2003) discovered deferral occurs in each development venture, and the extent of these postponements differ extensively from venture to venture. A few undertakings have been just a couple of days bogged down, and some have been postponed through longer than a year. Additionally, clashes in investors have been one of the elements of fruitless ventures. El-Razek et al. (2008) recognized various gatherings of development in Egyptian development ventures don't concur with one another on the significance of different variables of deferral, and they, for the most part, accusing each other of delays. He also discovers collaboration has been essential in the achievement of an undertaking. Liberatore et al. (2001) has referenced a high rate of the development respondents utilized venture the executives programming to general work arranging or introduction. Therefore, this has demonstrated the significance of use of venture the board programming in development works. Additionally, Scott and Assadi, (1999) had expressed more significant part of respondents didn't keep records of progress show each of the work exercises on the temporary worker's modified, precisely when work occurred. The issues had been needed of a composed and formalized methodology, need of clear standards and rules on how the records have been kept and sorted out, challenges in guaranteeing the consistency of announcing through different capable people, freshness staffs and so on (Babu and Nalina, 1996). In this manner, the significance of venture control strategies in overseeing time to improve the hazard of deferred venture have been required to be known and perceive so the hazard of venture postponed can be limited.

Mackenzie, (1990) tells the executives a more detailed description of the time: Time Management was the ability needed to sustain the fitting assignment at the time of

the general lead of the venture via the different phases of its distinctive life-cycle, (In a particular context, concept, change, implementation, and completion) Through the way of measures such as time-arrangement, time-assessment, time-planning and calendar management." Project time, the executives need to make usage of apparatuses and agreements, both of which together provide a standard for controlling and forecasting venture work. Both individual and relegated assignments must be able to catch and oversee time while using the equipment in this procedure. (Mcgraw and Leonoudakis, 2009). Viable time on the board has been indispensably significant**.**

2.3.1 Methods of time management

PMBOK Guide (20080) explains six project time managing methods. Construction Expansion of Project Management Book (2007) applies three new processes to Build Project Management Here was a list of nine procedures.

1) Definition of the Activity,
2) Sequencing Activity,
3) The activity of Estimating Resource,
4) Duration Estimating Activity,
5) Developmental Schedule,
6) Controlling Schedule,
7) The activity of Weights,
8) Progress Developmental Curves, and
9) Observation of progress

Initial five procedures recorded above typically take place when the work is undertaking an orchestration step, similar to the N-pop process, 7.8. In this way, the five underlying procedures, the master strategy, and the other tasks have been planned. Activity Weights process runs with the rest Activity related processes “No. 1:4” and outputs of this processes along with outputs of Schedule Development process “Project plan” allows to prepare progress twists. Data Flow Diagram t—Develop Scheduling Mechanism with connections to other systems in separate Information Areas—Authorization of Project Management B—Authorization of Knowledge has been seen in Figure 4. Control and Development Plan Monitoring mechanisms were used to guide and monitor the overall progress of the project and,

in this manner, the two over-the-counter processes were implemented (project revives, project plan invigorates, progress reports, disciplinary steps, and knowledge gained).

It is clear that nine methods represented by both Project Management Institute Manuals can be addressed at the same time as the risk processes are ongoing. By and, specifically, by a small and medium-sized production venture, time control has been restricted to a range of substantial procedures. A few experts in their Hearing Insights restricted the number of formats needed by effective Time Management. McGraw and Leonoudakis, (2009) named five key processes:

Management of Timetable, Time Maintenance, Authorization of Time, Changes in Task/Assignment, and Repair

As the whole project, management was about scheduling, booking, tracking, control, and posting, as well as making decisions on the appropriate improvements and their execution before the building project was finished, it was clearly good time management. Other tasks such as allocating money, setting targets, setting priorities undertakings, and reviewing time spent were also important.

Poor arranging, need of refreshes project plans, and a disappointment to apply a basic way investigation procedure influence project performance and results. The most common way to structure a project plan too the construction project has been through utilizing a Gantt outline which has been developed from a priority network chart demonstrating a basic way of the project. Bottom-up is evaluating, analogous assessing and master judgment have been the most popular strategies to movement resource and duration assessing, the precision of these evaluating has been essential to the project plan, compelling Time Management, and project result outcomes.

The utilization of need to venture undertakings inside task can be indispensable and successful to Time Management. The need has been likewise useful if venture chief has been required to make some time-related exchange offs between ventures. to need usage; venture chief can utilize different apparatuses, from first, such Covey's Matrix (Covey et al., 1994) to IT applications.

2.3.2 Time management tools

There has been a different time what can utilize the board apparatuses pending tasks. Thirty towing systems and protocols were tested by Webster (1982) for Time Control. Instruments engaged with Time Management procedure can shift from essentially utilized to an extensive stretch of time in Project Management to current devices, particularly connected with IT. Pending the most recent decade, the IT anticipate the executives programming applications have gotten a more extensive usage inside venture the board, a tremendous larger part of these applications can be included as a device in numerous procedures of Time Management and served to successful Time Management pending various stages of the undertaking. What can utilize the accompanying five devices beneath on the development venture to powerful Time Management:

I. Asset Leveling:

Asset Leveling has been an incredible asset utilized to successful Time Management pending the arranging stage. This instrument has been the key device to augmenting asset adequacy. It permits leveling accessible assets to arriving at the best use of them pending the execution stage. With the help of Project Management programmings such as Microsoft Project and Primavera, asset scaling has been handily revised.

II. Day by day, Weekly, Monthly Project Management Grids/Timesheets and Timesheet Register:

These devices can be utilized to action arranging and recording of the real contribution of venture individuals in venture action. It has been indispensable to viable Time Management to record the time spent through every part of the task group into such timesheets. The timesheet empowers the Project Manager to to control the level of asset distributed to a specific action. Timesheet Register incorporates a rundown of the time right now spent on the undertaking. Who can utilize these devices, to exercises, educated, and aggregate activities? Either who can utilize paper or programming to this apparatus?

III. "Time Recording and Control Tools to Construction Site"

A great range of of instruments has been accessible to use of building site to recording and controlling real working time. These apparatuses incorporate a remote time clock, GPS portable clock, cell phones (JobClock and PocketClock www.etaktime.com/cc, Ace Project www.aceproject.com, Data Maxx www.data-maxx.com, and so on).

IV. Task Management Estimating, Planning, and Control Software Tools

These perform multiple tasks development applications include drawing, perception, evaluating, arranging, and control exercises. Most of these apparatuses have a place to Building information modeling (BIM). Some of these devices have been based on well known 3D drawing applications such ArchiCAD, Revit with extra highlights. A great model of such an apparatus has been Vico Construction. The application contains six different programs and helps the gauge venture to coincide with sketches, schedule and monitor the execution of ventures and talk to visual data. This device uses numerous techniques for time management, especially the Network Diagram, Gantt Chart, LOB.

V. Cooperative Project Management Tools

The cooperative Project Management apparatus has been getting famous. A ton of seller offers programming applications explicitly to Construction Project Management groups. Model of such applications: "AceProject, TeamLab, 4Projects, PivotalTracker, Mavenlink, ZohoProjects". A few applications use distributed computing, making them entirely significant to development venture groups working in an advanced development condition. Such colleagues as chiefs, directors, engineers, amount assessors, and supervisors can be associated with a few undertakings simultaneously.

2.4 Quality in Construction Project

The development business regularly goes about as an impetus to animate the development of a country's economy. The business has frequently alluded to to as a motor of development. By and by, various government reports have scrutinized the business' terrible showing, particularly in wording of profitability, quality, and quality frameworks. Altogether, to improve execution, numerous development

organizations actualize the (ISO 9000) arrangement, an incorporated framework to guarantee consistency and better execution of development ventures. This has been accomplished by making a structure to persistent improvement and giving the fundamental measures to direct development firms to set up and keep up a quality framework in their associations. This article analyzes the advantages of of actualizing (ISO 9000) standard to development organizations, and the rules utilized to estimating venture execution. What had acquired the information from a writing audit and a postal poll review, which includes 30 administrators utilized in International Organization to Standardization-affirmed development organizations? (Ali and Rahmat, 2010).

The development business has various issues to convey quality development ventures since it involves of a large number of of callings, occupations, and associations. The quality of administration conveyed through specialists has frequently been a subject of careful examinations. A few customers have thought little of the effects of unacceptable consultancy administration to the achievement of a development venture (Barber et al., 2000). Numerous postponements, cost overwhelms, revamps, varieties, claims, and what can follow debates back to mistaken structure, poor agreement organization or remiss management of the customer's agent (Chini and Valdez, 2003). Moreover, the creative forms of of development ventures have been, for the most part, non-normalized. Consequently, it has been troublesome to guarantee quality. In this manner, some neighborhood building specialists look for to lighten the quality issue through the creation of affirmation to (ISO 9000) compulsory to all temporary workers who have been offering to crowd area ventures.

Mistakes incited through a framework can be forestalled or at any rate limited through the usage of a quality administration framework (QMS). Among different QMSs, (ISO 9000) affirmation has been generally embraced through numerous nations' development business. to occasion, in Hong Kong, all advisors must have a guaranteed (ISO 9000)- based QMS before they can offer to crowd development ventures (Works Bureau, 2001). With the discharge of (ISO 9000):2000, an exceptional accentuation has been put on consumer loyalty and nonstop improvement (Murphy, 2002). 'Fulfillment' can be estimated by contrasting the distinction between what has been normal and what really got. Customers would

fulfill with the exhibition of an advisor when the quality of administration gave surpasses or at any rate lives up to their desires. who must acknowledge ceaseless improvement whether specialists have known of their shortcomings or inadequacies and make comparing changes to fulfill the desires of their customers? (ISO 9000)-based QMSs have been accounted for to be capable to improve the administration quality of the firm. Hence, this will expand the customers' fulfillment, piece of the overall industry, income just as laborers' resolve. In any case, to what degree International Organization to Standardization (ISO)- confirmed contractual workers could fulfill customers' needs in development ventures have been as yet uncertain. There has still been a lot of objections revealed relating to the quality of conveyance. This article will introduce the exhibition of development ventures brought out through ISO-ensured contractual workers along these lines.

How to balance time, cost, and quality has been vital to development venture the board. Tradeoff streamlining among them has been noteworthy to the improvement of the general advantages of of development ventures.

2.4.1 The importance of quality

The importance of quality varies according to economic conditions in all product and service sectors, where if the economic conditions are bad, then the services provided by the project will be of low quality, what in the natural conditions, the employer will impose its requirements and that the consumer needs and that fit the purpose of the project (Murphy, 2002).

Quality in its concept is to reach the best possible service n the project can perform, that is, it performs the basic function that is found for it and does not mean that the increase in durability or the lack of need that spare parts and the extent of promotion of goods because the world is in a continuous development, which leads to the emergence of new methods to keep pace Evolution in terms of buildings and goods produced, which leads to the need for interaction between the producer and the employer and access to the most appropriate solutions (Khalid,2005).

2.4.2 Quality planning

Quality planning means defining the appropriate standards for the project and determining how they are applied. Quality is one of the main processes for establishing processes to improve quality and its necessity during development.

Each project has a quality management plan, and this plan is based on arranging the works in the project and one of the most important characteristics that quality determines (PMBOK, 2004).

- The quality plan varies from project to project according to the contract requirements.
- Define procedures and instructions, giving importance to the examination and testing program.
- It must be somewhat inflexible to be fixed along with the agreed project.
- It includes the type of resources that can be used in the project.
- What must present this plan to the customer to trust the contractor and the establishment in charge (Mansoor, 2006).

2.4.3 Quality cost

are all costs paid by the producing or established entity to determine the level of quality the product reaches, controlling it, and assessing the degree of congruence between product specifications and consumer desires. It can also be defined as the enterprise's costs to place products and services in the hands of the consumer in line with the consumer with its requirements and desires. Added to this is the value of failures that result from the product's lack of conformity with quality requirements, whether at the internal or external level of the facility, and it is noted that the study of quality costs is one of the most important ideas included in TQM; It is integrated with any quality program implemented by production facilities (Murphy, 2002).

Quality control costs (Conformance Cost), which includes: Prevention costs:

- These are the costs that are expended; to avoid any defects or gaps in the products, which leads to not meeting the consumer's specifications.

- Evaluation costs: these are costs incurred on all tests and examinations; to assess product quality levels and problems, which have a close relationship to measurement.
- Non-Conformance Costs, which include: Internal failure costs: This type of cost is associated with products that have failed to conform to the quality specifications; Defects and failures are discovered before they are presented to the end consumer.
- External failure costs: these are the costs the producer pays after the end consumer submits the complaints. To find faults, it includes costs for handling customer complaints, loss in sales, and more.

2.4.4 Quality factors

The costs that are spent to reach the required quality are considered actual expenditures economically. They work to reduce negative costs in case of lack of conformity in condition (Abdelaziz, 2009).

Quality of design: It has an impact on controlling and controlling the quality of the project, its cost, and the timetable prepared for the project, as it represents the basis for the start of the project and an understanding of all its requirements, where studies indicated that the cost of re-work in the projects was at a rate of 12% of the added costs and that the value of design deviation was at a rate 80% of the added expenses (Tilley, N., 1997).

2.4.4.1 Major factors that affect quality in design processes

- The information provided by the employer is inaccurate and does not come close to the actual reality, as well as a lack of design data.
- Failure of the staff to undertake adequate site visits to the worksite.
- Repeated changes praise scientific design.
- The legal procedures followed, governmental requirements, the lack of flexibility of laws, and the multiplicity of agencies responsible for approving core options.
- Experience and competence of the design and selection team based on cost or choice at the expense of personal relationships Insufficient knowledge of the resources needed by the project by the designer

- Technical matters and the lack of companies with high efficiency (financial and technical) specialized in its work, the delay of laboratory examinations of construction materials, the lack of conformity of the materials included in the project, the lack of highly qualified engineering cadres, the lack of advanced intelligence, the weakness of feasibility studies for projects, the change of international prices and their impact On imported materials and the global industrial fraud of imported materials.
- Executing programs used in construction, where studies indicated that the deviation cost does not exceed 20%. As we mentioned earlier, this causes weakness in the project economics and an impact on quality (Abdelaziz, 2009).

3 RESEARCH DESIGN

3.1 Methodology and Research Design

In this chapter, a questionnaire was constructed and given to a group of engineers and experts in institutions of a structural nature. Who collected the study community's information, classified it, and analyzed it to gain results that prove its hypothesis?

The questionnaire was distributed to several workers in this field (engineers, contractors, administrators, etc.) to know their opinions regarding the issues and questions raised in the questionnaire at each stage of the project's construction.

- Procedures of the questionnaire study
- questionnaire study

The aim of choosing the questionnaire study is to determine the study's content that achieves its objectives and prove its hypotheses by identifying the contents of the study, sources of information, and collecting them.

3.2 The Community of the Study

A research community can be defined as a well-defined group of individuals or things that have standard features, characteristics, and the same work added that residents are defined as all the items (things, individuals, and events) that conform to the sample criteria for inclusion in a study (Burns, 2001). The research covers a group of engineers working in the construction sector (public and private).

3.3 The Sample of the Study

The researcher relied on sending the questionnaire to the largest number of workers in the study community to obtain the study's data. The example involves project managers in consulting offices and engineers of different specialties with different years of experience.

Interviews were conducted with 155 engineers at some worksites and company headquarters; the study community involves engineering consultancy offices and public and private sector companies working in construction projects in different specialties, whether construction, roads, sewage, water, or electrical work.

4.4 Exclusion Criteria

Exclusion criteria are some of the attributes and characteristics that some respondent engineers lack so that they are not included in them

The study (Burns et al., 2001). In this study, some newly graduated engineers and non-scientist engineers were excluded to ensure the results' reliability.

3.5 Designing the Questionnaire

To gain the preliminary information and data for this study, the questionnaire was designed to evaluate the organizational factors that cause a delay in construction projects also the factors that affect their quality from the internal environment of companies operating in the public and private sectors.

The questionnaire is one of the standard methods of collecting data. It is characterized by the possibility of collecting information from a wide range of people in the study sample and is analyzed to obtain specific results.

The steps followed by the researcher during the process of building the study tool:

- Review of literature related to the study's subject and read what has been written about the organizational factors affecting construction projects.
- The researcher introduced the primary tool of the study to his supervisor and took his opinions regarding the consistency of the paragraphs with the research hypotheses by applying the supervisor's advice; what did the following:
- Delete the paragraphs that the supervisor suggested delete.
- Editing and Paraphrasing the paragraphs to give the intended meaning.
- The researcher tried to consider the educational and cultural level of the people participating in the study by avoiding the problematic vocabularies and avoiding embarrassing questions.

- Accordingly, the questionnaire was modified to suit the study community and the study sample, and then the questionnaire was constructed with its final form. It was also written in two languages, Arabic and English, depending on the language chosen and the country that the study will be carried out.

3.5 The questionnaire

N.	Questions	Strongly Agree	Agree	Neither Agree/ Disagree	Disagree	Strongly Disagree
1	Project management lacks identifying the achievable goals and is unable to measure and plan for them.					
2	Project management lacks initiation and decision-making.					
3	We are contracting companies delay in completing projects due to the lack of administrative competency.					
4	We are contracting companies delay in completing projects due to lack of legal skills.					
5	I am contracting companies delay in completing projects due to the lack of time management skills.					
6	Contracting companies are late in completing projects due to changing the management of the owner and the passage of decisions with a long chain before they are taken.					
7	Project management lacks awareness of the value of the time.					
8	Does the fluctuation of the materials in the markets affect the time of the project?					
9	Is the project management in Iraq unable to keep pace with technology and modernity?					
10	. Project management does not provide the staff with training programs and workshops that suit the organization's goals.					
11	Project management lacks considering potential delays.					
12	The weak relationship between the management and the workers.					
13	Inability to build a harmonious team.					
14	Project management lacks anchoring the principle of commitment, participation, and delegation.					
15	Project management lacks improving productive time and reducing wasted time.					
16	Project management lacks continuing monitoring of performance.					

17	Project management lacks awareness of the cost factor.
18	I am contracting companies delay in completing projects due to the lack of the right criteria in choosing humanitarian elements.
19	Do the changes made by the owner affect the quality of the project?
20	Does the inconsistency of construction and architectural plans affect the quality of the project?
21	Does contracting with a secondary contractor have an impact on the progress and quality of the project?
22	Does changing world prices affect the cost of the project?
23	Does the delay of payment to the contractor affect the quality of the project?
24	Does the appropriateness of contracting with the type of project affect the quality of the project?
25	Does the project's low-quality result from the randomness of the price and lack of contracting experience?
26	Does industrial fraud affect project quality?
27	I am contracting companies delay in completing projects due to the lack of leadership competence.
28	Does the diversity of bodies responsible for the design and supervision affect the project time?
29	Do the design requirements have an impact on the project progress?
30	Do they benefit from the experience of previous projects regarding the positives and negatives aspects?

4 FIELD STUDY PROCEDURES

4.1 Field Study Planning

The purpose of organizing the field study is to define the elements of this research that aid to achieve its goals and demonstrate its theories by understanding the parts of the research and describing them correctly and explicitly from the sample population as sources of knowledge and methods of collecting it and then to decide the method of hypothesis proof.

What is followed in the study and thus access to results that support and prove the study's hypotheses?

4.2 Study Population

The research community includes engineers working in construction companies with various specializations (civil, mechanical, architectural) and degrees.

4.2.1 Distribution of the sample members according to personal variables

The survey was allocated as per the personal variables after the researcher collected the questionnaires that he allocated to the test sample. The frequency and percentage of the variables were then measured and distributed in the questionnaire to the groups listed.

Table 4.1: Distribution of the Research Sample According to Personal Variables

Variables	Categories	Frequencies	Percentage
Degree	Bachelor	101	65.17%
	Master	36	23.22%
	doctorate	18	11.61%
specialization	Civil	115	74.19%
	architectural	25	16.11%
	Mechanical	15	9.7%

Table 4.1: Continue

Age	From 33 - 43 years	102	65.81%
	From 44 - 55 years	38	24.52%
	From 55 - 65 years	10	6,45%
	Over 66 years	5	3.22%
Years of Experience	From 0 to 10 years	127	81.9%
	From 11 to 20 years	14	9.1%
	From 21 - 30 years	12	7.7%
	More than 30 years	2	1.3%
Years of work in the organization	From 0 to 5 years	94	60.68%
	From 6-10 years	53	34.16%
	Over 10 years	8	5.16%
Gender	Male	134	86.5%
	Female	21	13.5%

Who should note the above table concerning the sample members' educational qualifications that the highest percentage was for those with a bachelor's degree? As this percentage reached (65.17%), which is the largest percentage of the sample?

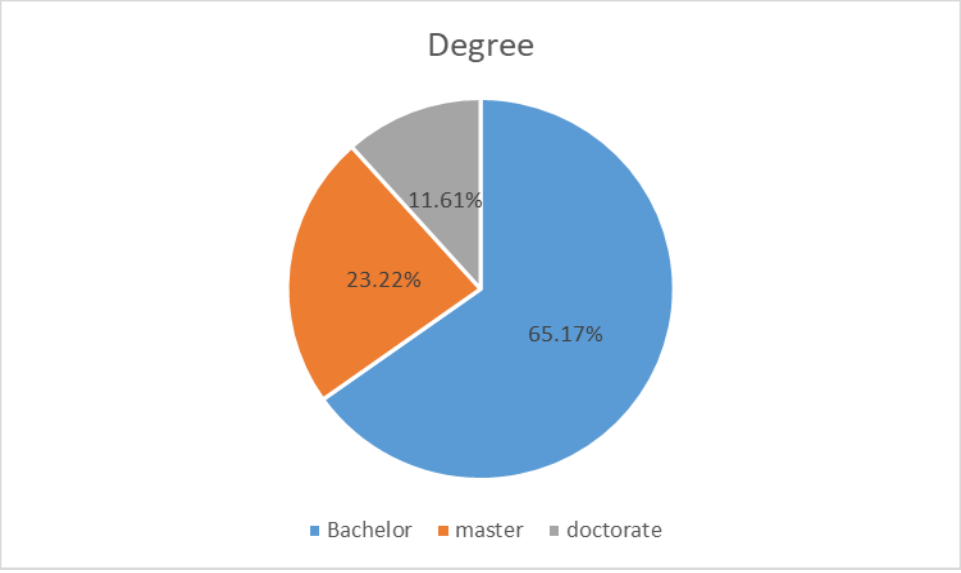

Figure 4.1: Degree

In terms of the nature of work, the largest percentage of workers in the field of buildings was (74.19%), Then workers in the architectural field by (16.11%), then workers in the mechanical sector by (9.7%).

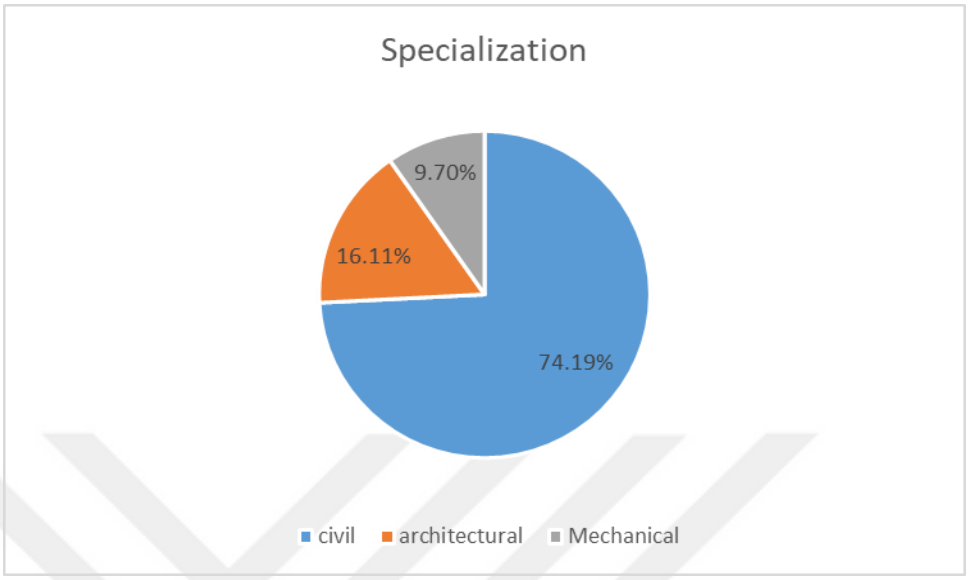

Figure 4.2: Specialization

This difference is because the number of workers in each sector corresponds directly to Iraq's market need for the establishments according to their priorities.

As for the experience, the dominant proportion was (81.9 percent) of those whose experience ranged from (0-10) years, then those whose years of experience ranged from (11-20) years (9.1 percent) and then their years of experience ranged from (21-30 years) years (7.7 percent). (1.3%).

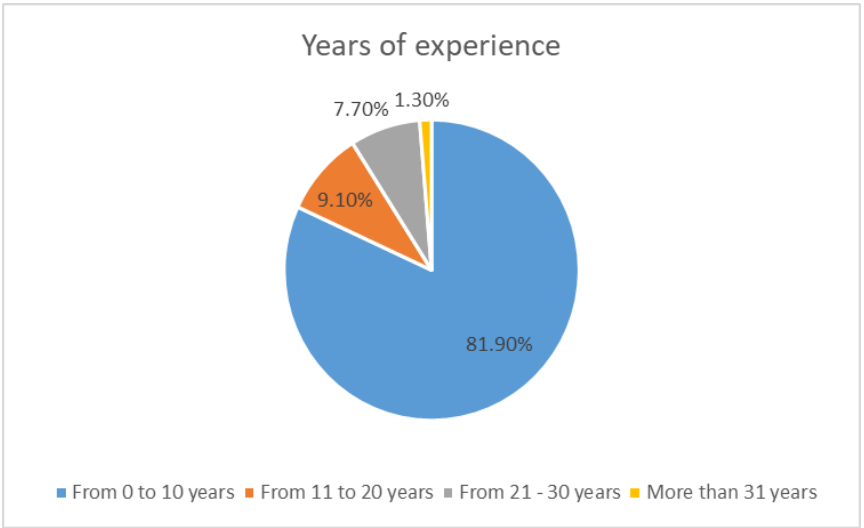

Figure 4.3: Years of experience

This difference can be clarified by those whose years of experience differ between (11-20 years).

They are the most diligent group in work and can follow up and manage construction work and development.

The researcher found that the percentage of the sample members based on the years of work in the same company was (60.68%) for those who work in the company in a period ranging between (0-5) years, and (34.16%) for those who work in the same company in A period ranging between (6-10) years, while the lowest percentage (15.16%) was for those who continued in the same company for more than 10 years. Years and this discrepancy can be explained by the companies 'desire to constantly hire new employees and the employees' desire to change their work to develop their scientific and administrative skills and improve their income level.

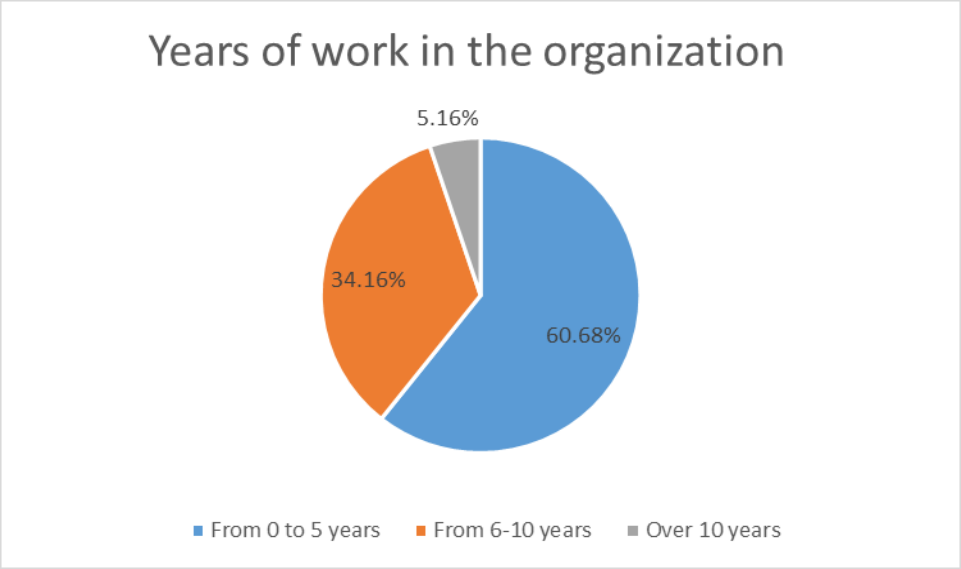

Figure 4.4: Years of work in the organization

As for gender, most males were (86.5%), while females were (13.5%), due to the nature of the arduous work in construction.

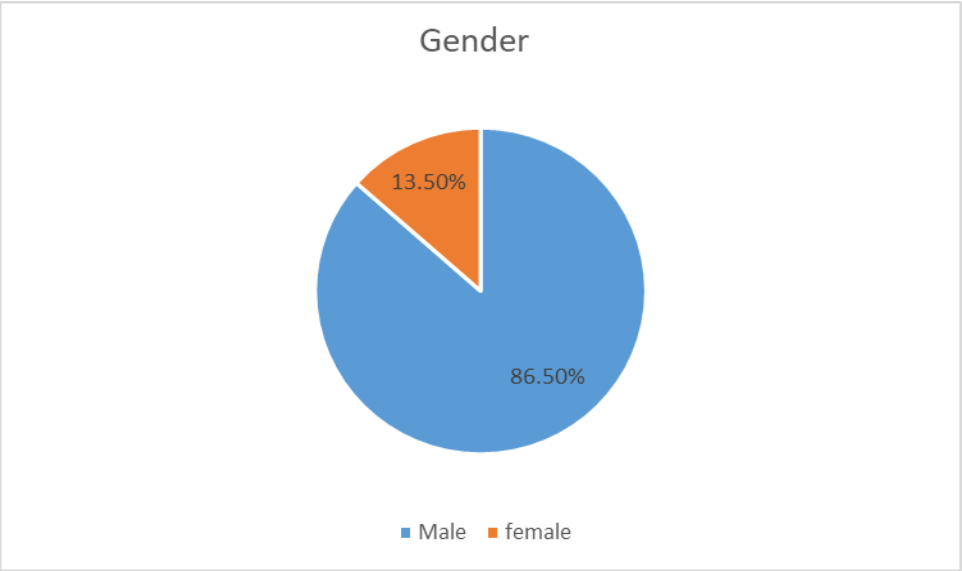

Figure 4.5: Gender

4.3 Statistical Methods Used in the Study

4.3.1 Data reliability test

The responses of the test sample participants were reliable, so the validity linked to the responses of the scientific engineers in the composite structures was (97%) noting that the appropriate degree is (60%) for the Alpha Cronbach laboratories (and hence it is possible to depend on the answers of the study sample and then analyze its results.

4.3.2 Descriptive statistical methods

To obtain the characteristics of the composition of the study population, the researcher has used method of repeated distribution of the responses of the individuals of the research sample, and it is a form of descriptive statistical method that helps to obtain general decisions about the characteristics and composition of the study population and the method of distribution of the study population.

4.3.3 Median estimation method (mode)

The study kept the vein approach based on the responses of the test survey participants based on the Likert scale.

The five-point ("completely agree = 5 degrees, agree = 4 degrees, neutral = 3 degrees, disagree = 2 degrees, completely disagree = 1 degree"). And to calculate the most frequent answers.

4.3.4 Using the (chi-squared) test

Chi-squared: a scale used to detect whether the true phenomenon point understudy is distributed random distribution, or a standard distribution, using an accurate statistical, mathematical formula.

The investigator used this measure to make sure that the distribution pattern used in the analysis is far from being at a degree of trust (5 percent).

4.3.5 Analyze the study sample data

The researcher used the data analysis program (Statistical Package for Social Sciences) in his analysis questionnaires of the study sample. And this approach was deemed to be one of the most used systems in sociology for the study of information statistics. Currently, it is commonly used by marketing and finance researchers and by government and education research teams. It is also used in the management and recording of information.

4.4 Evaluation of study variables

(Reasons for poor planning and its effect on delayed completion of projects).

This section of the thesis focuses on the review and evaluation of the causes of inadequate planning and its effect on delays in the execution of construction projects and on the efficiency of construction projects in Iraq in recent years, and the opinions of a sample of engineers working in the construction companies in the world and private sectors were extrapolated as follows:

1. Project management lacks identifying the achievable goals and is unable to measure and plan for them.

Table 4.2: Project Management Lacks of Identifying the Achievable Goals and Is Unable to Measure and Plan for Them

Answer	Frequencies	Percentage
Strongly agree	48	30.96%
Agree	78	50.32%
Neither	20	12.91%
Disagree	8	5.16%
Strongly disagree	1	0.65%
Sum	155	100%

Through the high approval rate, the researcher notes that the lack of accurate administrative competencies in project management, such as risk management, scheduling management, quality management, and others. This deficiency naturally reflects on the status of completion and quality of many construction projects of all kinds.

2. Initiation and decision-making were absent in project management.

Table 4.3: Project Management Lacks Initiation and Decision Making.

Answer	Frequencies	Percentage
Strongly agree	28	18.06%
Agree	77	49.68%
Neither	39	25.17%
Disagree	10	6.45%
Strongly disagree	1	0.64%
Sum	155	100%

3. Owing to a shortage of management experience, contracting firms take longer to finish contracts.

Table 4.4: Contracting Companies Delay in Completing Projects Due to the Lack of Scientific and Administrative Competency

Answer	Frequencies	Percentage
Strongly agree	44	28.39%
Agree	69	44.51%
Neither	31	20%
Disagree	11	7.1%
Sum	155	100%

Through the high approval rate, the researcher notes that the lack of accurate administrative competencies in project management, such as risk management, scheduling management, quality management, and others. This deficiency naturally reflects on the status of completion and quality of many construction projects of all kinds.

4. Because of the shortage of legal expertise, procurement firms postpone finishing contracts.

Table 4.5: Contracting Companies Delay in Completing Projects Due to Lack of Legal Skills

Answer	Frequencies	Percentage
Strongly agree	23	14.83%
Agree	50	32.26%
Neither	57	36.78%
Disagree	23	14.83%
Strongly disagree	2	1.3%
Sum	155	100%

Many contracting companies are operating illegally or in a primitive manner. Some do not have official offices or rent commercial records under the umbrella of a registered company. The workers who work in the company are only workers who are hired by hours. They do not have any association with the company, which negatively affects the construction process.

5. Because of the shortage of time management expertise, contracting firms miss finishing tasks.

Table 4.6: Contracting Companies Delay in Completing Projects Due To the Lack of Time Management Skills

Answer	Frequencies	Percentage
Strongly agree	62	40%
Agree	78	50.33%
Neither	10	6.45%
Disagree	5	3.22%
Sum	155	100%

The purpose of this study is to identify the role of time in management during the implementation of projects and thus control the flow of work and control the specifications and the completion of projects on time planned without any delay to ensure the achievement of the goal for which who accomplished it and on time

But it is clear from this question that companies are clearly suffering from a lack of skills and experience in time management and scheduling to reduce the proportion of wasted time without affecting the project outputs.

6. Contracting companies are late in completing projects due to changing the owner's management and the passage of decisions with a long chain before they are taken.

Table 4.7: Contracting Companies Are Late In Completing Projects As A Result of Changing the Management of the Owner and the Passage of Decisions with a Long Chain Before They Are Taken

Answer	Frequencies	Percentage
Strongly agree	56	36.14%
Agree	71	45.8%
Neither	20	12.9%
Disagree	8	5.16%
Sum	155	100%

Iraq suffers from a technological delay in administrative terms, and this is tangible to most Iraqi institutions. Therefore, the decision goes through a series of routine procedures before it is issued, which affects the workflow.

Likewise, the constant changes in administrative places sometimes lead to project suspension due to personal or partisan interests.

Therefore, it is preferable to work on the electronic storytelling project to reduce the wasted time in the decision-making and decision-making methods.

7. Project management lacks awareness of the value of time.

Table 4.8: Project Management Lacks Awareness of the Value of the Time

Answer	Frequencies	Percentage
Strongly Agree	60	38.71%
Agree	66	42.59%
Neither	15	9.69%
Disagree	13	8.38%
Strongly Disagree	1	0.64%
Sum	155	100%

Notice a high percentage of the sample agrees on the weakness of time management in construction projects in Iraq due to these companies' mismanagement and the lack of interest the rest of the time.

Time management is the best use of time and investment to achieve the greatest possible benefit and reduce wasted money.

8. Does the fluctuation of the materials in the markets affect the time of the project?

Table 4.9: The Fluctuation of the Materials in the Markets Affects the Time of the Project

Answer	Frequencies	Percentage
Strongly agree	36	23.23%
Agree	53	34.19%
Neither	38	24.52%
Disagree	25	16.12%
Strongly Disagree	3	1.94%
Sum	155	100%

Some construction projects need long periods of time to be completed and ready for the purpose for which they were built, the project may end in a year, two, three, or four depending on its size, type, and the financial cost paid to it, and during this long period of time, many changes occur in the country's economy, which results from The increase in the value of building materials, the increase in the value of

reinforcement, the value of finishing, and also the wages of labor in the project, almost all of this changes annually.

Therefore, we note that this factor has a clear impact on the construction projects in Iraq

9. Is the project management in Iraq unable to keep pace with technology and modernity?

Table 4.10: Project Management in Iraq Unable To Keep Pace with Technology and Modernity

Answer	Frequencies	Percentage
Strongly agree	101	65.17%
Agree	40	25.8%
Neither	8	5.16%
Disagree	6	3.87%
Sum	155	100%

From the sample's point of view, most of the Iraq projects suffer from their lack of accuracy and the lack of advanced technology in their implementation, which harms the project outputs' quality and quality.

10. Project management does not provide the staff with training programs and workshops that suit the organization's goals.

Table 4.11: Project Management Does Not Provide the Staff with Training Programs and Workshops That Suit the Organization's Goals

Answer	Frequencies	Percentage
Strongly agree	93	60%
Agree	45	29.04%
Neither	13	8.38%
Disagree	4	5.58%
Sum	155	100%

The researcher believes, through the opinion of the sample, the necessity and quality of a department specialized in training in companies that provide programs according to sound foundations, by providing training courses or workshops for employees and following up on what they were trained on to come up with the best outputs

11. Project management lacks considering potential delays.

Table 4.12: Project Management Lacks Considering Potential Delays

Answer	Frequencies	Percentage
Strongly agree	41	26.46%
Agree	68	43.87%
Neither	30	19.35%
disagree	14	9.03%
Strongly disagree	2	1.29%
Sum	155	100%

Scheduling is used to plan work, and delays are common. Delay determines if the project, or some due deadlines such as milestones, will end later than the planning dates.

But it is necessary to fuel a professional project manager in contracting companies for the project accelerator's account, and he must have at least a PMP certificate.

12. Weak relationship between the management and the workers.

Table 4.13: Weak Relationship between the Management and the Workers

Answer	Frequencies	Percentage
Strongly agree	25	16.48%
Agree	68	43.87%
Neither	43	27.74%
Disagree	16	10.32%
Strongly disagree	3	1.94%
Sum	155	100%

Weakness. The relationship between management and workers, and. Shortcomings in. The interest of management in developing the communication skills of the employees and the deficiencies. Management fairness in dealing with individuals and the wrong choice of the means of communication by management negatively affects the performance of employees in companies and reduces the performance of

The administrative communication process must be viewed as the main artery of work within the guide companies. It affects all the activities of the companies that seek to achieve their goals.

The interest on the management part to support vertical upward communication to ensure more participation of workers and get their ideas and opinions related to work.

13. Inability to build a harmonious team.

Table 4.14: Inability to Build a Harmonious Team

Answer	Frequencies	Percentage
Strongly agree	46	29.68%
Agree	69	44.51%
Neither	21	13.55%
disagree	16	10.32%
Strongly disagree	3	1.94%
Sum	155	100%

The researcher believes, through the opinion of the sample, the necessity and quality of a department specialized in training in companies that provide programs according to sound foundations, by providing training courses or workshops for employees and following up on what they were trained on to come up with the best outputs.

14. Project management lacks anchoring the principle of commitment, participation, and delegation.

Table 4.15: Project Management Lacks Anchoring the Principle of Commitment, Participation, and Delegation

Answer	Frequencies	Percentage
Strongly agree	30	19.35%
Agree	71	45.81%
Neither	38	24.52%
Disagree	14	9.03%
Strongly disagree	2	1.29
Sum	155	100%

In the category I agree with, the table indicates the high frequency of responses. This suggests that most of the sample items agree; however, the delay in finishing contracts by contracting entities is attributed to its poor efficacy in planning.

The agreement percentage was (65.16%), and the abstaining sample percentage was (24.52%).

15.Project management lacks improving productive time and reducing wasted time.

Table 4.16: Project Management Lacks Improving Productive Time and Reducing Wasted Time

Answer	Frequencies	Percentage
Strongly agree	47	30.33%
Agree	86	55.48%
Neither	13	8.39%
Disagree	9	5.8%
Sum	155	100%

Through the sample opinions, the researcher sees that time management is organizing and implementing a strategy related to the time required for work activities in the project. Effective time management is essential to successfully and efficiently achieve budget and program objectives and achieve profitability. Projects can risk incurring unnecessary costs and delays due to ineffective time management, either by failing to allow for the full complexity of the project or failing to manage scheduled work or unforeseen events effectively.

On large projects, the customer may appoint a program consultant to prepare a detailed program for the project, including a planned construction program if no contractor is appointed. Once the contractor is hired, they will be responsible for programming the construction work, but the program advisor may develop a comprehensive program for the client. During the planning phase, all work activities must be properly understood and planned to optimize resource allocation and reduce the potential for 'the unknown.' Estimates can then be made of how long each activity will last. This is critical for setting milestones and deadlines, allocating resources, and setting contract pricing and cash flow requirements.

16. Project management lacks continuing monitoring of performance.

Table 4.17: Project Management Lacks Continuing Monitoring of Performance

Answer	Frequencies	Percentage
Strongly agree	66	42.59%
Agree	53	34.19%
Neither	22	14.19%
disagree	13	8.39%
Strongly disagree	1	0.64%
sum	155	100%

see from the ratios in the table that monitoring performance in projects is not good, as monitoring over the project leads to controlling project costs, achieving control over the existence of the project, and monitoring project time and achieving the agreed time.

17. Project management lacks awareness of the cost factor.

Table 4.18: Project Management Lacks Awareness of the Cost Factor

Answer	Frequencies	Percentage
Strongly agree	35	22,58%
Agree	59	38.07%
Neither	35	22.58%
Disagree	22	14.19%
Strongly disagree	4	2.85%
Sum	155	100%

In the sample's opinion, the researcher believes that the important factor in the success of construction projects is their ability to objectively estimate the project's cost and adapt to variables of the external environment, which is affected by many elements and requirements of the competitive environment. These projects face several problems to achieve their goals, and the research aims to reduce the difficulties and problems facing projects in Iraq.

18. Owing to a lack of sufficient standards for identifying humanitarian components, contracting agencies are slowing the execution of contracts.

Table 4.19: Contracting Companies Delay Completing Projects Due to the Lack of the Right Criteria in Choosing Humanitarian Elements

Answer	Frequencies	Percentage
Strongly agree	37	23.87%
Agree	85	54.84%
Neither	26	16.78%
Disagree	7	4.51%
Sum	155	100%

The researcher notes from the sample's opinion and the high approval rate that there are no criteria and foundations in selecting human resources, and this leads to the presence of people outside their places and thus leads to the failure of the project due to the failure of workers in managing the project.

19. Do the changes made by the owner affect the quality of the project?

Table 4.20: The Changes by the Owner Affect the Quality of the Project

Answer	Frequencies	Percentage
Strongly agree	46	29.68%
Agree	70	45.17%
Neither	25	16.13%
Disagree	13	8.38%
Strongly disagree	1	0.64%
Sum	155	100%

The surveyed sample sees the frequent changes of the owner that affect the project's overall performance through delay and increase in cost through the high percentage of approval.

20. Does the inconsistency of construction and architectural plans affect the quality of the project?

Table 4.21: Inconsistency of Construction and Architectural Plans Affect the Quality of the Project

Answer	Frequencies	Percentage
Strongly agree	49	31.62%
Agree	54	34.84%
Neither	36	23.22%
Disagree	15	9.68%
Strongly disagree	1	0.64%
Sum	155	100%

The difficulty of implementing architectural designs and the limited availability of modern machinery and advanced technology leads to the difficulty of implementing architectural designs, the increase in the cost of implementing the project, the poor quality, or the demand to change designs to be suitable available capabilities.

21. Does contracting with a secondary contractor impact the progress and quality of the project?

Table 4.22: Contracting with a Secondary Contractor Impacts the Progress and Quality of the Project

Answer	Frequencies	Percentage
Strongly agree	83	53.55%
Agree	59	38.06%
Neither	7	4.52%
Disagree	6	3.87%
Sum	155	100%

It is clear through the questionnaire that the sample agrees that one of the important reasons is to contract with the subcontractor, and Who can explain these reasons

The purpose of the contract is for-profit purposes:

1- Contracting with the subcontractor due to the lack of capabilities or the availability of machinery for the contractor
2- The contract is made without the owner of the project
3- These obstacles are sufficient to delay the completion of the project or its poor quality

22. Does changing world prices affect the cost of the project?

Table 4.23: Changing World Prices Affect the Cost of the Project

Answer	Frequencies	Percentage
Strongly agree	36	23.22%
Agree	57	36.78%
Neither	18	11.61%
Disagree	34	21.94%
Strongly disagree	10	6.45%
Sum	155	100%

It directly affects the delay in the completion of projects on their scheduled dates and the effect of this on the rates of completion or the inability to provide resources for the project due to the change in global material prices, which sometimes leads to the suspension of the project due to the high costs and the project does not pay the value of its construction

23. Does the delay of payment to the contractor affect the quality of the project?

Table 4.24: The Delay of Payment to the Contractor Affects the Project's Quality

Answer	Frequencies	Percentage
Strongly agree	62	40%
Agree	53	34.2%
Neither	22	14.19%
Disagree	17	10.97%
Strongly disagree	1	0.64%
Sum	155	100%

The completion of the project on time is one of the main and important objectives in project management. Any delay in the project will undoubtedly be harmful to both the owner and the contractor alike.

Delay in paying the contractor's dues, which leads to a delay in implementing the project.

24. Does the appropriateness of contracting with the type of project affect the quality of the project?

Table 4.25: The Appropriateness of Contracting with the Type of Project Affects the Project's Quality

Answer	Frequencies	Percentage
Strongly agree	40	25.8%
Agree	75	48.39%
Neither	31	20%
disagree	7	4.52%
Strongly disagree	2	1.29%
Sum	155	100%

To ensure quality in each of the stages that the project goes through, it is indispensable to choose the right contractor or the appropriate company to implement this paragraph to avoid delay in implementation or poor quality and thus a waste of money.

Who must place strict conditions on article companies, and What must make a list of companies before agreeing to award the project?

25. Is the project's low quality resulted from the randomness of the price and lack of contracting experience?

Table 4.26: The Project's Low Quality Resulted from the Randomness of the Price and Lack of Contracting Experience

Answer	Frequencies	Percentage
Strongly agree	74	47.75%
Agree	54	34.85%
Neither	16	10.32%
Disagree	10	6.45%
Strongly disagree	1	0.64%
Sum	155	100%

Recently there has been an increase in interest in risk management in the project, resulting from fluctuations

The accelerating project environment and the latter's size and complexity resulted in an increase and diversity of risks due to the breadth and diversity of its sources. Each project component can create risks that threaten the project's success by not

maintaining its three constraints (time, cost, quality). Therefore, to ensure the successful completion of the project and the achievement of its objectives, what must select specialists in project management with long experience in contracting to carry out the contract.

26. Does industrial fraud affect project quality?

Table 4.27: Industrial Fraud Affects Project Quality

Answer	Frequencies	Percentage
Strongly agree	95	61.29%
Agree	46	29.68%
Neither	9	5.8%
Disagree	4	2.59%
Strongly disagree	1	0.64%
Sum	155	100%

Who will note that the low quality of the primary materials included in the project has a clear effect on the project's final quality? Therefore, the materials must be subject to the standardization and quality control device tests and be licensed by them if they are locally made. It has an ISO certificate if it is of international origin.

27. Because of the lack of managerial experience, procurement firms postpone the execution of programs.

Table 4.28: Contracting Companies Postpone Completing Projects Due to the Lack of Leadership Competence

Answer	Frequencies	Percentage
Strongly agree	47	30.32%
Agree	80	51.61%
Neither	18	11.62%
Disagree	10	6.45%
Sum	155	100%

28. Does the multiplicity of bodies responsible for the design and supervision affect the project time?

Table 4.29: The Multiplicity of Bodies Responsible for the Design and Supervision Affects Project Time

Answer	Frequencies	Percentage
Strongly agree	83	53.54%
Agree	47	30.32%
Neither	15	9.68%
disagree	8	5.17%
Strongly disagree	2	1.29%
sum	155	100%

The goal of project management is to organize project resources to be implemented [less time, less cost, and higher quality

The traditional administrative methods obstructing the project's progress is one of the most important problems facing the project in light of the delay in responses in correspondence and the multiplicity of references responsible for taking the decision.

29. Do the design requirements have an impact on the project progress?

Table 4.30: Do the Design Requirements Have an Impact on the Project Progress

Answer	Frequencies	Percentage
Strongly agree	20	12.9%
Agree	64	41.51%
Neither	38	24.52%
Disagree	27	17.42%
Strongly disagree	6	3.87%
Sum	155	100%

The contractor must have a group of experienced engineers to evaluate the projects and diagnose the obstacles and problems facing the project during implementation and the suitability of the project to the contractor's capabilities to avoid stopping during implementation or the inability to implement the design or the difficulty of obtaining materials for work.

30. Do they benefit from the experience of previous projects regarding positives and negatives aspects?

Table 4.31: They Benefit from Previous Projects' Experience Regarding Positives and Negatives Aspects

Answer	Frequencies	Percentage
Strongly agree	36	23.22%
Agree	57	36.78%
Neither	18	11.61%
Disagree	34	21.94%
Strongly disagree	10	6.45%
Sum	155	100%

Notice that the percentage of approvers is slightly greater than half, which enters the competing companies' necessity on the project. It must be one of the sober companies with a positive reputation in the labor market. The company must be eclipsed before signing the contract by the king with the executing company.

4.5 Test of Hypotheses

In this topic, the researcher deals with discussing and interpreting the results of the field study through information resulting from the statistical data analysis tables and the statistical analysis results for a test hypothesis. The researcher will discuss and interpret the result of each hypothesis separately to judge its validity

Or not, according to the general statistical analysis, as follows:

- The use of the model: the model was used for each phase of the questionnaire to find out the most frequent answers according to the weight of the answer, where the score (1) is given as the weight of the non-answer Completely satisfied, the score (2) as the weight for the unconvinced answer, the score (3) as the weight for the neutral answer, and the score (4) as the weight for the answer is satisfied, and the score (5) for the answer is completely satisfied.
- Using the chi-squared distribution to find the significance of the differences in the study sample individuals' answers for each hypothesis.

4.5.1 First main hypothesis

Weak administrative and engineering coordination by contracting firms is the primary cause of project delays, according to the participants in the study survey,

who are project managers in contracting companies and project managers in engineering project management companies. This hypothesis is divided into three sub-hypotheses:

4.5.1.1 First sub-hypothesis

From the perspective of the participants in the study sample represented by engineers working in contracting firms, the delay in finishing engineering tasks is attributed to a lack of consistent comprehension of the principle of administrative preparation and engineering personnel at contracting companies.

The following sentences were submitted to the people involved in the research questionnaire:

To prove this assumption, what would first determine the mean (mode) of all hypothesis statements to understand the course of a sample study, and to verify the presence of statistically meaningful discrepancies between the numbers of those who agree, are neutral, and disagree with the findings, to show the gaps between the responses, who used a chi-square distribution.

The following is the table that shows the estimation of the mode values and the values of chi-squared for the first hypothesis statements:

Table 4.32: Table That Shows the Estimation of the Mode Values and the Values of Chi-Squared For the First Sub Hypothesis Statements of Fist Main Hypotheses

No.	Statements	Mode	Chi-Square
1	Project management lacks identifying the achievable goals and is unable to measure and plan for them	4	78.110
2	Project management lacks initiation and decision making	4	85.490
3	Contracting companies delay in completing projects due to the lack of scientific and administrative competency	4	104.432
4	Contracting companies delay in completing projects due to lack of legal skills	4	67.994

For the four statements, the value of the chi-square measured to show the discrepancies between the participants of the research sample

(78,110,85,490,104,432,67,977) is higher than the table value of the chi-square at degrees of freedom (2) and the amount of significance (5 percent), which is 5,99. Therefore, this indicates that there are statistically significant differences between the answers of the sample members and those who agree that the delay in the completion of engineering projects is due to The lack of a clear understanding of the concept of administrative and engineering planning with the contracting companies.

4.5.1.2 Second sub-hypothesis

The delay in the execution of engineering projects is due to inadequate knowledge, from the point of view of individuals in the study sample represented with engineers working in contracting firms, of the value of administrative preparation and engineering personnel in contracting firms.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.33: Table Shows the Estimation of the Mode Values and the Values of Chi-Squared for the Second Sub-Hypothesis Statements of the First Main Hypotheses

No.	Statements	Mode	Chi-Square
5	Contracting companies delay in completing projects due to the lack of time management skills	4	45.748
6	Contracting companies delay in completing projects due to the lack of administrative competency	3	64.710
7	Project management lacks awareness of the value of the time	4	82.516
8	Does the fluctuation of the materials in the markets affect the time of the project?	4	89.613

The chi-square value was determined to demonstrate the variations between the research sample participants for the four statements (45.748, 64.710, 82.516, 89.613). The values are greater than the tabular value of the chi-square at degrees of freedom (2) and the significance amount (5 percent), which is 5.99; thus, this indicates that there are statistically important discrepancies between the survey

participants' responses and in favor of those who accept that the delay in completing engineering tasks is attributable to inadequate knowledge.

4.5.1.3 Third sub-hypothesis

The delay in implementing engineering projects is due to contracting firms do not rely, from the point of view of the participants in the study sample represented by engineers working in contracting firms, on the elements of successful administrative and engineering preparation as a basis for the performance of their proposals.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.34: Displays the Approximate Mode Values and Chi-Squared Values for the Third Sub-Hypothesis Claims of the First Key Hypotheses

No.	Statements	Mode	Chi-Square
9	Is the project management in Iraq unable to keep pace with technology and modernity?	5	152.123
10	Project management does not provide the staff with training programs and workshops that suit the goals of the organization	5	125.232
11	Project management lacks considering the potential delays	4	130.581

The chi-square value determined to reflect variations between research sample participants for the three statements (152.123, 125.232, 130.581), and this value is greater than the tabular value of the chi-square at degrees of freedom (2) and the amount of significance of (5 percent), which is 5.99. therefore, this indicates that there are statistically significant differences between the answers of the sample members and in favor of those who agree that The delay in the completion of engineering projects is due to the non-reliance of contracting companies on the elements of effective administrative and engineering planning as a basis for the success of their plans.

4.5.1.4 Fourth sub-hypothesis

The delay in the building projects of the contracting firms is attributed to the lack of coordination between project parties (owner - designer - executor-supervisor) and the lack of communication between senior management and the parties to the project establishment process.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.35: Table That Shows the Estimation of the Mode Values and the Values of Chi-Squared For the fourth Sub-Hypothesis Statements of First Main Hypotheses

No.	Statements	Mode	Chi-Square
12	The weak relationship between the management and the workers	4	113.871
13	Inability to build the harmonious team	4	89.677
14	Project management lacks anchoring the principle of commitment, participation, and delegation	4	114.387

The chi-square value determined to display the variations between the research sample participants for the three sentences (113.871, 89.677, 114.387), The values are higher than the tabular value of the chi-square at degrees of freedom (2) and the significance amount (5 percent), which is 5.99; thus, this suggests that there are statistically important discrepancies between the responses of the members of the sample and in favor of those who believe that the delay in the building programs of the contracting firms is attributed to the lack of responses of the members of the sample and in favor of those who agree that. (owner - designer - executor - supervisor) as well as the lack of communication between senior management and the parties to the project establishment process.

4.5.1.5 Fifth sub-hypothesis

The delay in construction projects is due to non-compliance with the project plan and oversight over the project's flow plan regarding cost, time, and quality.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.36: Table That Displays the Approximation of the Mode Values and the Values of Chi-Squared for the Fifth Sub-Hypothesis Statements of First Main Hypotheses

No.	Statements	Mode	Chi-Square
15	Project management lacks improving productive time and reducing wasted time	4	83.871
16	Project management lacks continuing monitoring of performance	4	99.323
17	Project management lacks awareness of the cost factor	5	97.226

For the three statements, the magnitude of the chi-square determined to show the variations between the participants of the research sample (83,871, 99,323, 97,226) is higher than the table value of the chi-square at degrees of freedom (2) and the importance amount (5 percent), which is 5,99 percent, respectively. Therefore, this indicates that there are statistically significant differences between the answers of the sample members and in favor of those who agree that the delay in construction projects is due to non-compliance with the project plan and oversight over the project's flow plan in terms of cost, time and quality.

4.5.2 Second main hypothesis

The construction company management's insufficient commitment to make the required efforts to implement successful quality management is divided into four sub-assumptions.

4.5.2.1 First sub-hypothesis

Lack of efficiency and training of work frameworks, and then fail to perform tasks, a lack of expertise, codes, and general specifications that must be followed during the construction process, and a promise of clarity in the limits of responsibilities related to work between the project parties and the lack of capabilities in companies to

implement the architectural design with the required quality, which affects Project quality.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.37: Table Illustrates the Mode Values Estimation and the Values of Chi-squared For the First Sub-Hypothesis Declarations of the Second Main Hypotheses

No.	Statements	Mode	Chi-Square
18	Project management lacks improving productive time and reducing wasted time	4	52.452
19	Project management lacks continuing monitoring of performance	4	44.452
20	Project management lacks awareness of the cost factor	5	147.935
21	Does the experience of the secondary contractor affect the quality of the project?	4	61.290

For the three statements, the magnitude of the chi-square determined to show the variations between the participants of the research sample (83,871, 99,323, 97,226) is higher than the table value of the chi-square at degrees of freedom (2) and the importance amount (5 percent), which is 5,99 percent, respectively. Therefore, this indicates that there are statistically significant differences between the answers of the sample members and in favor of those who agree that Lack of efficiency and training of work frameworks, and then failure to perform tasks, a lack of expertise, codes, and general specifications that must be followed during the construction process, and a promise of clarity in the limits of responsibilities related to work between the project parties and the lack of capabilities in companies to implement the architectural design with the required quality, which affects Project quality.

4.5.2.2 Second sub-hypothesis

Insufficient interest in achieving quality by workers in construction projects, the inconsistency of the volume of work and its impact on the stability of the national economy and world prices, and its connection to the availability of materials.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.38: Table That Demonstrates the Mode Values Estimation and the Chi-Squared Values for the Second Sub-Hypothesis Statements of Second Main Hypotheses

No.	Statements	Mode	Chi-Square
22	Does changing world prices affect the cost of the project?	4	42.581
23	Does the delay of payment to the contractor affect the quality of the project?	4	26.445

- What calculated the value of chi-square to clarify the differences between the individuals of the study sample in statement No. (22) where it was (42.581), and At degrees of liberty, this value is higher than the chi-square tabular value (2) and the level of significance (5%) which is 5.99. In addition, this indicates there are statistically significant differences between the answers of the sample members and in favor of those who agree to that Insufficient interest in achieving quality by workers in construction projects, and the inconsistency of the volume of work and its impact on the stability of the national economy and world prices, as well as its connection to the availability of materials.
- Who calculated the chi-square value to explain the alterations between the individuals of the study sample in statement No. (23) where it was (26.445), and this value is smaller than the tabular value of the chi-square at degrees of freedom (2) and the level of significance (5%) which is 5.99, and this indicates there are statistically significant differences between the answers of the sample members and in favor of those who disagree with that Insufficient interest in achieving quality by workers in construction projects, and the inconsistency of

the volume of work and its impact on the stability of the national economy and world prices, as well as its connection to the availability of materials.

4.5.2.3 Third sub-hypothesis

The lack of suitability of companies to the type of project, the lack of quality-related conditions among the project parties, and the limited availability of construction materials subject to standard specifications impact the quality of the project.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.39: Table That Illustrates the Mode Values Estimation and Chi-Squared Values for the Third Sub-Hypothesis Statements of Second Main Hypotheses

No.	Statements	Mode	Chi-Square
24	Does the appropriateness of contracting with the type of project affect the quality of the project?	4	110.774
25	Does the project's low-quality result from the randomness of the price and lack of contracting experience?	5	127.226
26	Does industrial fraud affect project quality?	5	207.548

The value of the chi-square calculated to indicate the differences between the members of the study sample for the two statements (110.774, 127.226, 207.548), and this the values is greater than the tabular value of the chi-square at degrees of freedom (2) and the level of significance of (5%), which is 5.99; therefore, this indicates that there are statistically significant differences between the answers of the sample members and in favor of those who agree that The lack of suitability of companies to the type of project, the lack of quality-related conditions among the project parties and the limited availability of construction materials subject to standard specifications, an impact on the quality of the project.

4.5.2.4 Fourth sub-hypothesis

Lack of use of previous implemented experiences and projects has affected the quality of the project.

The following phrases were posed to the individuals participating in the study questionnaire:

Table 4.40: Table That Shows the Estimation of the Mode Values and the Values of Chi-Squared for the Fourth Sub-Hypothesis Statements of Second Main Hypotheses

No.	Statements	Mode	Chi-Square
27	Contracting companies delay in completing projects due to the lack of leadership competence	5	114.806
28	Does the multiplicity of bodies responsible for the design and supervision affect the project time	4	65.613
29	Are the design requirements fully understood by the contractor	5	84.581
30	Do they benefit from the experience of previous projects regarding positives and negatives aspects	4	96.968

The value of the chi-square calculated to indicate the differences between the members of the study sample for the four statements (114.806, 65.613, 84.581, 96.968), and this the values is greater than the tabular value of the chi-square at degrees of freedom (2) and the level of significance of (5%), which is 5.99; therefore, this indicates that there are statistically significant differences between the answers of the sample members and in favor of those who agree that Lack of use of previous implemented experiences and projects has affected the quality of the project.

From the above, we conclude that the two main hypotheses of the study, which states:

- The contracting companies' poor administrative and engineering planning is the main cause of delay in completing its projects from the opinion of the participants in the research represented by project managers in contracting companies and project managers in engineering project management

specialized companies. There are only three sub-hypotheses derived from this hypothesis.

- The construction company management's insufficient commitment to make the required efforts to implement successful quality management is divided into four sub-assumptions.
- What achieved it after the questionnaire was presented to the research sample. They are engineers working in the construction sector in Iraq.

5. ANALYSIS

5.1 Results Related to the Main Hypotheses of the Study

5.1.1 Discussion on finding related to the first main hypothesis

The study showed that the research sample agreed that the insufficient awareness of the contracting companies regarding the planning concept was a considerable reason for the poor planning of the engineering projects. Some engineers working in contracting companies believe that the project plan is poorly executed, and the contracting company does not rely on the principle of delegating authority. The plan is not explained and clarified for workers. It motivates them to implement it. The weakness of the manager in influencing the implementers of the plan is one of the most important ones of the important reasons is the lack of sufficient knowledge of the concept of planning and related to the ignorance of the contracting company regarding the concept of planning is negligence in the implementation of the project plan, from Where the technical staff capabilities are weak and the staff inability to update and develop the plan and review the process Its implementation according to emergency conditions; And not to deal favorably with the late activities in the project. It is clear evidence that contracting companies do not focus on the concept of planning, as the insufficient coordination between the company's cadres in developing the project plan, the difficulty of dealing with the plan's weaknesses, and the Lack of decision-makers in the field of planning. It undermines confidence in the plan for implementing the project.

The research sample also considered the Lack of experience in preparing the project plan, in terms of insufficient understanding of the engineering project nature, the failure to define the objectives of the project and deal with and analyze information, as well as the Lack of experience in setting the timetable for the implementation of the project. It is a clear indication of insufficient awareness of the contracting companies regarding the planning importance, and it hurts the duration of the project implementation. Still, the interest of contractors in this opinion was relatively less.

5.1.2 Discussion on the results related to the second main hypothesis

The study showed that the research sample agreed that contracting companies would not make the required efforts to implement quality management. Engineers believe that the reality of quality management in construction projects in Iraq by working in contracting companies is the lack of quality management in companies the need to check the means and methods related to quality management. The quality management in the Iraqi construction projects suffers from some aspects. It needs a new formulation that includes achieving a high level of quality in its projects to keep pace with those in the developed countries.

5.2 Discussion on the General Results of the Study

1- The study showed a general strategic defect in many contracting companies that led to delayed completion of projects. This defect was evident when these companies found themselves in a real crisis resulting from their inability to implement their plans on the project as due to the lack of a culture of planning in them and Lack of sufficient understanding by the technical staff in the project of the engineering project nature, and consequently the misappropriation of project resources, which led to their exposure to more delays.

2- The study exhibited an administrative weakness in the contracting companies regarding their neglect of the planning importance, which led them into chaos and proved the stiffness in handling project risks and inadequate administrative coordination between the project cadres and the company, which encouraged the companies to take unrealistic steps which resulted in more project delays instead of decreasing the time of implementation.

3- The study revealed the clear weakness of contracting companies in the engineering planning regarding their inability to set a tight schedule for the project, which made them in error when estimating the project's time of implementation. These companies appreciate the importance of time.

4- The study showed the contracting companies depend on generalities in their planning lacking the focus on the project important objectives, which is the implementing the project as quick as possible, with the lowest cost and the

highest quality, therefore the project plan fails, which led to the waste of money and time.

5- The study showed the existence of a structural defect in the upper management of contracting companies in terms of the failure of these departments to apply the principle of compulsory planning, which allowed the company's cadres to implement the project in an ad hoc manner away from the modern scientific concepts and methods applied in the field of construction project management and planning. This led to the project staff's delay in making critical decisions during the project and wasting more implementation time.
6- The study process is deficient, as the detailed study is often started without discussing the legal and regulatory requirements for the project and the best implementation methods.
7- Another party does not audit most of the projects.
8- There is a lack of study and design, and the study does not match reality.
9- There is a deficiency in contractors' and subcontractors' competence due to randomness in entering this negligence field. This causes a lack of focus in choosing contractors who have previous experience in similar work.
10- Choosing a contractor in most projects is based on a financial evaluation more than a technical evaluation.
11- Failure to fully comply with the contractor's conditions and specifications to seek to achieve a greater profit.

5.3 Discussion on Findings Regarding the Sub-Hypotheses

1- The results of the study revealed a clear effect on the extent to which contracting firms understand the planning concept and its impact on the plan of the project and on its completion time, whereas the elements of a good understanding of the planning process are; an understanding the engineering project nature, defining the objectives of the project and analyzing the data of it, passing through the establishment of the company's staff and departments, with the processes of administration and coordination that lead to the plan's success and reducing the project implementation period, and ending with

updating the plan and reviewing the implementation process according to the modified plans, many construction companies lack this.

2- The results of the study showed that there is a negative effect on the application of the planning approach by the officials in contracting firms, leading to a decrease in the planning importance for these companies, as officials avoid incurring the trouble of pre-planning for work because they think that it is a waste of time and this is reflected negatively on the specified completion time for the project.

3- The study results showed that most of the factors that affect the delay in construction projects lie in the planning stage. The use of planning following the elements that ensure the plan's success is sufficient to spare companies the delay in the completion of their projects.

4- The study results showed that the Lack of correlation between the administrative components of the construction projects and the parties to the construction process from main contractors, subcontractors, and suppliers but rather directly affects the quality of the project and the duration of its implementation.

5- The study results showed that the contractor's commitment to secure a technical staff specialized in the engineering planning process, which develops the plan, follows it up, and develops it according to the working conditions but reduces the time wasted and improves the company's performance.

6- The study results showed that good interaction between the project's needs and the project's cadres and workers' technical capabilities would achieve stability in the project, making it easier for contracting companies to control the project's time.

7- The results of the study showed that delegating the authority to the specialists in terms of distributing the work and using the available resources to translate the plan into real actions would enhance the concept of planning in the company and thus control the factors affecting the project time, and this is consistent with the principles of modern management.

8- The study outcomes showed a risk plan is required in the company to understand the planning process. The worst situations for what the project

could go through are developed, and this is consistent with the modern management principles.

9- The study outcomes revealed that the absenteeism of measures and standards to measure the performance of the project with all its components means that these companies failed to create and develop an appropriate statistical database to start from to develop the performance of the company in upcoming projects, and this is consistent with the modern management principles.

10- The findings of this research revealed that the non-reliance of contracting companies on the incentive system in general and motivation to conduct effective planning. In particular, would create a state of apathy among the staff of the project, thus laxity in the implementation that leads to the delay of the project, and this is consistent with the principles of modern management.

1- 11-The results showed that not allocating contracting companies during their evaluation of the cost of projects to a special budget for project planning would confuse this company, especially when planning is part of the tender requirements. This is consistent with the principles of modern management.

2- 12-The study results showed that the failure to neglect the supervising authorities' quality control and the failure to apply good control affect the project's quality.

5.4 The Effect of the Experience of Managers on Answering Questions

The philosophy of experience is one of the topics that occupied a space in management, and (Hercules and Mercy; 2017). defines experience as the process of interaction between an individual and his environment. This interaction enables him to acquire correct ways of thinking.

Through this, the researcher tries to prove the validity of the theory, to prove the importance of years of experience to managers using a questionnaire by comparing the number of repetitions and recurrence rates.

who chose the first and last question in the questionnaire, and what compared the percentage of answers to the sample according to years of experience?

The comparison between the percentage of answers from the sample with experience (10 years) and the sample with experience greater than (30 years) to test the

importance of experience in choosing the correct answer and understanding the significance of experience in project management and its success.

The researcher notes that a sample with more than 11 years of experience has an accurate answer compared to a sample of 10 years.

A random set of questions was selected that were asked to the study population.

We found the response percentages of testers with less than 10 years of experience, and testers with more than 11 years of experience, to find out the accuracy of those with the highest experience in choosing the reasons affecting the progress of construction projects.

It is very important to have the expertise available in companies to create successful projects.

The following figures are a random sample chosen from the questionnaire questions. The answers were compared between the two categories:

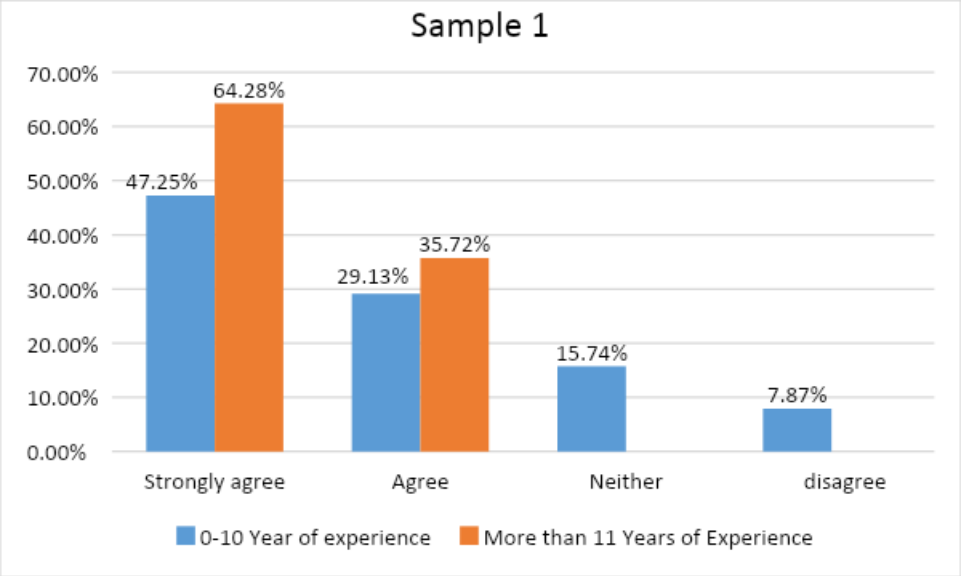

Figure 5.1: Random Sample 1 of the Questionnaire Questions

It is noticed through the following figures the accuracy of the tested sample with more than 11 years of experience in the answer, where the ratio appeared that the percentage of neutrality was low compared to those with experience less than 10 years, it appeared that most of the sample gave its opinion, as well as the percentage of randomness in choosing the answer was very few in the sample with Experience is more than 11 years, we conclude from this test that you are of great importance in

project management and solving problems facing the project, as well as experience is an important factor in the project planning process.

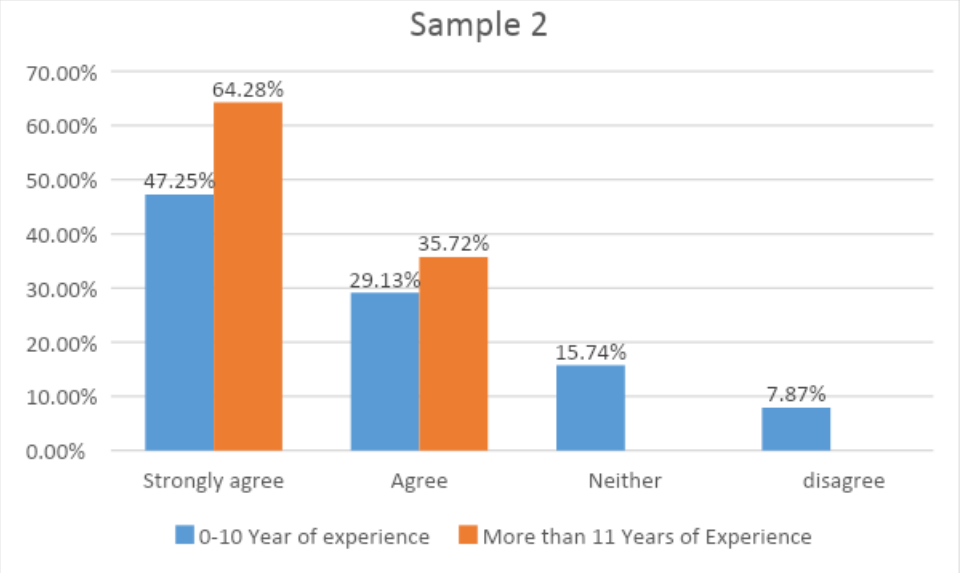

Figure 5.2: Random Sample 2 of the Questionnaire Questions

It is noticed through the comparison between the sample answers in the question as well as the accuracy of the answer of the sample with more than 11 years of experience, this gives the accuracy of the study in the field of time management that exists and comes out with accurate results that lead to developing recommendations and solutions to the problems of the referred.

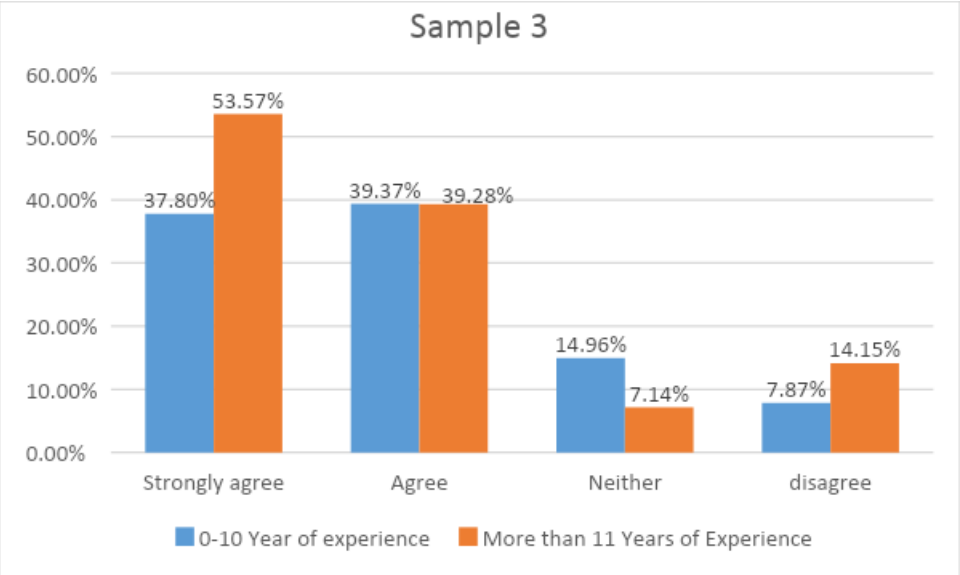

Figure 5.3: Random Sample 3of the Questionnaire Questions

Note in the answers to the random question that the two samples had difficulty in choosing the reason for delaying the completion of the project, due to several reasons, including the type of problems and the rate of occurrence of this problem in the project.

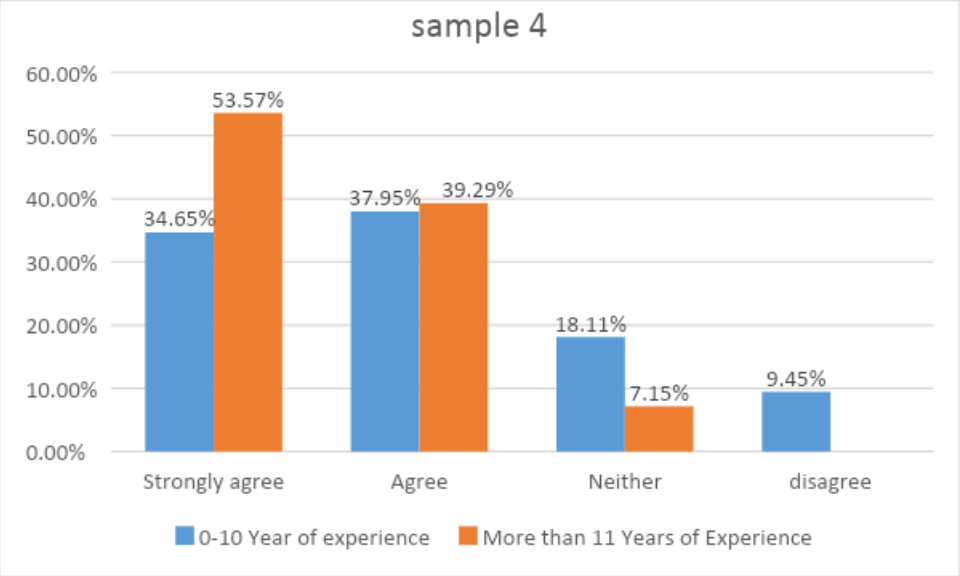

Figure 5.4: Random Sample 4 of the Questionnaire Questions

The actual practice of working on projects is of great importance in solving problems, as the engineer acquires important skills that are the reason for the success of the work entrusted to him.

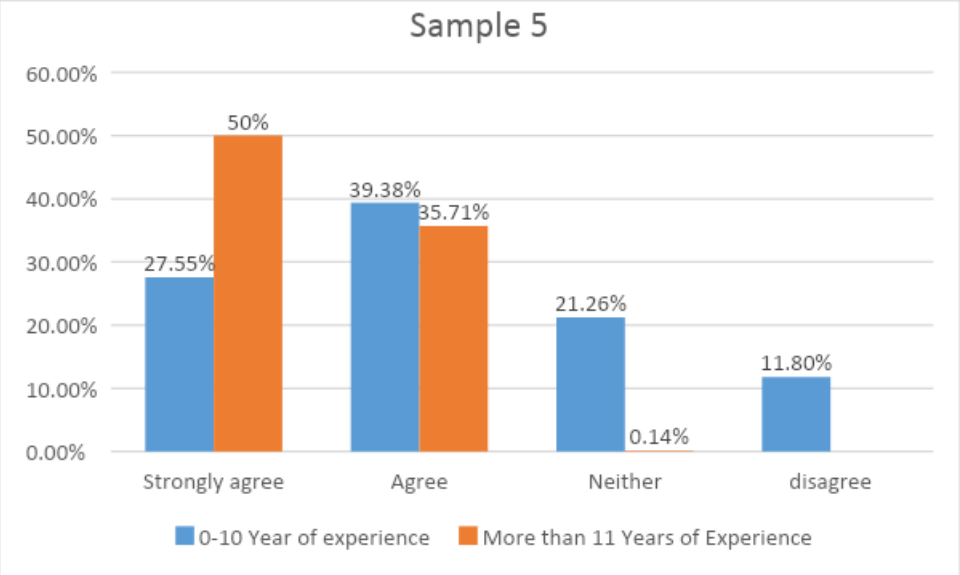

Figure 5.5: Random Sample 5 of the Questionnaire Questions

In comparing the fifth random question that was chosen randomly from among the questionnaire questions, we note that experience is a piece of knowledge or skill in a specific job or activity that you acquired because you did this work or activity for a long time.

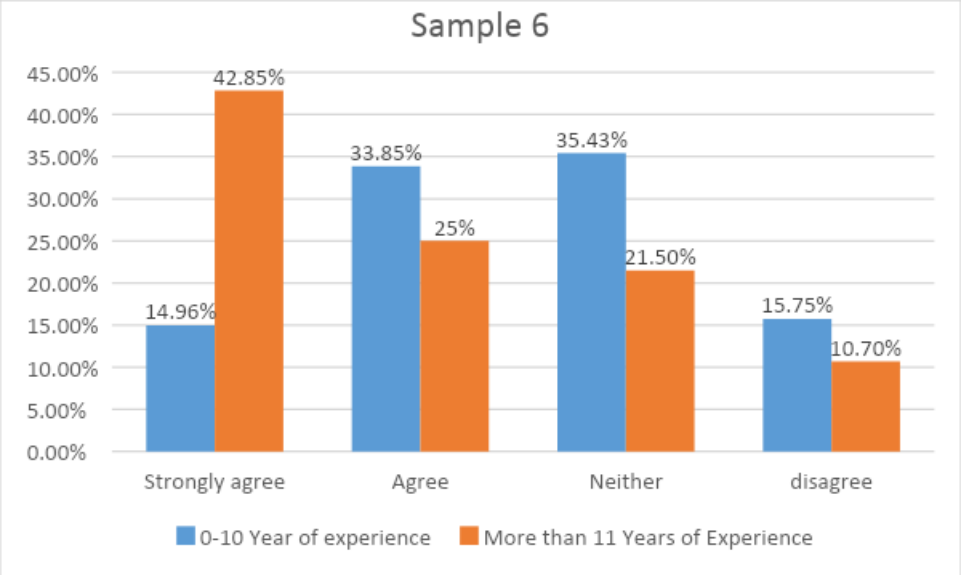

Figure 5.6: Random Sample 6 of the Questionnaire Questions

With the difficulty of determining the reason for the delay of the project and the difficulty of determining the extent of the impact of this factor on the progress of the project, we note from the opinion of the sample with experience over 11 years that a strategic plan can be developed for the problems that can be expected.

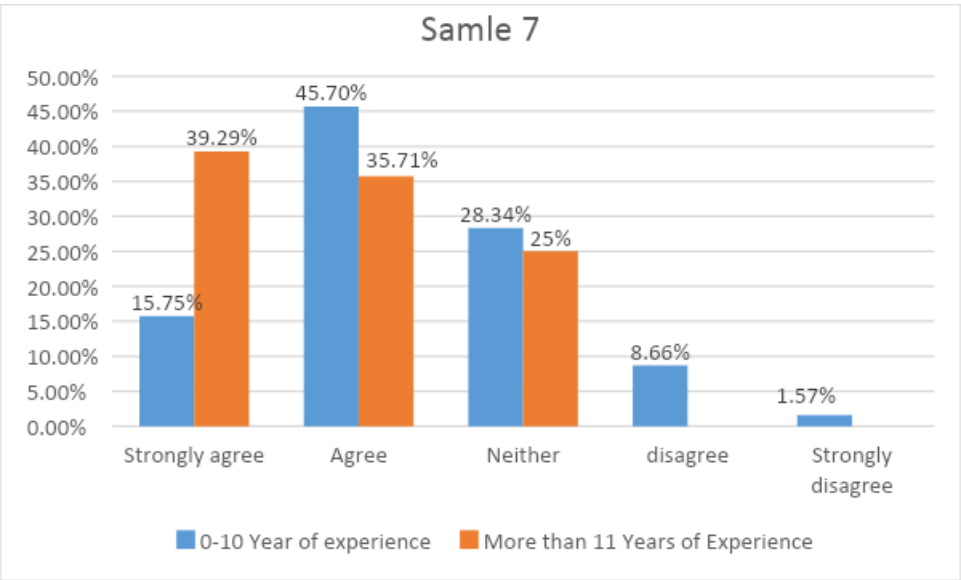

Figure 5.7: Random Sample7 of the Questionnaire Questions

The human experience is the final and justified source of all knowledge. The same experience has accumulated in the human memory and culture, gradually producing the methods of intelligence that come with solutions to missions.

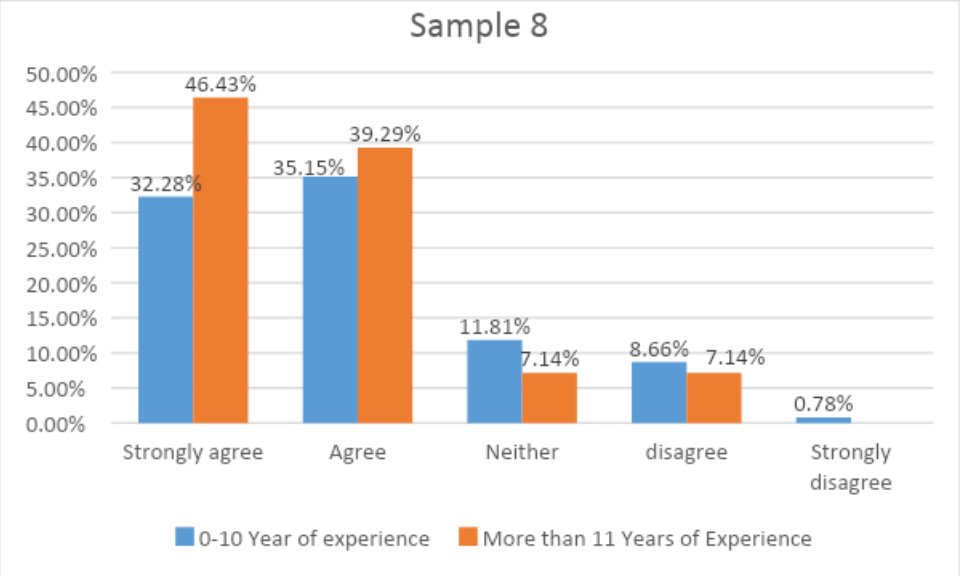

Figure 5.8: Random Sample 8 of the Questionnaire Questions

An individual's proven work experience can provide the business owner with a wealth of information about whether the new hiring will be an asset to the workplace, the team, and the continued growth and success of the company.

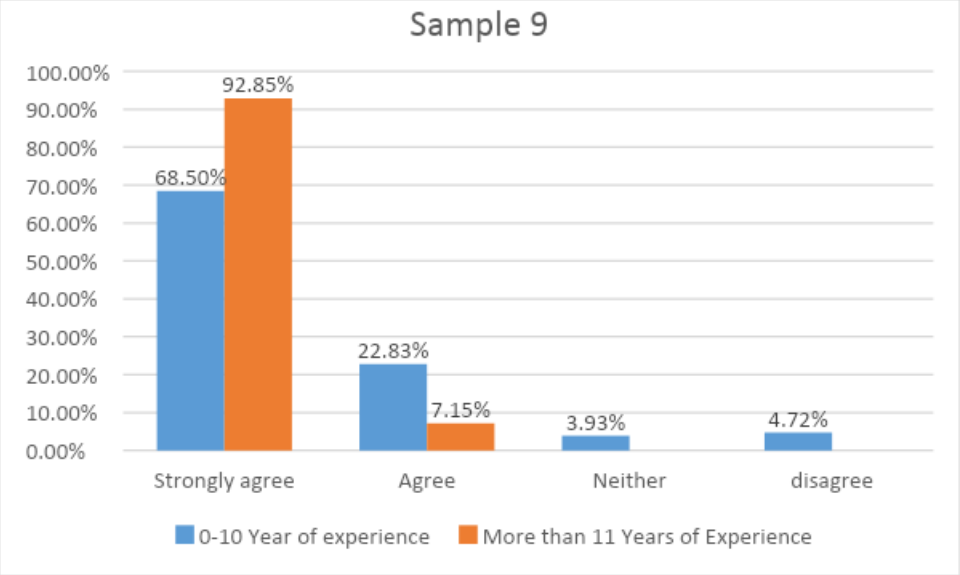

Figure 5.9: Random Sample 9 of the Questionnaire Questions

Because work experience is very important in demonstrating your ability to work effectively as part of a team, or independently to achieve successful results.

You should start compiling this work experience as early in the process of developing your career as possible. This will also help you develop "balance" in the learning and work process, and help you learn and develop time and quality management skills.

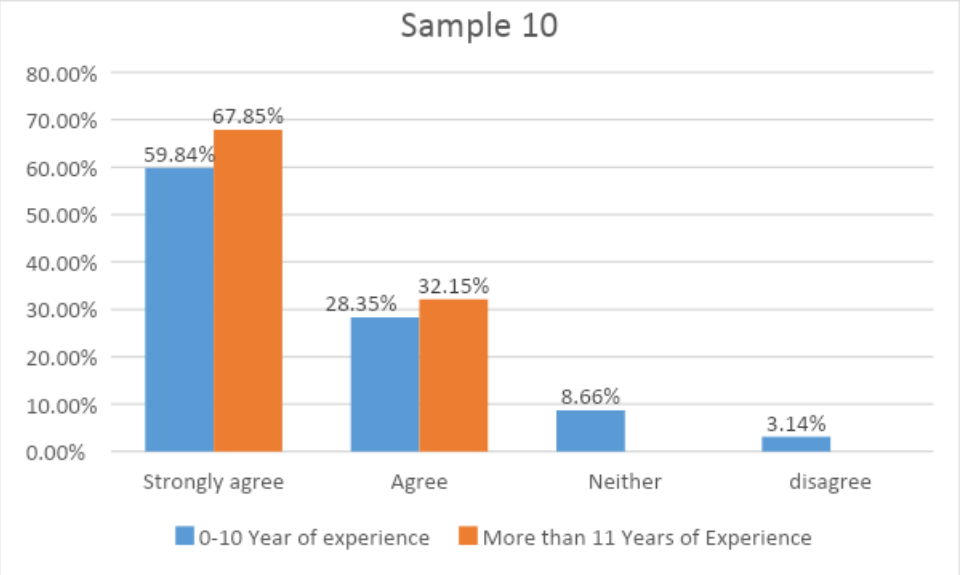

Figure 5.10: Random Sample 10 of the Questionnaire Questions

As such, the business owner or company will be more interested in helping you move towards your long-term goals on large projects. This may be through positive signs, referral to another job, or even the development of the company's cadres and progress in competition for large projects.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions and Recommendation Related to the Results of the Study

1- The necessity for contracting companies to allocate a special section from within their basic divisions, its mission is to study the project's plans thoroughly and all its documents from general specifications especially and contracts, so that these companies can understand the nature of the engineering project and analyzing his data and setting his goals.
2- contracting companies need to focus on choosing the trained and professional workers in the planning and implementation fields even though it costs higher wages to these workers, and for these companies to be established by giving planning a major priority by allowing the planning engineers in the company Participation in administrative and technical decision-making.
3- That the contracting companies delegate the authority to the specialists who perform their role to distribute business, allocate resources to this business, and allow the company's planning department for experienced workers involved in drawing up plans.
4- Contracting companies focus on periodic meetings between the implementers and the planners. Through it, they explain the plans and the objectives to the company's employees, and any possible amendment that happens to them is explained.
5- For contracting companies to subject managers and technicians to training courses, his specialty is (PMP). He also subjected them to regular tests by professional bodies and certified them to make sure that they are permanently ready for the processes of planning and implementation.
6- That contracting companies prepare statistical databases on their previous projects for their use in her future projects.
7- That contracting companies support their tendering department with all modern means and qualified cadres, to be able to estimate the cost of its projects with high accuracy, which avoids falling into crises Financial.

8- in the field of planning, contracting companies depend on modern computer programs.
9- Contracting companies should activate the role of their risk management department's so that they can face urgent works throughout the period of the project implementation.
10- For contracting companies to activate their incentive system, especially to encourage staff competent in planning and allocating financial rewards to these cadres if their plans are successful and applying the reward system for early completion of projects.
11- Contracting companies encourage their employees to use the best time and develop their skills in managing time and linking time with other factors contributing to the project's success, which are cost and quality.
12- For contracting companies to coordinate among themselves through their affiliation to official associations Such as the Society of Engineers or the Contractors Association, exchanged experiences, and the problems are considered by these companies to solve them appropriately.
13- For contracting companies to send their skilled employees to well-established companies to benefit from their expertise and transfer this experience to it, and for these companies to establish a special department for training and development to transfer the acquired experience to its employees in a sound academic manner.
14- Contracting companies should be keen on entertainment programs for their staff to reduce the apathy in their resolve. Its workers result from the routine followed at work.
15- Contracting companies are careful about placing suitable policies and controls to make decisions and develop these policies according to the business's interest, which is time-saving for the decision-maker to take the appropriate decisions.
16- Contracting companies generalize that following the logical schedule of the project is the best way to finish it on time.
17- Convinced in the importance of time management and getting rid of illusory arguments that lead to wasting it without benefit.
18- Contracting companies should plan the daily time in line with the capabilities of the employees.

19- Convincing workers of the importance of respecting the time and the necessity of daily monitoring of workers to correct deviations and not impose punishment.
20- Relying on the constant guidance of subordinates to exploit time in order to gain re-management of time.
21- Emphasis on the material and moral incentives because of their great role in influencing the behavior of the worker and how it occurs for work, Timely detection, and prevention of errors.
22- The necessity of developing a national policy for comprehensive quality management, taking into account the implementation of comprehensive training and qualification programs, and adopting effective systems to achieve quality concepts.
23- Setting comprehensive and balanced plans to qualify and train all cadres, especially project managers in the field of quality concepts, to ensure the provision of competencies and professional administrative and scientific cadres necessary to apply quality concepts in the implementation of construction projects.
24- Involving the public sector and the private sector in developing a strategic plan that seeks to implement quality in business institutions through a true partnership between higher management, lower administrations, and individuals.
25- The bodies concerned with qualification (such as ministries and the municipality) must lay down strict foundations, controls, and procedures for the implementation of the building code, the conditions of which are the qualification procedures for engineering offices and contracting companies operating in the construction field.
26- The higher departments of the institutions must be committed to achieving the concepts of total quality in the implementation of construction projects, in order to be a model for the rest of the employees and workers of the institution.
27- Institutions should develop a system for documentation, measurement, and review, to help avoid mistakes and benefit from previous experiences
28- It is necessary to provide expertise in companies to create good project management based on expertise and experience.

29- Relying on experienced people in planning and finding solutions to project problems.

6.2 Recommendations for Future Research

1- Once the research was completed, the researcher recommended that other different researches address the influence of Scientific Finance's crisis on the construction projects' deferred implementation in Iraq.
2- That the findings of this research to be implemented in construction projects in countries that suffer from the same problems.
3- Also, it is possible to identify some other influences that impact the delay in projects completing process applicable in the geographical area such as; regulations, impact Laws, and legislation in which to implement the project.
4- The researcher also recommends that other studies address the temporal challenges facing these projects like Green Building particularly these projects are still in their beginning stage.

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