**T.C.**
**ISTANBUL GEDİK UNIVERSITY**
**INSTITUTE OF GRADUATE STUDIES**

# ASSESSING BARRIERS TO THE IMPLEMENTATION OF INVESTMENT CONSTRUCTION PROJECTS IN IRAQ

**MASTER's THESIS**

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**MASTER OF CIVIL ENGINEERING PROGRAM**

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**November 2023**

**DECLARATION**

I, Ali Raafat Khalıd Mousa, thus declare that the thesis titled " Assessing Barriers to the Implementation of Investment Construction Projects in Iraq" is an original piece of work that I have done in order to be awarded the master's degree in Engineering Management. I further certify that this thesis, or any section of it, has not been published and provided for any other graduation or study paper in any other university or institution. this applies to any and all parts of the thesis.

**Ali Raafat Khalıd Mousa**

**DEDICATION**

I would like to dedicate the findings of my research to all organizations and businesses working in the field of construction and contracting that are looking to develop their executive and administrative work through the application of the most recent technologies in the world for the purpose of implementing and completing their projects and obtaining the economic value they seek.

**ACKNOWLEDGMENT**

I would like to extend my thanks and gratitude to my supervisors Asst. Prof. Dr. Tuğbay Burçin Gümüş, for his support and valuable guidance and advice that helped me accomplish my research.

**TABLE OF CONTENT**

**ABBREVIATIONS**

| | |
|---|---|
| AFM | Association of Facilities Managers |
| BEPAS | Building Environmental Performance Analysis System |
| BIFM | British Institute of Facilities Management |
| EFM | European Facilities Management Network |
| ICP | Investment Construction Projects |
| FMAA | Facilities Management Association of Australia |
| FM | Facilities Management |
| NFMA | National Facilities Management Association |
| USGBC | United States Green Building Council |

**LIST OF TABLES**

## LIST OF FIGURES

## ASSESSING BARRIERS TO THE IMPLEMENTATION OF INVESTMENT CONSTRUCTION PROJECTS IN IRAQ


### ABSTRACT

The impact of investment management has greatly increased over the past two decades as a result of the growing level of competition that exists between construction organizations and the shifting expectations regarding the nature and level of craftsmanship required of building projects. Because of this, in recent years it has been clear that companies that work in the construction industry require a complete system for the administration of investments. Performance management is a determined closed loop control technology that provides efficient strategies for the company's processes, assignments, and duties and performs evaluations of the entirety of the system's operations. This type of system is known as "closed loop control."

Since 2003, the building sector in Iraq has undergone a large amount of development, and the region's commercial linkages with the countries of other regions have undergone a substantial amount of advancement. Because Iraq was closed during this period, it needed a lot of investment for development projects. In addition, because major sections of Iraq are stable, foreign construction corporations have been focusing on the country.

In spite of this, the Iraqi government has made it easier for foreign investment businesses to get involved in the region as part of a plan to acquire international knowledge and foreign technological ability. As a direct consequence of this, a competition environment for both domestic and foreign businesses has been established in the region. As a consequence of this, regional and national construction businesses have been motivated to make significant strides toward enhancing their overall performance within the sector.

On the basis of acknowledging the most appropriate achievement measures for construction companies performing in the region and recommending an arrangement by using these measures, the primary goals of this study are to analyze and assess the obstacles that stand in the way of the implementation of investment construction projects in Iraq. These goals will be accomplished by constructing a framework that will be based on the performance measures. In order to shed light on the aforementioned impediments to investment in the construction industry, this article has been revised to include a variety of viewpoints pertaining to the commercial climate of the construction sector in Iraq.

This was done so that the intended topic of discussion, namely the impediments to investment, can be more effectively communicated. In addition, a questionnaire study has been conducted among the construction businesses working in the region to determine the importance degree of the barriers.

The survey was distributed to Iraqi construction companies by e-mail, shared on social networks, and completed in person during meetings with representatives from each company. As a consequence of this, a management controlling system that can be utilized as a management oversight system for the purpose of managing and accessing the performance of Iraqi construction companies has been developed as a result of an assessment of the barriers to the implementation of investment construction projects in Iraq management.

As a result of the employment of two distinct frameworks in the process of constructing the framework, as well as the addition of different viewpoints based on knowledge, the study has the potential to be regarded as an important addition to the area. In addition, the structure can be examined further so that it can be utilized as a control system in a variety of contexts, including various periods and nations.

**Keywords:** *Investment management, Construction projects, Assessment barriers, Strategic management, Construction industry.*

# IRAK'TA YATIRIM İNŞAAT PROJELERİNİN UYGULANMASININ ÖNÜNDEKİ ENGELLERİN DEĞERLENDİRİLMESİ

## ÖZET

Yatırım yönetiminin etkisi, inşaat organizasyonları arasında artan rekabet düzeyi ve inşaat projelerinin gerektirdiği ustalığın niteliği ve düzeyine ilişkin değişen beklentilerin bir sonucu olarak son yirmi yılda büyük ölçüde arttı. Bu nedenle son yıllarda inşaat sektöründe faaliyet gösteren firmaların yatırımların yönetimi için komple bir sisteme ihtiyaç duydukları açıkça ortaya çıkmıştır. Performans yönetimi, şirketin süreçleri, atamaları ve görevleri için etkin stratejiler sağlayan ve sistemin tüm operasyonlarına ilişkin değerlendirmeler yapan kararlı bir kapalı döngü kontrol teknolojisidir. Bu tür sistemlere "kapalı döngü kontrolü" adı verilir. 2003 yılından bu yana Irak'ta inşaat sektörü büyük bir gelişme gösterdi ve bölgenin diğer bölge ülkeleriyle olan ticari bağlantıları da önemli ölçüde gelişti. Irak bu dönemde kapalı olduğundan kalkınma projeleri için çok fazla yatırıma ihtiyaç duyuyordu. Ayrıca Irak'ın büyük bölümünün istikrarlı olması nedeniyle yabancı inşaat şirketleri ülkeye odaklanıyor.

Buna rağmen Irak hükümeti, uluslararası bilgi ve yabancı teknolojik yetenek kazanma planının bir parçası olarak yabancı yatırım şirketlerinin bölgeye dahil olmasını kolaylaştırdı. Bunun doğrudan bir sonucu olarak bölgede hem yerli hem de yabancı işletmeler için rekabet ortamı oluşmuştur. Bunun bir sonucu olarak, bölgesel ve ulusal inşaat işletmeleri sektördeki genel performanslarını artırmaya yönelik önemli adımlar atmaya motive oldu.

Bölgede faaliyet gösteren inşaat firmaları için en uygun başarı önlemlerinin kabul edilmesi ve bu önlemleri kullanarak bir düzenleme önerilmesi temelinde, bu çalışmanın temel amacı yatırım inşaatının uygulanmasının önünde duran engellerin analiz edilmesi ve değerlendirilmesidir. Irak'taki projeler. Bu hedeflere, performans ölçümlerine dayalı bir çerçeve oluşturularak ulaşılacaktır. İnşaat sektöründe yatırımın önündeki yukarıda belirtilen engellere ışık tutmak amacıyla bu makale, Irak'taki inşaat sektörünün ticari ortamına ilişkin çeşitli bakış açılarını içerecek şekilde revize edildi.

Bu, amaçlanan tartışma konusunun, yani yatırımın önündeki engellerin daha etkili bir şekilde iletilebilmesi amacıyla yapıldı. Ayrıca bölgede faaliyet gösteren inşaat işletmeleri arasında engellerin önem derecesinin belirlenmesi amacıyla anket çalışması yapılmıştır.

Anket Iraklı inşaat şirketlerine e-posta yoluyla dağıtıldı, sosyal ağlarda paylaşıldı ve her şirketin temsilcileriyle yapılan görüşmelerde bizzat dolduruldu.

Bunun sonucunda, yatırım inşaatlarının uygulanmasının önündeki engellerin değerlendirilmesi sonucunda Iraklı inşaat şirketlerinin yönetimi ve performanslarına erişim amacıyla yönetim gözetim sistemi olarak kullanılabilecek bir yönetim kontrol sistemi geliştirilmiştir. Irak yönetiminde projeler.

Çerçevenin oluşturulması sürecinde iki farklı çerçevenin kullanılması ve bilgiye dayalı farklı bakış açılarının eklenmesi sonucunda çalışma, alana önemli bir katkı olarak değerlendirilebilecek potansiyele sahiptir. Ayrıca yapı daha detaylı incelenerek çeşitli dönemler ve uluslar da dahil olmak üzere çeşitli bağlamlarda bir kontrol sistemi olarak kullanılabilir.

**Anahtar Sözcükler:** *Yatırım yönetimi, İnşaat projeleri, Değerlendirme engelleri, Stratejik yönetim, İnşaat sektörü.*

# INTRODUCTION

## 1.1 Introduction

The Private Construction Industry is the essential pillar that supports all of the other economic activities in human life. It includes projects for living, as well as other initiatives for human activities and industrial applications. As such, it is relevant to and supports the purposes of all facets of human behavior. It is an unavoidable infrastructure that is essential to preserving life and making development. As a consequence of this, it is essential to make an effort to guarantee that the beginning stages of construction are based on scientific foundations.

That is the responsibility of those in charge of the construction. Therefore, the human aspect is the one that really matters. Graduate programs in engineering prepare students to address problems of this nature. Construction firms are responsible for managing other aspects of the implementation process, while the government is in charge of the legal aspect.

The process is bound to be fraught with issues and difficulties due to the large number of stakeholders involved. They could originate from technological, legal, economic, social, organizational, or any number of other sources. Possibly though there are multiple parties involved, the management is there to help deal with the challenges, but doing so will need a significant amount of effort, duration, and resources that's assuming it can even be handled.

According to Grabovy and Orlov (2016), sudden and unexpected changes in building technology, procedures, materials, or employees might produce a wide variety of reasons for the lack of success of those projects.

The effect of such a circumstance results in a significant amount of delay, rendering the public in a precarious position where they are both hurting and unserved. When faced with such a situation, the standard reaction is to lessen, stifle, or otherwise get rid of the disputes. According to Domnina et al., (2016), it is the responsibility of the project manager to rectify any anomalies that may arise throughout the course of the project and bring it back into compliance.

Even while it is successful on occasion, in general, it is not always successful. This is because the fundamental causes of the dispute cannot be easily recognized, and the potentially beneficial aspects of the conflict cannot be brought to the surface Kaklauskas et al., (2021).

According to Eroshkin et al. (2017), concerns should be addressed to, and the fault reasons should be discovered, so that management and dealing with these issues may be accomplished effectively.

The construction industry is frequently cited as an important economic driver as well as one of the economy's defining characteristics. Therefore, the quality of the building is one of the primary variables that plays a role in the quality of the operations that are provided to the general public. As a result, steps need to be taken to ensure that the quality of the buildings is preserved to the greatest extent possible.

In building, engineering and the various other parties involved form a particular combination to meet a particular demand. The design of a process results in engineering activities that are performed to attain the aimed-for outputs. According to Kaklauskas et al., (2021), people who work in the construction industry have significant obligations, but in exchange they have the ability to build works that are to the advantage of humankind.

Considering it is the government's responsibility to organize the building industry, it is the government that establishes the criteria that describe the characteristics of public constructions (including schools, hospitals, highways, bridges, and agricultural systems; as well as water and electricity infrastructure) (Domnina et al., 2016).

Therefore, construction standards are essential necessities for the efficient management of the many public services that are available. The building and construction sector is widely recognized as one of the most exciting, perilous, and difficult commercial arenas. It has a highly terrible reputation due to the fact that many significant projects have failed to achieve timelines and building targets (Anthony Mills, 2001), which is a necessity for them to perform considerable studies in the sector.

### 1.2 Research Issue

There has been a noticeable increase in attention towards the construction matter in Iraq over recent years, particularly in relation to structures that cater to the needs of the general population. This interest is evident in the implementation of many projects, including those focused on infrastructure development as well as the construction of educational, healthcare, and security facilities, among others.

Given the belief that the construction industry serves as a crucial platform for the execution of investment construction projects in Iraq, it is imperative to prioritize encourage for the national economy. However, it is worth noting that there is a scarcity of previous research in this particular domain. Therefore, it is essential to bolster the Iraqi library with research that provide both existing encourage and new recommendations. These research will aid in the advancement of the management method, particularly while these projects encounter genuine obstacles.

These obstacles arise during various stages, including project preparation, organization, needs assessment, design, and giving document preparation. Furthermore, they persist throughout the tender determining process and the subsequent commencement of project implementation. The financed, designed, and implemented teams encounter a multitude of challenges and obstacles, some of which may be familiar and evident, while others may be novel. The aforementioned circumstance can be attributed to the economic and political challenges that Iraq currently faces.

The current circumstances require a scientific examination of the matter in order to identify and comprehend the issues involved, with the objective of enhancing the efficiency and responsiveness of construction management.

Based on prior research, it is evident that many obstacles can arise from multiple stakeholders' perspectives, encompassing human, materialistic, environmental, and legal factors. These entities are not evaluated in isolation; rather, they are intricately interconnected. Therefore, in order to comprehend them fully, it is necessary to evaluate them as a cohesive whole. It is imperative to provide due consideration to these difficulties as a cohesive entity. The examination of these experiences broadens the understanding of scholars and researchers, allowing them to tailor solutions that align with the unique characteristics of Iraq.

### 1.3 Research Question

The present study aims to address the following research inquiries:

- Question 1: Which are the sociological, a political issue, natural environmental, legal, scientific, human, well-being and safety, managerial, and performance problems encountered by the public construction sector in Iraq?
- Question 2: What is the impact of these problems on the public Construction Sector in Iraq?
- Question 3. How are these concerns addressed?
- Question 4: Are there any statistically significant differences in the perception of problems based on criteria such as specialization, region, and duration of experience?
- Question 5. How can the issues be addressed in order to ensure optimal efficiency and effectiveness in the public construction sector? In essence, which recommendations need to be taken into account to tackle these obstacles?

### 1.4 Research Aim

The primary aim of this study is to evaluate the obstacles that hinder the execution of investment construction projects in Iraq.

The smaller aims encompass the following:

- The objective of this study is to ascertain the diverse sociological, political, technological, legal, managerial, and other environmental obstacles encountered by the public constructing sector.
- In order to investigate the impact of these difficulties on the public construction sector.
- In order to enhance the implementation of management practices in construction projects in Iraq and foster the development of improved policies, strategies, and rational decision-making, it is necessary to establish a conceptual project management structure.

### 1.5 Why This Research is Important

The significance of this study is exemplified by the significance of implementing investment construction projects within Iraq itself. Limited scholarly attention has been devoted to examining the present state of investment construction projects in Iraq. The elucidation of challenges encountered during the execution of investment construction projects in Iraq is imperative for effectively addressing and overcoming them, so enhancing the value of construction endeavors while minimizing costs and maximizing benefits.

The existence of obstacles not only impacts the effectiveness of the construction project, but also hampers construction endeavors and results in significant resource wastage if not appropriately addressed.

The research holds significance for the general public as the implementation of its recommendations is expected to yield optimal outcomes in the Iraqi public construction sector, hence enhancing the quality of services provided. This study is of paramount importance for policy makers in informing their decision-making processes and guiding the trajectory of their work, with the aim of ensuring the satisfaction of all stakeholders involved.

This study aims to contribute to the Iraq library by providing a theoretical framework for understanding and addressing the challenges encountered during the implementation of investment construction projects in Iraq.

The study's significance lies in its potential to improve relationships with stakeholders involved in the execution of investment construction projects in Iraq.

Additionally, it has the capacity to increase public understanding of the challenges faced by engineers and other professionals in the industry, with the ultimate goal of encouraging leadership within this sector (Fadhil and Burhan, 2021).

The results of this study contribute to a deeper comprehension on one hand, while also facilitating regulation on the other. The findings of this study are anticipated to enhance the implementation of investment construction projects in Iraq and facilitate the adoption of appropriate precautionary measures to mitigate avoidable hazards.

## 1.6 Research Methodology

This research employs a mixed methodology approach in order to provide a comprehensive description of the current state of the construction sector and the issues it faces. This is achieved by utilizing data gathering tools that are specifically relevant to the subject area of this study.

This study aims to analyze the existing practices and areas of concern in order to develop a framework that can facilitate the formulation of improved policies, strategies, and logical judgments for the implementation of building project management.

### 1.6.1 Data Gathering Items

This research utilized a comprehensive set of data collecting instruments to assure the collection of all necessary data types. The primary instruments utilized in this study are questionnaires that have been specifically tailored to serve the research objectives. During the construction of these questionnaires, the researcher will draw upon past studies, theoretical articles, adopted designs, and expert perspectives to enhance their effectiveness and validity.

Prior to administering the questionnaire, it underwent a process of validation and scrutiny in accordance with the principles and standards of scientific study methodology. The document was disseminated to all relevant parties involved in the construction industry project. Primarily directed towards the individuals involved in the project including:

- Engineers,
- Staff members,
- Project managers,
- Independent contractors,
- Consultants, and
- Several other participants.

The questionnaire will help in crystallizing and enhancing the perception of challenges facing the implementation of investment construction projects in the Iraq context. It will also help in analyzing the results of the study as an outcome of the questionnaire.

Data collected using those methods is integrated and categorized to ensure the questions of the study are answered; it is worth mentioning that the questionnaires were formulated and distributed online, and that really helped in getting a quicker response easily and within a short period.

### 1.6.2 Data Analysis

The SPSS was employed to analyze the responses obtained from the questionnaire, following the process of coding and data entry. The statistical techniques employed in this study encompass several quantitative methods, including means, ratios, standard deviation, relationships, Cronbach's alpha, and others. Furthermore, the qualitative data was subjected to rigorous analysis utilizing recognized scientific explanations and logical reasoning, in alignment with well-known theories and procedures.

### 1.6.3 Participants in the Research

The demographic composition of the research's participants is as follows:

- The organizational demographic under consideration encompasses a significant proportion of the public construction projects across the several governorates of Iraq.
- The human demographic in the context of this discussion includes persons and groups involved in the public construction project, with a specific emphasis on engineers, personnel associated with the construction industry, contractors responsible for project implementation, municipalities, and government departments.

## 1.7 Research constraints

Constraints and impediments are inherent and rational factors that researchers encounter during the course of their research endeavors. The apathy of respondents is a significant barrier when expressing their perspectives on such subjects. Despite the initial explanation of the research objective by the researcher, a significant proportion of participants exhibited a lack of participation by delegating the task of answering the questionnaire to others. Conversely, only a small number of participants readily and promptly responded without requiring repeated reminders from the investigator.

The researcher made multiple attempts to contact the participants by telephone in order to provide timely reminders for the completion of questionnaire preparation, which was necessary for subsequent collection.

Regrettably, the received responses were unsatisfactory as they consisted of explanations stating the respondents' inability to reply owing to time constraints or loss of the required information. Additionally, some respondents expressed their intention to provide answers in the near future, while others displayed a lack of interest in the matter.

The extent to which the respondents were willing to disclose vulnerabilities within their various organizations remained ambiguous as a result of cultural factors that discouraged individuals from openly acknowledging their flaws, despite the researcher's repeated assurances that the study was solely for educational purposes.

The inability of certain participants to fully concentrate during the questionnaire times, due to their work commitments, resulted in the inability to achieve the anticipated level of depth in the questionnaire.

A significant portion of the participants faced time constraints as a result of work-related pressures, necessitating many reminders from the researcher to elicit responses to the questionnaire in order to attain a satisfactory level of responsiveness.

### 1.8 Research Anticipated Results

The anticipated results of this research study are:

- This study aims to provide a comprehensive descriptive assessment of the current state of stakeholders' view, managers, and decision-makers regarding the obstacles and barriers associated with the implementation of investment construction projects in Iraq.
- This study aims to identify and analyze the constraints and obstacles, from both scientific and cultural perspectives, that hinder the implementation of innovative concepts in investment construction projects in Iraq, as seen by the parties involved.
- The design of a framework, based on the analysis of data, is proposed to address the issues and enhance the performance of investment construction projects within the context of public construction projects.
- This study proposes a suggestion for participants and decision-makers in the context of critical infrastructure (CI), urging them to embrace and implement optimal practices in order to attain the intended goals.

### 1.9 Framework of Research

This thesis is structured as follows:

- Chapter Two provides a historical overview of prior research to identify the primary obstacles encountered in the implementation of investment construction projects in generally.
- Chapter Three provides an overview of the primary approaches employed in prior studies, as well as the methodology implemented in this research to effectively accomplish the specified objectives.
- Chapter Four, a comprehensive examination, depiction, and discourse of the research findings are presented.
- Chapter Five, the research discusses its conclusions and outlines potential avenues for further study.

# LITERATURE REVIEW

## 2.1 Introduction

Over the course of the previous ten years, environmental economists as well as policymakers have paid an increased amount of consideration to green building. Although there is no universally accepted definition of "green buildings" or the policy that pertains to it, academics and organizations have a tendency to place an emphasis on resource efficiency in building and on minimizing the negative effects of buildings on individuals and the environment.

As a consequence of this, an increasing number of rules pertaining to the building industry have been put into effect in the United States and various countries. These policies attempt to improve energy efficiency and reduce the environmental implications that the structure or site has.

The unique mix of a particular requirement and a design carried out within an approach to produce engineering works is at the heart of engineering and construction. According to Chen and Duan (2014), people who engage in the construction industry take on significant obligations in exchange for the possibility of contributing to the betterment of humankind through the creation of works of art.

Through a review of the empirical and scientific data pertaining to green buildings, this article provides a summary of the economics and policies surrounding green buildings. We are concentrating on whole-building investments as a way to limit the scope of our evaluation and to convey the significance of the life cycle and no energy aspects of environmentally friendly structures (Hilfert, and König, 2016).

Green buildings are encouraged by a set of policies, some of which are voluntary while others are necessary, that effect the entirety of the building's existence, beginning with its design and construction and continuing through its operation and eventual deconstruction. Consequently, we differentiate green building rules from component-level strategies to promote energy efficiency, such as appliance standards, building ordinances, and other technology-specific regulations, as well as from more general rules that affect buildings subsequently (for example, wetlands offset rules and ant sprawl policies).

Throughout the next section, we will present further background information as well as definitions on green building programs and regulations.

After that comes a discussion of market failures and other obstacles that have led to the development of green building, as well as actual evidence on the effects of green building policies. Following that, we will discuss green construction policies in the United States as

well as evidence concerning the effects of these policies, and we will conclude with a brief discussion of projects in other nations. We wrap off this section with a discussion of the difficulties inherent in conducting empirical research on green buildings, as well as an examination of the top goals for next research and policy initiatives in this field (Emmitt, 2010).

### 2.2 Construction Industry

The term "construction industry" refers to a somewhat amorphous collection of distinct disciplines and actors that have been haphazardly grouped together as a sub-industry of the economy. The construction industry is extremely important to the well-being of the nation, as seen by the fact that it is responsible for constructing apartments, office buildings, and manufacturing facilities, as well as the renovation of the country's infrastructures and other civic for the public. According to Hendrickson (2008), the significance of this sector of the economy rests in the fact that the products it produces serve as the essential building blocks for other sectors' manufacturing.

According to Enshassi and Kaka (1997), the construction sector shares many characteristics with the manufacturing sector as well as the service business. This is due to the fact that the construction industry does not amass considerable quantities of capital in comparison to other industries such as metal, shipping, and petroleum.

The term "construction" encompasses a wide variety of tasks that are typically linked with the assembly and maintenance of permanent structures. It is estimated that about (85%) of all construction operations are performed by contract construction companies, which include a huge number of businesses that carry out construction work on behalf of others. The remaining fifteen percent of building is considered to as force-account construction and is carried out by owners of the facilities themselves. Even though there are more than a million contractors operating in the “United States”, the most prominent 400 companies account for more than sixty percent of all construction work conducted by contractors.

Even if its weight in the overall “Gross National Product” has been diminishing over the past few years, the construction industry continues to hold a considerable position. It is important not to overlook the fact that as the country's manufactured facilities get older, the overall expenditure on reconstruction and operation may expand in relation to the value of new building (Hendrickson, 2008). This is something that should not be neglected.

According to Eduardo Yamasaki Sato and de Freitas Chagas (2014), in order to finish a construction project on time, within the appropriate budget, and with high quality, local

building firms need to enhance its managerial and management framework, increase social, financial, and environmental obstacles, and enhance the connections between all individuals associated with the project.

The construction industry shares many features with the manufacturing industry as well as the service industry. There are, without a doubt, tangible things to be found in this industry, just as there are in other fields. But in other respects, the construction sector is more comparable to that of a service industry. This is due to the fact that the construction business does not amass huge quantities of capital in comparison to industries such as steel production, transportation, petroleum extraction, and mining (Gładysz et al., 2015).

The construction industry is one of the most important economic sectors in Iraq and is the primary driver of the country's overall economic activity. Since 2003, the building and construction industry has seen a discernible period of growth. Because of this, the field of construction contractors and the industries that support it have experienced a resurgence; the construction industry currently holds the leading position among all other sectors, mostly due to its ability to recruit new investments and provide new job opportunities.

### 2.3 Role of Construction Industry in Country Economic

The construction industry plays a significant role in the promotion of national welfare, which includes the renovation of private housing, public buildings, and industrial plants, in addition to the revitalization of infrastructure as well as other public services. The construction industry is a heterogeneous amalgam of several subfields and individual members that have been brought together to form a distinct sector of the economy.

Local building organizations ought to strengthen their authoritative and management structure, broaden social, economic, and ecological imperatives, and improve interrelationships among all individuals involved in the project to achieve the results expected from this sector (Enshassi and Kaka, 1997).

Not only should construction firms benefit from the aforementioned improvements to their administrative framework, but so should government agencies and nonprofits that work to preserve the majority of projects within the scope of the study and thus have the expertise to know what constitutes best practice in the construction industry through monitoring activities regulated until getting the job done.

Gaining an improved comprehension of the methodology of development industry management may require first gaining an awareness of these ideas and the responsibilities that fall on the shoulders of those who are specialists in this field. It may be deduced that the

primary concern of industry management and construction industry is the whole process of organizing, arranging, analyzing, and managing activities and tasks related to construction in order to satisfy corporate interests (Merschbrock and Munkvold, 2015).

Additionally, there is an effort for recognizing the construction industry deported through the perspective standpoint of individuals who identify with it as a result of the multiple stakeholders that participate in the building industry. For example, those who write laws concentrate on the legal implications of their definition, while those who practice the law pay attention to the specifics, administrators pay attention to the processes, roles, and obligations, and everyone else concentrates on their particular area of expertise. It is important to note that this industry is highly specialized and encompasses a vast array of processes and operations (Kent and Becerik-Gerber, 2010).

### 2.4 Developing in Iraq: An Ongoing Construction Projects

The building and construction sector in Iraq was one of the key sectors that saw strong rates of economic development in the 1970s and up to the middle of the 1980s. This was true for the period beginning in the 1970s and continuing until the middle of the 1980s. This was especially the case throughout the twenty-five-year era beginning in 1970 and ending in 1985. Over the course of that span of time, the contribution that this sector of the economy makes to Iraq's total economy, as measured by the number of employment that it has generated for Iraqi nationals, has increased to a higher degree.

Since that time, this industry has been dealt a number of blows, which has resulted in a diminution in the role that it plays in the process of building up the infrastructure of Iraq in comparison to its counterparts in a number of other growing countries and countries in the surrounding region (Lyons, and Skitmore, 2004).

Despite the fact that variations in Iraq's political atmosphere have a significant impact on the building industry, the construction industry continues to be one of the most important economic sectors in the country. In addition to the roles that are played by private businesses, prominent non-governmental organizations in Iraq, such as the Union of Engineers, the Iraqi Contractor's Unionization, and the Iraqi Construction Industries Association, also play significant roles in the construction industry in Iraq.

There is an increasing demand for additional housing that is still within budgetary restrictions as a result of rising population levels and lowering building movement levels. However, the additional housing must be affordable. A robust housing market has the potential to

rejuvenate and revitalize the Iraqi economy because of the connectivity of the housing sector with other parts of the economy.

This industry is particularly crucial for growth since it carries considerable forward and backward links. These linkages might range from relatively straightforward manufacturing units to significant construction components and processing companies. Furthermore, the construction industry has been a driving force behind the stimulation of regional investment and has helped to contribute to the strengthening of the economic foundation of Iraq (Stephenson, 1996).

Regardless of the construction sector's great success in Iraqi territory in terms of economic development, its contribution to local manufacturing, job creation, and partially satisfying the requirements of Iraqi society the sector has been plagued by a number of issues that have kept it from playing a central role in the Iraqi economy once again (Enshassi et al., 2006).

### 2.4.1 Construction Contractors in Iraq

A contractor is a person or business that works in the construction industry and is required to be registered and categorized with the Iraqi Contractor's Union (ICU). Any individual or entity with the legal authority to engage in the construction contracting industry in line with applicable laws and requirements may qualify as a contractor under ICU's bylaws. The ICU must have the contractor's registration information (Bekr, 2015).

The increase in the number of building projects carried out over the course of the preceding two decades has led to a concomitant rise in the quantity of garbage produced by construction projects. This expansion, in conjunction with shortages in waste space, particularly in metropolitan areas, has proven to be a challenging stress or to the environment. Specifically, urban areas have been particularly impacted by this. As a result, construction management is a global issue that is garnering an increasing amount of attention all around the world (Bakshan et al.,2015).

The construction sector performs a significant role in enhancing the quality of the physical environment; nevertheless, the activities that it engages in also have an effect on the broader environment in a variety of different ways, including on other construction sectors.

Recent studies and analyses of published literature have made it abundantly evident that the building sector has enormous negative effects on multiple fronts, including the economy, society, and the environment. The amount of trash from building and deconstruction that is deposited in landfills has been a focus of research and development in many industrialized nations, which has led to the development of various tactics and procedures.

The management of construction and demolition waste has been practiced in many European governments and Japan for a significantly greater amount of time, and these nations have successfully improved the proportion of recycled and/or utilized materials in construction and demolition activities (Abbas and Burhan, 2022).

It is common knowledge that enterprises related to construction pose a risk to the natural world, in particular as a result of the damage they do to environmental quality. There have been a few studies conducted in the past on the management of construction projects in Iraq. These studies have, for example, focused on estimating the amount of construction projects. Even though the industry is currently in a decline stage as a result of the recession and the resulting shift in the production process, the issues generated by large construction projects, or preferably by its management, require to be handled and analyzed in detail. This is the case despite the fact that the activity has now reached a decline stage (Kim et al., 2020).

### 2.4.2 Key obstacles confronting Iraq's Construction Industries

As a whole, the construction industry faces problems, difficulties, and challenges in many parts of the world, but in developing countries in particular, these obstacles are compounded by widespread financial unease, persistent resource shortages, weak institutions, and a lack of control over the situation (Jaber, 2019).

Iraq's construction sectors have been facing a significant number of obstacles over the past few years. Due to a number of factors that have an impact, whether direct or indirect, on this industry, and as a result, through the query that was submitted to this study, which anticipates giving a response in an effort to try to present this industry in a more effective manner:

- What kinds of challenges, both technical and non-technical, does the construction sector in Iraq have to contend with in terms of people, organizations, the environment, and other factors?
- What kind of effects do these difficulties have on investment in Iraq's construction industry?
- Where are those difficulties going to be overcome?
- And if there are any substantial statistical variations in perceiving those obstacles, refer to variables such as age, gender, particularization, position, years of experience... etc., and
- What are the steps that should be made to cope with those barriers?

The following obstacles will be investigated as part of this study:

- Culture, then Environment.
- Taking into account the labor force.
- Concerns with the law.
- The pressures of society and politics.
- Regulation imposed by the government.
- Putting on a show.

In this study, all of these obstacles were taken into consideration in order to highlight the effect that they have on the construction industries in Iraq, to find methods dealing with them in order to get the highest standards in managing projects with the greatest outcome for the whole society by ensuring the best utilization of the investment of construction management concepts such as resources, and to get the highest level of quality, efficiency, and society and government fulfillment (Al-Mhdawi et al., 2022).

#### 2.4.2.1 Social Culture

The concept of 'culture' can be understood in a variety of ways, all of which have shifted significantly over the course of the last two generations. There were around 160 different descriptions of culture that were presented.

Saeed, Y., Aziz, E., and Zelentsov, L. (2021) came up with a straightforward definition of culture, which states that it is "people's thinking, doing, and producing that makes up culture." Also discovered that culture as an assortment of beliefs, principles, conventions, attitudes, and practices of a group of people, bringing out that the principles and principles of a society have an effect on the way business is carried out in that society, and that civilization is a set of those things.

The researchers Aljamee, H. K., and Naeem, S. M. (2020), identified various definitions of culture, which include behaviors linked to many topics such as language, faith, standards, and traditions that are shared by a community of people and learnt from birth. These definitions of culture may be found in a number of different places.

It is vital to evaluate the structures and procedures of the constructing industry's work that must be established in Iraq. This is necessary in order for the practices and processes of construction to reflect the personalities and cultural values of different developing countries.

It is vital to reconsider the planning and processes of the construction industries' engagement to a male culture, which is characterized by interactions that are characterized by disagreement, conflicts, and catastrophes (a difficult environment). As a consequence of this, it has been discovered that the working environment that employees work in is extremely unfriendly. Women who are interested in entering this industry must contend with the same kinds of obstacles as other women working in other fields if they want to succeed (Buniya et al., 2020).

There are additional prejudices concerning the nature of the industry as well as the professionals that work in it because of the fact that this field is dominated by men. Women who choose not to work in this industry are more likely to pursue careers in specialized professional labor rather than managing positions. This results in a disparity in the career options available to men and women, which is an unavoidable fallout of the high staff turnover rate that women experience in construction enterprises (Othman et al., 2020).

It is essential to reevaluate the policies and practices that have been put in place by the company.

Buniya et al., (2020) discovered that younger women were disillusioned with their career choice more quickly than males did, and they desired to leave the business at an earlier stage in their professional lives. Both the management of change and the management of time are crucial components in the improvement of the culture of the construction industries in Iraq. As a result of the fact that the culture of Iraq in the past did not place a strong emphasis on developing a mindset that would respect time and improve effectiveness.

Changing and enhancing behavior will assist in dealing with cultural difficulties; for example, thinking of new developments in the local marketplace like "make technology for all"; such implies that all companies stage has to motivate to accept modifications and not feel of risk, particularly for those who believe it is not achievable to learn everything new in this sector and that it is limited to the current generation, which presents a threat to their profession locations. As a result of concerns regarding the environment as well as the requirement to save expenditures.

According to Othman et al., (2020), there has been an increase in the amount of innovation and advancement within the construction industry worldwide. And because Iraq is one of the established countries, it should keep growing with technological advancements to enhance efficiency. This is contingent on increasing the certificate of acquisition of new technology resulting from the lack of abilities; high levels of creativity; and raising governmental industry investment in technological advancement (Othman et al., 2020).

Because of the one-of-a-kind circumstances in Iraq as a result of the occupation, which created a great deal of obstacles in the way of broadening our perspective to include the rest of the world, the culture of Iraq is one of the primary obstacles that necessitates the expenditure of significant effort in order to study and investigate this subject matter. Therefore, in order to do justice to this aspect, research into the current circumstance in Iraq should take into account the need to discover alternative methods that assist in resolving the challenges and roadblocks that arise as a result of this challenge; to be capable to devise methods, processes, and connections that are appropriate for the culture; and finally, to formulate obtaining approaches that promote the incorporation of the building procedure into the information (Zamim, 2021).

#### 2.4.2.2 Social and Political Tensions

According to Ahmed and Altaie, (2021), construction environment authority's agencies and regulators both have an impact on the process for planning and building permission as well as the enforcement of adherence with various acts and rules.

It is essential for the government to have a solid understanding of the ways in which changes in political conditions can directly impact the actions of a company. In "political variables," political impacts such as government backing, regulations and requirements, employment rules, transportation strategy, environmental restrictions, and tax policy are taken into consideration (Kraidi et al., 2019).

It is essential to place a strong emphasis on this aspect of the investigation because Iraq is currently experiencing a highly unique political environment that has an effect on the building and construction sectors. This will assist in determining the extent to which the political situation has an effect on the overall performance of the companies (Kraidi et al., 2019).

#### 2.4.2.3 Environment

Since 1980, the environmental challenge has become a significant topic of investigation, and international consideration must be dedicated to the need to protect it when they achieve an advanced stage of economic and social growth. Furthermore, given the current political climate in Iraq, that is confronted with high levels of land degradation, it deserves the greatest amount of focus, especially in decreasing the area of arrives that could be location for projects (Hatem et al., 2018).

The appearance of these issues has forced the adoption of environmentally friendly guidelines in construction by specialists, who are now only able to focus on time, quality, and performance as with traditional design and spend very little emphasis on environmental repercussions. This new approach to construction, known as sustainable building, integrates techniques that are both ecologically and economically responsible into a single field of study that examines the overall consequences of a building or construction project on the surrounding environment, economy, and society.

A method of manufacturing that makes use of best practices will result in fewer adverse effects on the environment, a reduction in the amount of waste produced, a lessening of the risks involved in design, and an increase in the building's profitability and lifespan.

As suggested by Hatem et al., (2018), the government should assume the accountability of a construction the customer in order to motivate construction companies and professionals to continuously looking for ingredients and ways of employed, such as by utilizing technologies, substances, and so on, that will minimize the negative side effects on the environment and assessment the inputs that might provide some beneficial environmental benefits. The federal government ought to additionally take on this responsibility in order to ensure that the environment is not negatively impacted by the construction process.

As a result, the authorities of Iraq ought to shoulder the obligation of encouraging construction companies to contribute to the enhancement of the construction industries by conducting research on the natural environment across all disciplines (Ofori, 2000).

The Iraq environmental concern is now being given a significant amount of weight in the assessment of projects. Failing to conform to environmental laws can result in the postponement or cancellation of a project, exclusion from future employment prospects, fines, legal action, and even charges. Additionally, it is of the utmost importance that the upper management, as well as all stakeholders in Iraq organizations, have complete awareness and comprehension of the environmental legislation and permission procedures (Hatem et al., 2018).

#### 2.4.2.4 Employment Obstacles

Individuals are the construction industry's most valuable asset. Planning and execution of construction processes depend on the understanding and abilities of the people involved; therefore, it is essential to have skilled administrators in place to oversee and direct efforts. (Hatem et al., 2018).

Having an adequate amount of expert and unskilled employees to complete the task is an absolute necessity. Locating and recruiting enough skilled and accomplished individuals is becoming increasingly challenging. There are multiple contributing considerations to this difficulty. That involves construction, which is inherently hazardous, filthy, and strenuous. In order to achieve optimal performance over the long run, it is essential that workers receive the requisite training. This is the central question of the construction industries in Iraq.

By enhancing leadership and empowering others. This would be beneficial to efficiently organizing work activities by offering an avenue for interaction among management and work personnel. It would additionally offer upward mobility and possibilities for motivated employees to advance productively. And result in high levels of dedication, passion, self-motivation, efficiency, and creativity (Al Hadithi, 2018).

The majority of research concentrate on empowerment as a result of the substantial advantages offered to the individual and the organization, which include feelings of recognition, belonging, and increased self-esteem. In addition, it empowers workers to make judgments for which they are dependable and answerable.

According to investigations conducted by Hatem et al., (2018), the amount of empowerment has an effect on efficiency. A high degree of empowerment is associated with improved efficiency. Empowering employees is essential to increasing the efficiency of construction.

**2.4.2.5 Health and Community Protection**

According to the definition provided by the “International Labor Organization” (2001), workplace wellness and health is regarding as "the avoidance and ongoing preservation of the highest possible level of well-being in terms of one's physical, mental, and social avoiding instances of illnesses among employees caused by their circumstances at work, the safeguarding of employees from elements adverse to their wellness in their position at work, and arranging and maintaining employees in work settings that reflect their unique physical and emotional conditions." To be in a state of safety means that there is no risk of an accident occurring that could result in damage being caused.

The personnel in construction industries are put in dangerous situations where they could suffer from occupational illnesses and injuries as well as the negative effects of working excessively long hours. The people in charge of devices, plants, and other complex pieces of construction equipment pose a risk to themselves since, in most situations, they lack the experience or training necessary to operate the equipment or plants in question. The laborer's physical and emotional wellbeing, as well as his skills, should inform the assignment of his

responsibilities. In addition, employers are required to have full control over their workforce in order to guarantee that employees comply with all safety procedures. According to Jarallah and Mahjoob (2022), the organization is responsible for adhering to all of the safety and health requirements that are associated with the building operations themselves.

#### 2.4.2.6 Legal Concerns

Contractual arrangements are typically used to do business in the construction industry, which can occasionally give rise to disagreements. Claims, conflicts, and financial matters are the most common refers to that reflect the legal element of the construction industry and have been constantly on the rise for years. According to Shakir and Mohammed (2022), claim is described by Hughes and Barber in the context of "Claims in Perspective" as "an inquiry, demand, implementation for payment or announcements of presumed powerlessness to which the contractor, appropriately or incorrectly at this the field, considers his identity able with regard to an understanding that hasn't yet been reached."

According to Rahi and Halihan, (2010), the various forms of claims involve interference, better understanding asserts, delay and interruption claims, additional labor asserts, speeds, impossibility-of-performance asserts, flawed design claims (error or omission), and extra work claims.

The absence of contract evidence is the most frequently encountered problem in construction lawsuits and disagreements. If a disagreement over a building project ends up in court, the party or parties who have a more compelling documentary record to support their side of the argument are in a stronger position to emerge victorious. According to Shakir and Mohammed (2022), careful contract management can save the organization a significant amount of money in unnecessary legitimate charges and deter subcontractors, suppliers, and other outsiders from pursuing meritless demands and arbitration.

In accordance with the definition of finance, which states that it is the collection of actions that deal with the administration of funds, one of the components of the law that pertains to finances is the decision-making process about the acquisition and application of resources. Construction project financial is a one-of-a-kind monetary support and accumulations solution that is designed to provide assistance to those working in the construction industries by providing funding and services that are tailored to the requirements of the construction industry. Access to finance encompasses a wide range of topics, including but not limited to the availability of monetary resources to individuals or businesses in the form of deposits, financing, payments, or coverage.

The availability of such services may be contingent on a number of factors, including affordability, eligibility requirements, and physical access (Al Hadithi, 2018).

There is always a possibility of financial connected misery in the building industries, and certain gatherings are at a greater risk than another. In addition, there is no means to completely eliminate this possibility.

According to Al-Hashimy et al., (2022), there are a number of hazards associated with the funding of large-scale initiatives by both private and public entities. These risks can be equally as significant. In terms of the financial means that are required for projects, regardless of whether it is a publicly financed, publicly-privately funded, or privately-funded venture, speculators frequently experience anxiety about deciding on decisions due to a lack of complete information in the area of financing techniques and the dangers that are associated with them.

The appraisal and assessment of a construction project's effectiveness as well as ensuring that the appropriate modes of finance are utilized are the primary concerns that pertain to construction endeavors. In order to be able to control project costs and financial effectiveness, which will be essential areas to be controlled (Al-Hashimy et al., (2022), the projects need to be secured. The finance could be provided by an internal source, an external source, or the customer themselves.

Due to the fact that most of the prior studies have focused on claims, contract problems, and legal considerations for construction in Iraq and have been investigated as special and specific themes, this study will devote a significant amount of its focus on the financial aspect as a major issue. This is because of the studies that came before it, which have mostly been devoted to the financial aspects of construction in Iraq.

#### 2.4.2.7 Government Authority

One of the issues that construction industries are having in terms of enhancing this occurrence is government monitoring. This is due to the fact that the public construction industry continually comes under higher regulation by the construction regulations and licensing regulations. By applying these developed construction requirements and codes for meeting the integrity of the structure that affects the security of the population, although as a result a lot of multi requirements for contracts will appear, which forms a challenge facing this sector with various currencies and circumstances that are dependent on the financed companies or country (ALFahham and Alajeeli, 2020), this industry will be able to meet the fundamental integrity that impacts the safety of the general population.

Because Iraqi law and international law are both heavily relied upon in governmental organizations, Iraqi law frequently requires modifications that make it more restricted than necessary so that it may be applied to the current circumstances in Iraq. According to Hatem et al., (2018), several regional regulations are antiquated and outmoded, and as a result, they prevent the use of materials and systems that are frequently superior and more economically viable.

Consequently, governmental organizations could be either directly connected to or indirectly involved in the construction industry wherever an agency of government manages a construction project. these institutions serve the population through its requirements and by its different locations that importance of public construction efforts, which work independently in some cases or collectively to manage general population projects. In addition to this, they have the ability to oversee and monitor the building industry. Therefore, the construction industry is organized according to the regulations made by the before stated governmental organizations as well as the laws established by the Iraq contractor's organization regulation (ALFahham and Alajeeli, 2020).

#### 2.4.2.8 Effectiveness

According to Winch (2009), the efficiency of the construction industries is regarded as a cause of concern by customers in either the private and public sectors. According to Rashed (2014), efficiency refers to the processes and procedures that participate in a project in order to ensure that the activities are carried out in the appropriate manner.

It would appear that there are many different explanations and variables that contribute to the performance difficulty that the general construction industry is experiencing in Iraq. According to Alkaabi and Mahjoob, (2022), the problems with construction industries performance may be broken down into three categories: issues created by shortages or deficiencies in industry infrastructure (mostly the supply of resources), issues brought on by customers and consultants, and issues brought on by incompetence or deficiencies on the part of contractors. It's also possible that the problem was caused by inept designers or contractors, bad estimating and change management, cultural and technological concerns, site-related problems, or the use of unsuitable techniques and instruments.

In addition, Sanvido et al. (1992) found that traditional methods of measuring effectiveness have flaws due to the large and complicated amounts of information that are collected, as well as the lack of methods that can assist decision makers in comprehending, organizing, and making use of such information in order to manage organizational effectiveness. This

was found to be a problem because traditional methods of measuring effectiveness have been around for a long time. The issue with efficiency can be classified according to the factor to which it corresponded, and the factors in question are the amount of money spent, the amount of time spent, and the level of performance achieved.

### 2.5 Obstacles Facing Construction Industries

A variety of challenges in today's construction industry are one of the primary forces pushing that industry toward the use of more advanced technologies. In addition to other obstacles, such as legal issues, governmental legislation, and environmental considerations, the construction sector has been presented with other challenges, such as time restrictions, worries surrounding the availability of personnel, and safety considerations.

The level of competition in this industry is extremely high, and as a consequence, the companies that operate within it are obliged to work incredibly hard in order to increase their levels of production in order to remain in business (Banihashemi et al., 2022).

In recent years, there has been an increased emphasis placed not just on issues concerning the natural environment but also those pertaining to society. In today's world, projects commonly involve several stakeholders, each of whom holds specialized knowledge in a certain technology but is based in a separate company and region. Additionally, each of these stakeholders have knowledge in a specific area of technology.

The official construction industry in Iraq, much like the official construction industry in most other nations across the world, is quoting its projects using the traditional paper-based tendering system. This procedure has several flaws, including a lack of accountability and bureaucracy, among other issues. It was needed to investigate the feasibility of implementing alternative more efficient methodology known as "E-Tendering" that addresses the shortcomings of the manual tendering system due to the significant volume of projects that are tendered every year Al-Dalaeen, and Tarawneh, 2022).

This was done in order to meet the demands of the increasing number of projects that are submitted each year. This current study investigates whether or not the construction industry in Iraq is prepared to use electronic tendering for public bids, and it offers suggestions for how to increase the sector's level of participation in e-auctions. The purpose of this study is to present a model of the obstacles, challenges, and worries that Iraqi tenderers have in regards to accepting and embracing e-tendering. This is performed by conducting a comprehensive examination of the relevant literature in conjunction with in-depth analysis and identification by subject matter specialists.

### 2.6.1 Obstacles Regarding Expense

Hasan and Rasheed, (2019) made the observation that study into the effectiveness of projects with regard to the expenses involved has been going on since the 1960s. On one end of this spectrum you will find the theoretical research work, which is dependent on the prior knowledge of the researcher, and on the other end you will find the methodical research activity. In addition, Hasan and Rasheed, (2019) claimed that much previous study has been undertaken on the performance of projects in relation to cost and time considerations. This is something that was referenced by Abu Shaban (2008).

The complexity of the project, the qualities of the client, and the characteristics of the contractor all have a strong correlation with the cost performance connected to the project budget. Because this correlation has an effect on the performance of the project, the number of project stakeholders may sometimes need to be reduced.

The building project was confronted with some of the most complex issues when it attempted to reduce the scope of its work by eliminating some operations in order to keep its budget in check. This ultimately resulted in the creation of a conflict of interest between the many parties involved in the project.

### 2.6.2 Obstacles Regarding Time

Huang et al., (2021) made the observation that research conducted in a variety of nations over the course of the previous three decades appears to have made important contributions to the body of information relating to time performance in construction industry.

During the building phase, a variety of unforeseen problems and deviations from the initial design surface, which causes issues with the project's ability to be completed within the allotted budget and time frame.

In local developing works, the three most important factors causing complications and challenges of time efficiency are disadvantaged site management, unanticipated ground situations, and a slow speed of making choices involving all project teams. Additionally, project difficulty, the customer type, experience of team, and interacting are highly associated with the time efficiency.

Hasan and Rasheed, (2019) offered various technological and management techniques with the goal of increasing the speed of building and, as a result, improving the construction time efficiency. One answer that may be mentioned as a solution to boost productivity is effective communication, rapid exchange of data among project individuals, the best selection and

development of managers, and detailed building applications that are provided with advanced technology (Kiviniemi and Fischer, 2009).

### 2.6.3 Obstacles Regarding Quality

Infrastructure management's three most important goals—time, money, and quality—are inextricably intertwined and cannot exist in isolation from one another. Because of the functional significance it has, trade-offs among project length, overall expenses, and level of quality are frequently addressed in project management. This is due to the fact that it is one of the most essential concerns in the successful completion of a project and has always been taken into perspective by project managers (Huang et al., 2021).

Many people believe that increasing productivity, lowering production costs, and satisfying customers can all be accomplished most effectively by focusing on quality improvement. Any attempt that is made in good faith to better the quality of a product or service must take into consideration the expenses that are connected with doing so. In today's business climate, it is not enough to simply fulfill the expectations of the customer; the fulfillment must also be accomplished at the cheapest price possible. This is only achievable if the costs required to attain quality are reduced, and the only way to reduce these costs is to first identify and then quantify them (Kiviniemi and Fischer, 2009).

It is argued that quality is a vague concept that is interpreted in a variety of ways by various individuals. It is also referred to as " accomplishing pre-defined requirements" and can be defined as efforts aimed at bettering the company and the services it provides. It is also commonly considered that the features of a product or organization that bear are what constitute its quality (Hasan and Rasheed, 2019).

It is commonly held that the quality of something is a factor that goes into decision selecting and that increasing attention to that element can help us make more economically sound choices. To put it another way, trying to save money by sacrificing quality is not an economically sound strategy. Quality is not an abstracted, instrumental, extravagant, or unneeded paradigm and inventive strategy to the management process insuring the development of exceptional product and offerings, providing quality the serious consideration it deserves is discovered to be the primary determinant in the success of businesses (Kiviniemi and Fischer, 2009).

The goal of quality management is to achieve an amount of quality that is stable throughout time and does not fluctuate. In order to achieve this level of effectiveness, the quality process must be enhanced indefinitely; nevertheless, quality is a procedure, not a destination.

## 2.6 Kinds Construction Contract Agreement

A construction agreement is a written understanding between two parties the "owner" and the "contractor" that describes the manner in which building initiatives should be implemented based on particular conditions and rules. This agreement can be described as a construction contract.

The manner in which the ultimate price of the contract is established primarily serves as the primary dividing line between the numerous construction contracts that are available. Regardless of the approach that is taken, the primary objective of any building project is to produce a structure of the highest possible quality within the allotted time frame and at the cost that is the least expensive option available. According to Tang and Cheng (2010), the following is typically included in construction arrangements:

- Offer Template
- Agreement Template
- Standard Requirements or General Restrictions
- Additional Requirements
- Strategies
- Amendments

The following are some of the most frequent categories that can be used to classify different types of agreements:

- Unit Cost Agreements
- Lump Sum Agreements
- Cost Plus Agreements
- Price Aim Plus a Cost
- Turnkey Agreements
- Design-Build Agreements
- Agreements Based on a Percentage of Budget
- Arrangements with a Maximum Cost Assured

The following is a full explanation of the various forms of construction agreements:

### 2.6.1 Unit Cost Agreements

This kind of agreement is based on a checklist of anticipated operational quantities that will be considered in the project as well as to actual unit costs. Some examples of these amounts

are cubic meters of building materials, excavation, and various lengths and sizes of pipe. The final cost of the project as a whole is determined by the quantities of the work that need to be completed. If this is the case, the owner may choose to assume the risk of a fluctuating quantity (Gulghane and Khandve, 2015).

The majority of government agreements in Iraq are of the unit cost category. A contract of this kind gives owners the ability to make adjustments to the amount of work that has to be done and enables efficient oversight.

### 2.6.2 Lump Sum Agreements

Under the terms of this kind of agreement, an engineer or a contractor is obligated to carry out the project in accordance with the specifications and requirements in exchange for a certain amount of compensation. A "Fixed Price Agreement" is another name for this kind of arrangement.

According to Galloway (2006), a fixed-price contract is suitable for situations in which the project's objectives and timetable are clear enough to enable the engineer to provide an accurate estimate of the overall costs associated with the endeavor.

In Iraq, a lump sum agreement for labor work is utilized relatively frequently, particularly for the construction of residential constructions.

### 2.6.3 Cost Plus Agreements

A lump sum contribution is made to the contractor in regard to the full amount of supplies and labor that is owed to them under this form of contract. This payment is intended to pay for the contractor's expenses for overhead as well as their profit.

According to Galloway (2006), this kind of agreement should be used in situations in which the opportunity of the project is very unpredictable and other aspects of the project, such as the types of materials, personnel, and equipment, also have an uncertain character.

### 2.6.4 Price Aim Plus a Cost

In this kind of agreement, the contract itself defines the particular quality and time parameters that must be met. If a contractor meets these requirements, he receives an additional payment equal to the entire costs on top of the charge that was agreed upon at the beginning. If the contractor meets and exceeds those criteria, for example, by performing the work sooner than expected the contractor will receive an increase in their base rate.

According to Gulghane and Khandve, (2015), the cost of the service is reduced when the contractor in question does not fulfill the requirements of the project.

### 2.6.5 Turnkey Agreements

Under the terms of a turnkey agreement, the design-builder is responsible for not only designing and constructing the project, but also ensuring that the plant is operational and ready to be run by the owner.

According to Galloway (2006), the origin of the phrase "turnkey" comes from the idea that the owner of a factory can start successful functioning of the plant by figuratively inserting a key into an opening and turning it.

### 2.6.6 Design-Build Agreements

A design-build agreement enables a property owner to enter into a contract with a single organization that will supply both the architectural design and the construction operations. It entails the use of a single contract for the provision of services related to design and construction as opposed to the use of two separate contracts for design and construction respectively.

According to Galloway (2006), it integrates into one assignment that encompasses the project's design as well as the purpose of the building that the main contractor is responsible for. The design-builder could be one organization or it might be a collaborative venture between two or more businesses. It is not necessary for the design-builder to have the in-house expertise to conduct both construction and design.

Instead, a constructing contractor can subcontract the design portion of the project, or a company that specializes in engineering can subcontract the building project. According to Tang and Cheng (2010), certain design-build contracts are also referred to as "turnkey" agreements.

### 2.6.7 Agreements Based on a Percentage of Budget

When it comes to this kind of agreement, the amount of money paid to a contractor is based on a percentage that is added onto the total cost of building. This proportion could represent the contractor's straight profit, or it could be the contractor's total revenue, which is why general operational costs like clerical assistance, telephone service, and general company insurance are required to be paid.

It is crucial to know the distinction because, according to Galloway (2006), if the contractor anticipates the proportion to be clear profit, therefore regular business operations costs will have to be considered somewhere in the agreement for construction as costs. Consequently, it is essential to determine the distinction.

### 2.6.8 Arrangements with a Maximum Cost Assured

Construction agreements that set the highest possible amount of payments for the defined scope of the task, with advantages for the contractor if costs are kept under control and penalties if costs go over control are known as incentive agreements (Gulghane and Khandve, 2015).

## 2.7 Concepts and Structures Currently Used in Change Management

It is essential to select the appropriate kind of model in order to attain the highest quality results that are feasible (Havu-Nuutinen, 2005). The construction industry makes use of a variety of modeling approaches, and each of these concepts can be applied in a wide variety of contexts.

This investigation focused mostly on change requests in the building industry. The construction industry in Iraq is experiencing change order problems, which are having an impact, and are now being managed. According to the mass of previously published material, it has been observed that the integration models relating to change order management have received a comparatively little amount of attention.

According to Nadler, (1993), a simulation model was developed with the purpose of modeling the occurrence of modification orders and their effect on cost, duration, and productivity for construction projects in Iraq.

Tang and Cheng (2010), established a different model; the model that they established identifies the amounts of interest and authority, location, and function for every participant that is participating in the steps of change request management. Every participant in a construction project has varying degrees of interests and amounts of influence in the project in which they are involved due to the diverse and complicated nature of the activities that make up any given construction project.

According to Smyth (2004), the achievement or collapse of a project is heavily influenced by both the opinions and objectives of the project's participants. the improper management of participants can lead to a variety of unfavorable outcomes in construction projects. Some of these outcomes include "limited scope and task definition," "inadequate resources assigned

to the project (both in regard to quantity and quality)," "weak interaction," "changes in the total amount of function," and "unforeseen controlling adjustments."

A number of different approaches to mapping stakeholders have been developed. Nevertheless, the power/interest framework, an example of which can be seen in figure (2.1), is the method that is used the most frequently to map the effect of stakeholders.

The framework was developed by Yap et al., (2010), and it classifies stakeholders according to the amount of influence that they possess as well as the amount of involvement that they have regarding the project. In the framework, there are four distinct areas that each represent a distinct kind of stakeholder. These zones demonstrate the kind of interaction and connection that the project manager needs to develop and maintain with every one of the different categories of stakeholders.

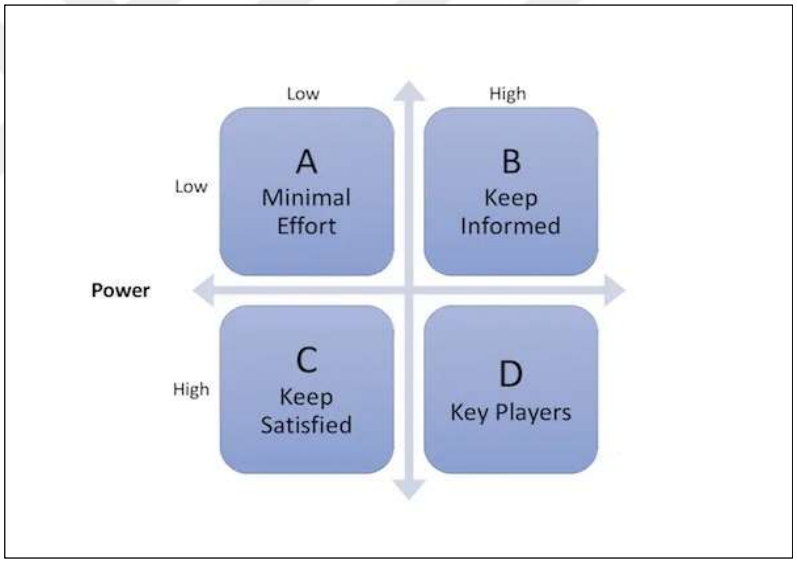


**Figure 2.1:** Modelling of interested parties, often known as the power-interest framework

**Source:** Yap et al., 2010

Participants in this framework who have a low degree of interest in the operations of the project and a poor level of authority to impact the operations of the project are located in Area A because they only require a small amount of work from the project manager. Participants in Area B who have a strong level of involvement in the operations of the project and a poor level of power to impact the operations of the project need to be kept fully aware of the main choices that have already been made; hence, having effective communication among this kind of stakeholder is essential.

Those stakeholders that fall into the (Area C) category need to have their needs continually met because they wield a significant amount of power over the project's activities yet have only a passing interest in those operations.

For the purpose to successfully engage participants and better manage requests for change, the investigator combined the power-interest framework with the fundamental principles of modification order control in construction projects. This was accomplished by establishing their respective duties, positions, and responsibilities as well as the manner of communication and involvement.

In order to put the established model into practice, it is necessary to determine the roles and responsibilities of the various participants involved, most notably the general public the customer and the design consultant, as well as how their places will change from incrementally to step. These steps include identifying, examining, and assessing the change order; estimating and approving the change; implementing the change; and documenting the modifications.

### 2.8 Iraqi Construction Projects involving Public Private Partnerships

The building industry in Iraq is struggling with a variety of difficult concerns and issues overall. According to a lack of money, which is expressed by surpassing the time limit for finishing of the assignments, the construction projects are regarded to be one of the most prevalent and major challenges in the construction sector in Iraq. This is because the time required to finish for the projects takes longer than the allotted amount of time. Typically, both the amount of projects and their total value will be considerable.

This objective cannot be reached provided the project is financed in the most effective way possible. Reconstruction, servicing, and functioning of projects in Iraq necessitate improved coordination among these concerns and the other concerns of Iraq (Erzaij et al.,2020).

Public-private partnerships have been embraced in developing nations as a means to address the financial constraints faced by governments in their efforts to enhance quality and improve service delivery. In the context of Iraq as a country that is still developing, the Iraqi government encountered a significant dearth of financial resources resulting from an economic downturn and security challenges.

Consequently, the Iraqi government was compelled to discontinue approximately 4,000 ongoing projects that were being funded under its funding initiatives.

These projects were dispersed across various governorates in Iraq, as indicated by the most recent report of the Department of Planning in 2019. The assignments in question were initiated during the period spanning from 2010 to 2018 (Erzaij et al.,2020).

As a direct response to the worldwide economic downturn, the government gave its agencies permission to collaborate with private companies on the procurement of projects that had previously been scrapped. Around the globe, public-private partnerships are utilized because, in comparison to the public industry, the private industry is superior at facilitating creative thought, managing complicated technological endeavors, and reacting rapidly to shifts in the environment. The expertise that may be gleaned from the private sector will be of considerable assistance in modernizing and streamlining the conventional public contracting process (Khudhaire and Naji, 2021).

The construction industry in Iraq has encountered numerous challenges in recent years, primarily stemming from an increase in the amount of incomplete building projects. This issue can be attributed to a lack of adequate financing, and this has had a detrimental impact on the overall achievement of the construction industry. Additionally, Iraq has faced difficulties in effectively selecting financing approaches, particularly in relation to public-private partnership agreements. The inadequacy and insufficiency present in this particular domain give rise to an inappropriate selection of contracts. Therefore, the utmost significance is in the prudent selection of the public-private partnership approach, given the prevailing difficulties in the funding system in Iraq and the pivotal role of right selection in ensuring the project's success (Yaseen and Naji, 2021).

# INVESTMENT CONSTRUCTION PROJECT

## 3.1 Introduction

In recent years, discussions have taken place all around the world about the ideal conditions for certain regions. However, there is no consensus over the variables that should be used to describe these criteria; rather, only different components of this process are being talked about. Due to the fact that an area (as a system) is described by different requirements, an evaluation of the procedure of regional development cannot be based on just one component. The fundamental tenets of both Lithuanian and European Union (EU) regional policies serve as the organizing principle for the regional economy's expansion and growth (Chirkunova et al., 2016).

The Gross Domestic Product, sometimes known as GDP, is the primary indication of the level of economic growth in the European Union (EU). The aforementioned index is referred to as the most practicable indicator for revealing shifts in various stages of regional development, as is stated in the previous sentence. It is vital to keep in mind that the origin of scientific theories may be traced back to one of these three key growth principals: strength, sustainability, or a social perspective. According to Grabovy and Orlov (2016), the many aspects of the process of regional development are inextricably entwined with one another, and there are no apparent barriers separating them.

The construction sector is one of the most important contributors to the economies of individual states. This is supported by a variety of scientific studies that investigate ways to improve the effectiveness of decision-making in relation to construction-related concerns.

A wide variety of issues pertaining to the investment construction process are addressed by a number of authors. Nevertheless, almost no research has been done on the subject of a significant issue concerning the integration of building investment projects in the growth of regions (Chirkunova et al., 2016).

Even if the best development investment project is selected based on quantitative indicators, the project that ends up being selected might not be a suitable fit for further investment efforts that are currently being carried out or are in the process of being carried out. This could be the case even if the greatest development investment project is selected. In terms of the overarching framework of regional development, the synergy effect is pretty large and has quite an impact. According to Mottaeva (2016), the ideal scenario is one in which numerous projects can produce new value while also being able to benefit from one another in a reciprocal manner.

## 3.2 Importance of Strategic Management in the Development of Construction Investment

Constructing buildings in a way that minimizes their impact on the environment is one of the most pressing concerns of our time and an important step toward achieving long-term sustainability in the area of social evolution. In order to achieve sustainable development, there are challenges associated with the building of a criterion system for assessing the sustainability of construction, as well as obstacles associated with the collection of information regarding criteria and mathematical computations (Lapidus et al.,2020).

Certain aspects of the Regional Development Strategy have been included into the broader development strategy and goal that the state has. In the meantime, the regional economic growth instruments of the western nations are directed toward the decentralization of significant industrial agglomerates as well as fostering the growth of economically depressed and economically weak regions (Eroshkin et al., 2017).

A wide variety of issues pertaining to the investment construction process are addressed by a number of authors. However, almost no research has been done on the subject of the incorporation of construction investment projects within the development of regions, which is a significant issue. Even if the most profitable construction investment project is picked according to financial indications, the project that ends up being picked could not be an appropriate combination for other investment projects that are already being carried out or are in the process of being carried out (Lapidus et al.,2020).

The synergy impact is quite significant with regard to the overall substance of regional development. As a result, it is necessary to assess the multifaceted impact of the following requirements:

- Quantity of "Construction Investment Projects" (CIP),
- Current tendencies,
- Legal concerns,
- Constructional solution options, etc.

The primary objective of strategy is to direct forthcoming investments according to a way that they will contribute to the accomplishment of the established objectives in the most efficient and fruitful manner feasible. In addition, must it be pointed out that collaborated attempts of state as well as local governments are important in order toward accomplishing these objectives, but it also needs to be pointed out that it is essential to note that the

accomplishment of the indicated objectives is impacted not only by investment, but also by other managerial, legal, and additional measures carried out by the institutions of the framework of the state.

Nevertheless, the fundamental challenge that authorities encounter when attempting to execute strategic planning is procedural in nature, and the primary problems that arise are either the selection of methodology or the absence of it (Dehlin and Olofsson, 2008).

Investing in building, reconstruction, and continuing operation of infrastructure is the goal of CIP, which is a complicated of legal interactions, acts, and documents targeted at accomplishing this goal. The following are some of the domains in which they find application:

- Explanation of the logistical and financial viability of the proposed building or reconstruction.
- Cost estimation and assessment.
- Repayment times as well as projected levels of profitability.

### 3.3 Concept in Investment Construction Project

The manufacturing industries were the birthplace of what is now commonly recognized in the development profession as investment construction project (ICP) and is practiced in this field. The accomplishments that the manufacturing sector obtained as a result of its acceptance of the rapid principle and the advantages that were gained were the primary drivers behind the eventual implementation of the lean concept in the construction industry.

The primary objective of this Strategy is to refocus on subsequent investments in like a way that they may help bring the stage of economic growth of states closer to the average of EU countries. It ought to be pointed out that in order to achieve these objectives coordinated initiatives of the state are significant (Zavadskas et al., 2004).

This is considering the accomplishment of the indicated objectives is influenced in addition by investment however additionally by other managerial, legal, and other evaluates implemented by the declare. It is essential to note that in order to accomplish these objectives coordinated initiatives of the state are essential.

Eroshkin et al., (2017) observe that it is essential to guarantee an effective integration of actions and activities, which is done by logical distribution of duties among the organizations and employees. One of the main challenges for officials is to find methods how to effectively oversee these procedures while applying a regional development regulation, how to form an

equitable and transparent framework for decision's planning, adoption, and monitoring of application.

It is feasible to make an estimate of the investment costs involved with the construction of major commercial or industrial facilities by basing one's calculations on the findings of one's preliminary study. After that, the entire cost of the project will be calculated based on the construction investment project contract. Turnkey construction provides additional benefits to the customer, while also allowing the organization to delegate risks and responsibilities to an experienced construction manager.

- When attempting to secure funding for construction by investors that are not affiliated with the project.
- When applying for preliminary permits to conduct surveys, designs, or construction projects.
- When the structure's planning and study, as well as its building or renovation, and commissioning are complete, the facility will be ready for use.
- When the application for permissions and the registering of title documents for the location have been completed.

The strategic framework of the evolution of the construction industry recommends the long-term viability of investments, the highest possible energy productivity, and the long-term reliability of the materials and structures utilized; in addition, it provides a more precise explanation of the processes that encourage the use of novel technologies.

The development and implementation of a system that integrates cutting-edge technical developments or creative products into the processes of investment and construction will make it feasible to overcome the obstacles that currently stand in the way of putting investment to use in the building sector. Because of recent advancements in technology, it is now possible to find solutions to the problems that arise.

Several separate stages of the processes involved in strategic and investment planning have been postulated, according to a variety of different ideas. Generally speaking, these three essential stages of strategic planning are seen as three separate processes:

- Evaluation of the investment construction strategy: including an examination of the external environment of the organization, an examination of its resources during the retrospective time frame, and a projection of their availability during the prospective time.

- Strategy-making of the investment construction: which includes defining the target direction of the institution strategy, selecting and evaluating various options to strategic options, and selecting the ultimate decisions regarding strategy.
- The process of putting a strategy of the investment construction into action, which includes delegating duties to those who will carry them out, allocating resources and preparing budgets, as well as accounting and management systems.

### 3.4 Assessment of the Effectiveness of Investment Construction Projects (ICP)

The strategic framework for the advancement of the construction industry recommends the long-term viability of investments, the highest possible energy productivity, and the long-term reliability of the resources and structures utilized; in addition, it provides a more precise explanation of the processes that encourage the use of novel technologies.

It can be accomplished to overcome the challenges of applying investment in the construction industry thanks to the formulation and positioning of a system that incorporates new product or technologies alternatives into the steps of investment and construction. This makes it feasible to overcome the challenges (Ustinovichius et al., 2010).

In order to successfully implement strategic projects, official of government are required to select an acceptable investment management, relevant strategic projects, and supply the resources that are required. Which the state must comprehend besides the importance of choosing of appropriate strategies, additionally it needs assume responsibility for the application of selected development strategy, which means investing the limited financial assets of the country into a collection of suitable advantageous projects and programs.

The authors suggest that, in order to facilitate the formulation of strategic development strategies at the municipality stage, construction investment projects should be segmented into the following categories:

- Municipalities
- Commercial/industrial zones
- Residential structures, and
- Infrastructure

As seen in figure (3.1). When evaluating the many groups involved in a project, you should apply different criteria each time. Current net profit should be used as the primary criterion for evaluating any potential investment initiatives. It is vital that one concentrate on the

following variables in order to evaluate this benefit: the benefit that is anticipated, the costs that are required to apply the project (for development, production, and building, and exploitation), and the probability that the project will be employed as anticipated (Han et al., 2020).

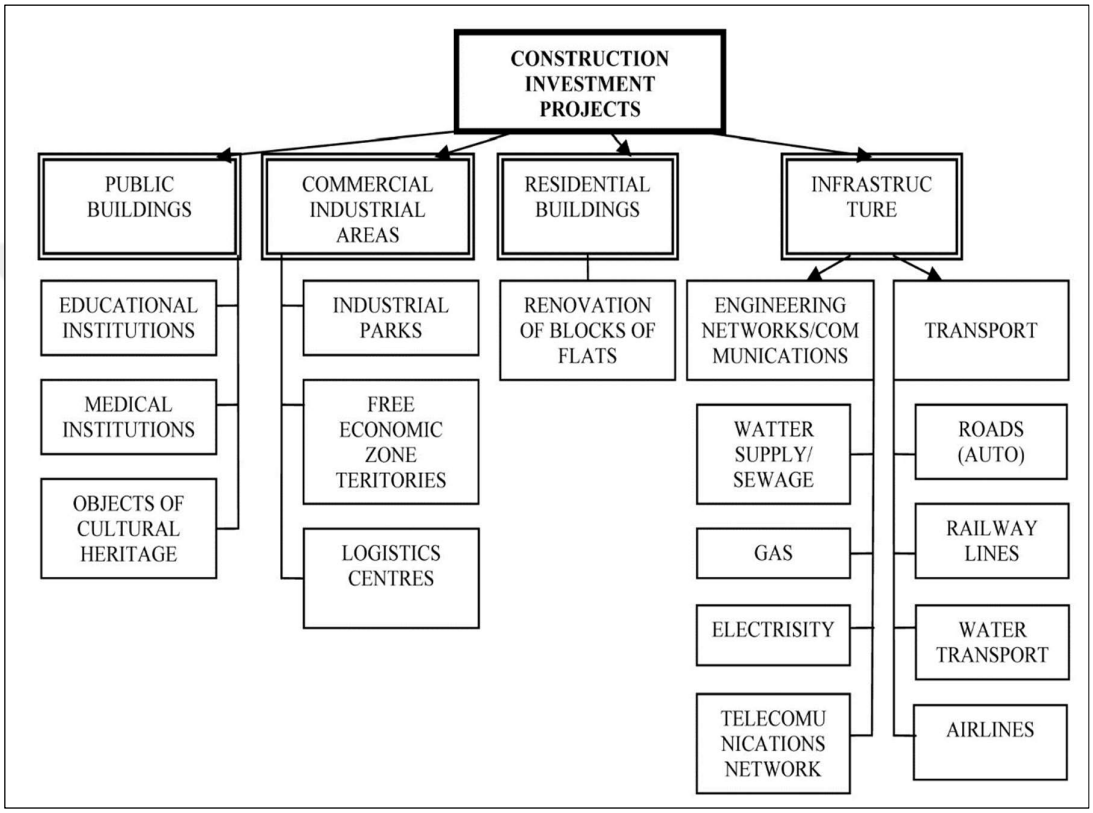


**Figure 3.1:** The Framework for Community Development Involving Construction Investment Projects

**Source:** Han et al., 2020

### 3.5 The Challenges that Facing Investment Construction Projects (ICP)

The first step, which is also the most crucial, is to choose how the money will be raised. It is frequently the determining factor in whether or not the investment in construction will be profitable. The effectiveness of the overall investment project is characterized by the mode of funding. According to the quantity of capital invested in equity, the primary methods of financing a project could be allocated as follows: equity money, reserves for the purpose of company operations, offered financial money, renting, investment boarding, foreign investment, and outside investment (Banaitiene and Banaitis, 2012).

Investing in construction typically involves using borrowed financial resources, which can have a significant bearing on the overall effectiveness of the investment project being undertaken. As a result, it is essential to conduct an accurate analysis of the good and bad aspects associated with each potential source of funding for the development stage.

Nevertheless, there are a number of factors that make it challenging to provide an objective assessment of the net profit that was generated by building investment projects:

- It is not always easy to make an accurate assessment of the benefits that a project will provide to the society it is intended to serve. In some cases, the defining criteria of a benefit can be quite challenging to evaluate in practice.
- It can be challenging to evaluate and forecast the likelihood that a project will be successfully carried out because the outcome of decisions and circumstances can have a significant impact.
- It is not always easy to provide an accurate assessment of the entire costs associated with investment projects and potential development. In this scenario, the costs need to be evaluated based on the genuine requirement for investment along with additional costs; but, they should also take into account the different projects that may be abandoned.

Decision-making procedures that are advantageous from a strategic perspective can be broken down into three stages, as shown in figure (3.2).

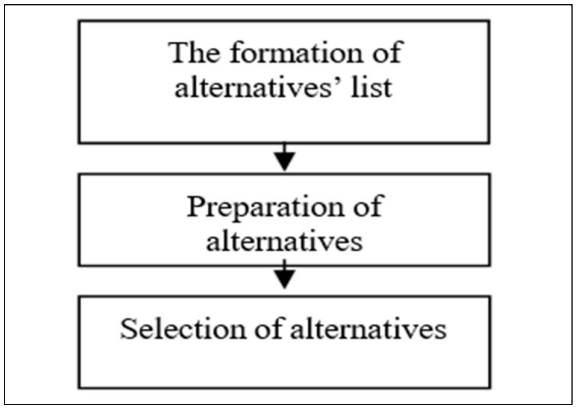


**Figure 3.2:** Decision-making methods

**Source:** Banaitiene and Banaitis, 2012

An investment is considered to have a certain level of risk (also known as uncertainty) when its potential return on investment (or benefit) cannot be precisely determined, but for which

specific opportunities exist and the probability of those possibilities may be determined. This is the primary goal that the criterion analysis aims to achieve.

### 3.6 Framework for the Management of Construction Investments

For a considerable amount of time, the formulation of a general plan for the governorate, a plan for effective development, a framework for strategic operation, and a budget were each considered to be wholly separate processes in a number of the governorates of Iraq. The process of preparing these documents and the process of putting them into effect must both be considered as components of the same overarching procedure while this is taking place.

Integration of planning approaches for the long term, scheduling, and financial construction is something that needs to be done. In this stage of the process, out of all the different options that have been investigated, the ones that most completely satisfy the long-term goals while requiring the least amount of money to execute them with the greatest possible effect should be selected (Mahmoud and Erzaij, 2023).

According to Giel and Issa (2013), the basic purpose of strategy is to guide future investments in such a manner that they have the greatest possible potential to contribute to the successful achievement of the established goals. This is the primary objective of strategy. At the stage of the national economic advantages, problems relating to the economy and the growth of the building industry are simultaneously treated as areas of focus for improvement. In this particular situation, impact factors that are typically utilized in the administration of the economy at the national level are applied.

These include the promotion of investment, the implementation of an effective tax system, the attainment of fiscal discipline, the increase of employment opportunities across all industries, and the expansion of existing employment opportunities across all industries. In order to carry out organizational strategic planning, it is required to have complicated intellectual support. This support should include both individual and collective decisions, guidance from specialists, and assistance with discussions (Zhai and Ding, 2021).

The following are the three fundamental principles that guide the development instructions:

- To evaluate the value that is attached to the outcomes of a project that was funded through investment and carried conducted in accordance with a yearly plan.
- The procedures that result in a yearly plan need to be trustworthy and open to public scrutiny.
- The implementation ought to be straightforward.

The researchers offer a theoretical strategic development model for the level of municipal governments, which is presented graphically in figure (3.3). This model was based on an analysis of the challenges associated with strategic planning that were found in the scientific literature (Fedorova et al., 2018).

The paradigm for strategic planning is comprised of three interdependent components, which are as follows:

- Throughout the selection of the project process, the most optimal construction investment proposals are chosen based on a set of criteria and limits, as well as the degree to which they are appropriate for priority domains and the evaluation of prospective achievements.
- During the phase known as planning or projection, a comprehensive planned framework of construction investment projects is developed.
- The management and monitoring application is put into action during the phase of the project known as "implementation."

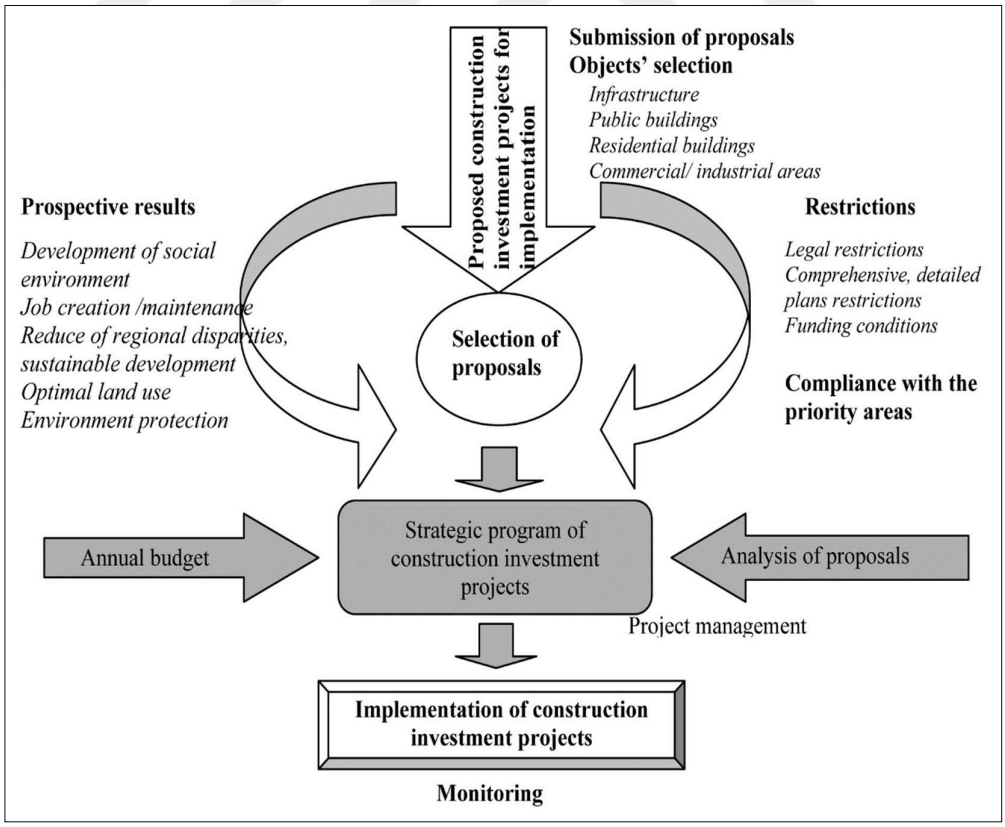


**Figure 3.3:** The Strategic for Community Development Involving Investment Construction Projects

**Source:** Fedorova et al., 2018.

Each year, a specific amount of financial support is allotted to the initiatives that have been deemed to have the greatest potential after being chosen from among a huge number of other potential projects. Every project comes with a unique set of prices and expenses, in addition to a unique set of benefits associated to its implementation. The amount of time it takes to put a project into action can also vary; for example, it may be anticipated that the project will be put into action within a year, but the duration of this phase could extend. In this particular scenario, the decision has to be made in a way that is consistent with the program that has been planned for the next year (Fedorova et al., 2018).

Furthermore, it is important to remember that projects from various disciplines need to be tied to one another and coordinated with one another in order to generate a synergy impact. When there are only so many funds available, it can be difficult to choose which initiatives should receive funding and how much of it should be allocated to each of those projects. This is where the issue of optimal investment comes into play.

Portfolio formation refers to the process of looking for the best possible investing strategy to implement. In the field of construction, it is recommended that a perfect projects' portfolio be chosen, with the goal of maximizing societal benefit while taking into account any constraints imposed by the system (Malafeyev et al., 2018).

A wide variety of mathematical frameworks can be of use in finding solutions to challenges associated with selecting the best investing strategy. The choice of model is determined by the kinds of specified activities and the assumptions made about those tasks, taking into account the parameters of the task that are known as well as partially known. In light of this, the authors intend to select mathematical approaches and programmed instruments for the modeling and optimization of the strategic possibilities presented by building investment projects in upcoming research that they will do (Faeq et al., 2021).

### 3.7 Analysis and Description of Construction Projects for Investment

The scope, significance, functions, and features of construction executes, management objectives, financing sources, and investment processes to manage construction efforts (regulators, operations, and duties of construction investment, etc.) will determine the classification of development investment projects (Zhang et al., 2020);

1. The following is a classification of development investment projects according to the features of the works being constructed:

- Projects involving investments in the construction of government and residential buildings, as well as other forms of economic infrastructure, are referred to as civil works.
- Investment projects involving the building of facilities for industry (for the purpose of extracting raw materials and manufacturing finished goods and energy).
- Project for the investment of funds including the building of technical infrastructure works (with the intention of supplying technical infrastructure capabilities).
- Projects including investments intended for the building of traffic works, also known as the development of works that allow people and vehicles to circulate and carry both people and products.
- Investment projects that focus on the building of rural and agricultural growth works (either directly or indirectly servicing agricultural, forestry, salt, and aquaculture output, as well as the construction and maintenance of dikes) are examples of such projects.
- Projects involving investments in the construction of projects related to national protection and security (conducted for the goals of national defense and protection).
- Investments in construction projects that serve several purposes, including urban areas, residential complexes, technical facilities of manufacturing parks or economic regions, etc.

2. The following is a classification of building investment projects determined by the sources of financing:

- Initiatives that make use of public investment resources.
- Projects that make use of non-public investment State resources.
- Public-private partnership (PPP) initiatives
- Projects that are being funded by other sources.

3. Depending on the scales and significance of the projects, the following types of construction activity are included:

- National significant projects.
- Projects assigned to Category A.
- Projects assigned to Category B.
- Projects assigned to Category C.

4. Different types of construction projects and their classifications:

- It is necessary to identify the categories of building projects that will serve the management of development investment activities. These classifications, which include special class, class I, class II, class III, and class IV, will be identified depending on the sizes, significance, and technical features of the projects.
- The requirements and technical rules for the construction industry provision for several categories of construction works that are meant to serve the construction design. The classifications of construction work that serve other management functions must be defined in line with the laws that apply.

# RESEARCH METHODOLOGY

## 4.1 An Overview of the Introduction

This chapter provides a description and justification of the study design and process that have been employed in order to satisfy the goals and aims of the research, as defined in the introduction portions of this chapter. The goals and aims of the research are discussed in greater detail in the introduction portions of this chapter. Earlier in the chapter, these objectives and objectives were discussed. The primary goal of this chapter is to investigate the several inquiry techniques and research procedures that are currently in use. This is done with the intention of providing the reader with a deeper comprehension of the numerous presumptions, paradigms, and methodologies that form the basis of this research.

In addition, the reader will be able to have a better understanding of the numerous approaches that served as the foundation for this research thanks to the inquiry that was conducted. This stage is crucial because it will provide insight into the benefits and drawbacks of the many points of view, as well as the numerous ways that these points of view can be balanced out within the framework of this research. Additionally, this stage will provide insight into the various ways in which these points of view can be balanced out. The research technique is made up of the use of a wide range of scientific procedures, and the primary objective of the research technique is to find solutions to problems by doing so. In order to improve the possibility that the information acquired will be reliable and objective in addition to being pertinent to the issue that is being researched, certain processes have been devised.

According to McCusker and Gunaydin (2015), the fact that there is now little agreement over how to construct the approach of conducting study makes it significantly more difficult to carry out an inquiry. This contributes to the overall complexity of the process. In light of this information, the process of conducting an investigation becomes more difficult. On the other hand, one may argue that the process of carrying out research is always a compromise between a range of different possibilities and judgments, which are frequently influenced by the quantity of resources that are available.

Therefore, researchers typically adopt the pragmatic perceptions that there are no hard-and-fast rules in the process of conducting research and that the numerous study methods and approaches that are accessible and may appear appropriate to an investigation, should still be embraced in a flexible manner despite the fact that they may appear appropriate to the investigation. This is because researchers tend to adopt the pragmatic perceptions that there are no hard-and-fast rules in the process of conducting research. Researchers feel that there

is a large degree of subjectivity involved in the process of conducting research. This is the reason why. This viewpoint is based on the idea that research is a process that is always open to new routes and lines of study. This idea forms the basis of this perspective.

Therefore, researchers typically adhere to the pragmatic viewpoint that there are no hard-and-fast rules when it comes to conducting research, and that the numerous research approaches and approaches that are accessible and that may appear to be suitable to an investigation, must nonetheless be adopted in a flexible manner. This viewpoint is based on the idea that there are numerous research approaches and approaches that are accessible and that may appear to be suitable to an investigation, but that they must be adopted in a flexible manner. This is due to the fact that there are a plethora of research procedures and methods that are readily available and that might appear to be appropriate to a study.

At the beginning of the chapter, you will find a synopsis of the research that was conducted. After this is finished, there will be a discussion of the study's objectives, primary questions, and secondary questions. In this section, a general overview of the study's methodology is presented for your perusal. This part also delves into the research strategy, which is broken down into subtopics such as research views (philosophies), research strategies, research methodologies, and procedures for information gathering and data analysis. In the final part of this analysis, we will go over the concepts, as well as the research population, the sampling procedure, the statistical techniques, and the ways of analysis that have been used during the course of this study. In addition to this, we will go through the fundamental ideas that underlie each of these subjects (Njie and Asimiran, 2014).

### 4.2 Research Objectives and Aims

The research methodology provides an explanation of the many different approaches that are used by research to gather data in order to acquire a fuller understanding of the overall quality management system and to determine whether or not it is appropriate for all companies to adopt them. The purpose of this study is to determine whether or not it is appropriate for all companies to adopt them. This information is used to decide whether or not it is appropriate for all organizations to adopt them, and it will determine whether or not it is appropriate to utilize this information.

In addition, the purpose of the study is to evaluate the obstacles that must be overcome before investment construction projects in Iraq can be carried out. This additional purpose of the study will be satisfied by carrying out the evaluation in order to complete the requirements of the study (Hardway and Stroud, 2014).

The primary data, as stated by Wittek et al. (2013), may include either quantitative or qualitative information. In order to continue our discussion on this matter, we will circle back around to it at a later date. The various points of view that researchers have regarding the characteristics of research quantitative methods and qualitative methods are quite different from one another. These opinions on research quantitative methods and qualitative methods are held by individuals who regard the two approaches as being wholly distinct from one another and by individuals who incorporate both strategies into research projects. The various points of view that researchers have regarding the characteristics of research quantitative methods and qualitative methods are discussed below.

On the other hand, the exploitation of findings or interviews is an example of what may be considered qualitative research. This type of study is typically more in-depth than quantitative research. One sample of a quantitative methodology that one may use as an example is the practice of utilizing surveys in conjunction with a range of various tactics.

could be structured and evaluated quantitatively during the process of collecting numerical data or during the process of classifying and coding non-numerical replies presented in numerical form. Alternatively, these processes could take place during the process of collecting numerical data. Another possibility is that these procedures will take place while the data are being gathered numerically.

There is also the risk that this will occur when we are in the process of gathering numerical data. When utilized in this manner, questionnaires can make a contribution to the process of conducting in-depth analyses of individual circumstances when they are prepared in such a way that they allow open-ended responses.

According to Fonseca, (2013), the 1980s were the decade in which academics first started to question the use of qualitative and quantitative data together in the same research project for the first time.

These researchers failed to provide any convincing explanations to justify their worries regarding the utilization of qualitative and quantitative data combined in the same research endeavor. As a direct consequence of this, the first iteration of the mixed-method methodology was carried out.

According to Pringle and McLafferty (2011), using a hybrid approach to research methodology enables researchers to be more integrative, adaptive, and holistic in their inquiry strategies. Researchers that are seeking to answer a variety of diverse study topics all at once will find this to be helpful. This is because taking a mixed approach to research technique

entails mixing qualitative and quantitative research approaches, which is the reason for this result.

In addition, the essential data were gathered for this study by combining quantitative and qualitative methods of data collection in the form of a hybrid survey, which the participants self-administered and maintained for themselves. In the earlier analysis that was presented, a methodology was applied, and it will be the topic of discussion in this chapter. Knowledge of study design, methodologies, and other relevant topics is included. The structure of the questionnaire, including how it is laid out, is also specified in this definition. Along with this, it has proven how the validity and reliability of the questionnaire have been ensured.

### 4.3 Methodology and Research Strategy

According to Bobrovskij, (2018), the concept of the research process is "the manner in which research aims and objectives can be accomplished." The collection and examination of data in the vast majority of research projects follows either a qualitative or quantitative methodology. Both of these ways of approaching a problem are referred to as techniques. This part discusses certain major problems relevant to qualitative and quantitative research, as well as the features of both approaches and the primary justifications for using qualitative and quantitative approaches in this inquiry. In addition, the characteristics of both approaches and the primary justifications for using qualitative and quantitative approaches in this investigation are discussed.

The objective of this investigation was to acquire a thorough and unmistakable knowledge of the research by arranging the numerous components of the investigation in a fashion that adhered to a logical progression. This was accomplished by organizing the various aspects of the investigation in a manner that followed a logical progression. There are three key actions that need to be followed in order to reach the objectives that have been set for this research.

#### 4.3.1 Research Design

The research design provides a detailed and organized outline of the procedures that are going to be followed throughout the course of the research investigation. The overall strategy is selected to methodically and logically combine the many components of a study in order to effectively address the research issue and establish a basis for data collecting, calculation, and analysis. This is done with the goal of producing the best possible results from the investigation.

In some circles, the research design is also referred to as the research procedure. According to Creswell (2017), the methodology that is selected to lead research operations might be either qualitative, quantitative, or a blended approach. Various philosophical theories, design strategies, and research methodologies serve as the foundation for these approaches. The meaning of a study design can be seen in figure (4.1), which is an illustration of the meaning.

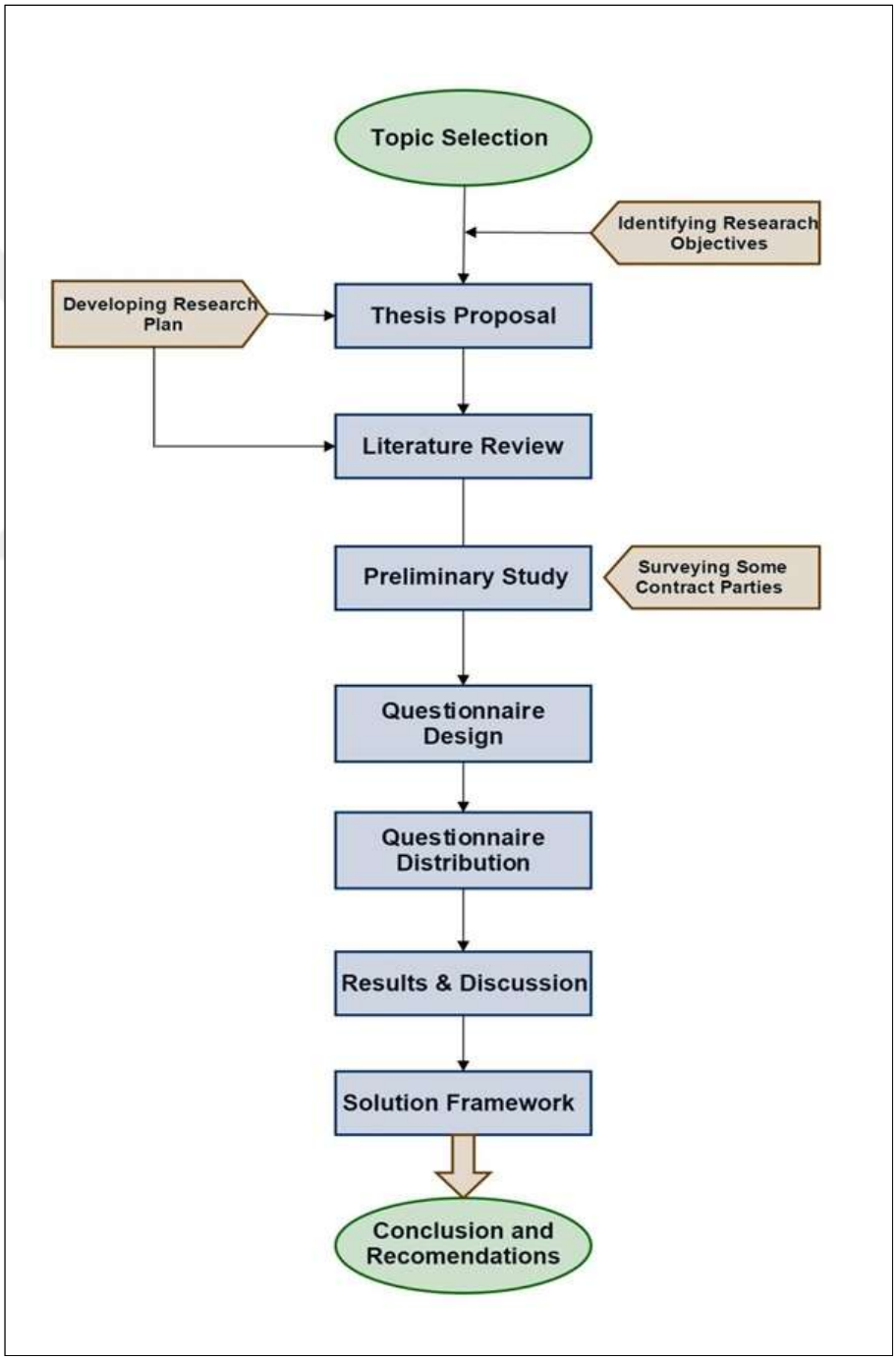


**Figure 4.1:** Research Methodology

During the first step, you will choose the research topic, determine the research challenge, define the goals and objectives of the study, construct a research plan while drafting the proposal, design a research approach, and conduct a full review of the relevant literature.

Data collecting is the emphasis of the second stage of the process, which is also known as the questionnaire design step. During this phase, specialists should be consulted to determine whether or not the questionnaire's components are understandable, contain a enough amount of information, and are helpful in terms of gathering the necessary data.

The third stage consists of data analysis carried out with Microsoft Excel and the statistical tool "SPSS" for the social sciences in order to carry out the essential analysis, as well as a discussion of the study results and the formulation of a solution framework that might assist in lowering the amount of changes that occur in construction projects. In the last part of this step, we will draw some conclusions and provide some suggestions based on the findings of this investigation.

### 4.3.2 Philosophical of Research

According to Creswell (2017), philosophical conceptions can be interpreted in two different ways: first, as the overarching guidelines and knowledge of the world, and second, as the purpose of a study that the researcher is carrying out.

The author of a typical research article will, at some point, make use of the theoretical concepts and principles outlined in the previous sentence. However, there is a possibility that some people will never establish a consensus about the necessity of accepting a certain assumption or regarding the function that these hypotheses perform in the process of study (Lester, 2005).

This is a possibility that exists due to the fact that some individuals have the potential to never reach a consensus. Ontology, epistemology, axiology, methodology, and philosophical assumptions of rhetoric are all considered to be different forms of philosophical assumptions, as stated by Creswell (2017).

According to Hospers, J. (2013), figure (4.2) illustrates these philosophical assumptions by focusing on specific concerns such as what sort of research technique was utilized in the study. Specifically, the focus is on what type of research methodology was employed in the study. What is the nature of the connection between the individual being researched and the individual being examined? What are some of the overarching ideas that serve as the foundation for this study? What did the study actually find as a result of its findings? What does it truly mean to become proficient in communication?

Ontology is a philosophical assumption concerning the nature of truth in which the investigators acknowledge the multiple actuality of their subjects, and this is shown by the employment of numerous themes utilizing the technique (What is the research process?). Ontology is an aspect of epistemology, which is the branch of philosophy that studies the origin and development of knowledge. Aristotle, the ancient Greek philosopher, is credited as being the first person to use the term "ontology." A tall tale told for the purpose of gaining an audience's attention (What phrase best characterizes research?).

A philosophical theory of the relationship between the researcher and the known, as well as the process by which empirical knowledge has been obtained, is known as epistemology. Epistemology is also the name given to the study of the development of empirical knowledge. Axiology is a subfield of philosophy that investigates the role that ethics play in the process of scientific investigation. Because of the experience of the scientists in data collection, the research methodology can be understood to be inductive. This is because the methodology is a logical theory of the research process and approach.

The term "methodology" refers to a logical theory that explains the process and method of conducting research.

The study of language as well as the art of convincing an audience to adopt one's point of view is what is referred to as rhetoric.

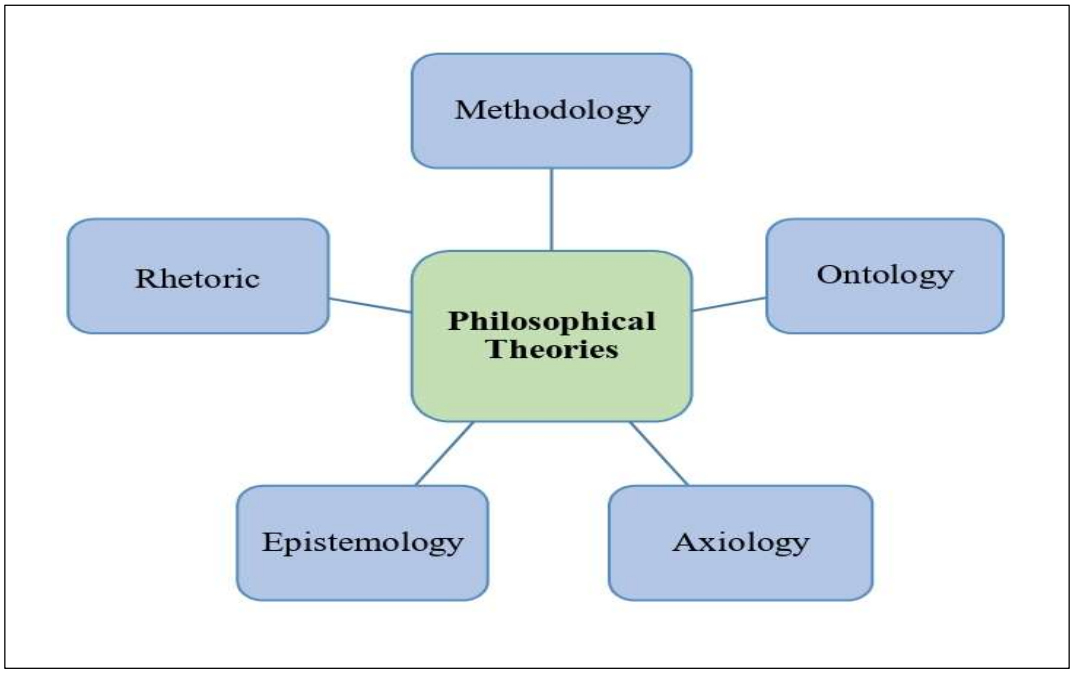


**Figure 4.2:** Philosophical Theories

**Source:** Hospers, J. (2013).

### 4.3.3 Research Subjects

A research plan might be descriptive, correlational, illustrative, or exploratory, depending on the goals of the study that is being carried out, and there are various different shapes that this plan could take. The kind of research that needs to be done will be decided by the purpose of the study, which in turn will be decided by the objectives of the study (Garg, 2016):

- Descriptive research is the kind of study that is done when an effort is made to explain a situation, practice, service, or methodology in a methodical manner; when attitudes surrounding certain challenges and how to examine issues are identified; and when descriptive research is also done when there is a recognition of how to explore issues.
- If the objective of the study is to determine or evaluate the nature of a relationship, interdependence, or partnership, then the research will contain a correlation between several parts of the situation that is being researched. This is because the nature of the relationship, interdependence, or partnership is being investigated.
- Explaining why things happen is one of the primary goals of research, as well as establishing, producing, expanding, or testing the idea. This is the definition of research, and it is also the main objective of research.
- Research can be considered exploration if the goal of a study is to investigate a subject area in which only a small amount of additional research is required, or if the goal of the study is to investigate the various avenues open to specialized research and to formulate foundational ideas and questions for further investigation. In both of these scenarios, the objective of the study is to investigate a subject area in which only a little bit more research is required.

Due to the fact that the goal of the study is to evaluate the obstacles that stand in the way of the execution of investment construction projects in Iraq, the study may be classified as a descriptive study. In addition to that, the study is being seen as an examination into various research techniques. This is because the study combines qualitative and quantitative methods, and the results of this combination are sufficient to achieve the objectives of the study. The reason for this is that the study mixes qualitative and quantitative methods.

According to Creswell (2017), the methods of information gathering, examination, and interpretation that were used in the study were based on the research researcher's philosophical concepts, research design, and fundamental research procedures. These methods were accepted by the study in order to conduct the analysis.

### 4.4 Methodology of Research

According to Goundar (2012), "the method in which the goals of the study can be questioned" is the definition of the research methodology. The first sort of research strategy is known as quantitative study design, and the second kind, which is known as qualitative research, is the kind of research strategy that comes in a close second.

According to Harland (2014), the primary considerations that should be taken into account when deciding which method of research to use are the objectives of the investigation, the nature of the information being sought, and the likelihood of its acquisition.

#### 4.4.1 Research Using Quantitative Methods

Quantitative research tends to take a more 'objective' stance. It is the investigation into a cultural or political problem that is based on evaluating a hypothesis or a theory that is composed of characteristics, measured with amounts, and evaluated with statistical processes in order to discover whether or not the assumption or the hypothesis remain true. When carrying out this kind of research, one makes use of a theory in a logical manner and positions it towards the starting point of the plan for an investigation. Rather than the goal being to develop a hypothesis, testing it or verifying it will be the focus here. Therefore, one begins the study by proposing a theory, then gathers data to put that theory to the test, and finally, one considers whether or not the outcomes of the study verified or disproved the theory. According to Tolmie et al., (2011), the theory functions as a framework for the entirety of the investigation.

#### 4.4.2 Research Using Qualitative Methods

The character of qualitative research might be described as "subjective." According to Beail and Williams (2014), it places an emphasis on meanings, experiences, descriptions, and other such things.

According to Maxwell, J. A. (2004), qualitative research involves investigating a topic without making any assumptions or drawing any conclusions in advance. As a result, the goal of this type of study is to develop an understanding of the topic while also gathering facts and data from which theories can develop.

In his analysis of the differences between subjective of qualitative and quantitative study, Pathak et al., (2013), pointed out that the goal of qualitative research is to find responses for inquiries that begin working with "why," "how," and "in what way."

Quantitative research, on the other hand, focuses more on answering questions like "how much?" or "how many?" or "how often?" or "to what extent?"

The similarities and differences comparing qualitative and quantitative research approaches are outlined in Table (4.1).

**Table 4.1:** Comparing the Qualitative and Quantitative Approaches to Research Attributes of Both Methodologies

| Quantitative Method | Qualitative Method |
|---|---|
| Regarded as one of the difficult sciences | Considering to be a social science |
| Purpose | Subjective |
| Inductive reasoning employed in the process of data synthesis | The application of inductive reasoning in the process of data synthesis |
| Concentration; being brief and specific | Complex and extensive focal point |
| Examines the theory | Creates theory |
| Understanding is founded on cause and effect interactions. | Knowledge's foundation significance, finding |
| Statistics and mathematical analyses constitute a fundamental aspect of analysis | Fundamental component of analysis language, story |
| A measurable and generalizable singularity of reality | Numerous realities whose individual interpretations are constantly shifting |

**Source:** Pathak et al., (2013)

### 4.4.3 Mixed Method

The fundamental purpose of this study is to acquire a full knowledge of the importance of the concept of sustainable buildings as well as the difficulty of obtaining green buildings in the country of Iraq. Because of this, this research makes use of a variety of research methodologies in order to accomplish its primary objective.

According to Creswell (2017), if a method or concept needs to be investigated and described but there have only been a few studies conducted on it, then a mixed approach is required. This is the case when there is a gap between the number of studies completed on the topic and the need to study and explain it.

Migiro and Magangi (2011) conducted a study to determine the extent of the importance of the occupational service management career for the owners of buildings in relation to their buildings in the fine, functional, and up to date conditions. The investigation consisted of both a questionnaire investigation and in-depth interviews. This was done in order to get a better idea of how significant a role a profession in occupational service administration plays for building proprietors, and the results of this investigation are presented below.

The research analysis is exploratory as a result of the limited amount of literature that is currently available in this field; hence, explanatory studies are required in order to validate the findings (Heyvaert et al. ,2013).

The qualitative approach was proposed as the initial way that may be used. After that, the qualitative findings were placed through a questionnaire so that the quantitative technique could validate and generalize them for a population. This was done in order to ensure that the findings were accurate. In the end, the findings from the qualitative technique were put through an evaluation using the quantitative method.

### 4.5 Research Methods Choosing

In this section, effective research methodologies are investigated using a mixed methodology, which was utilized for the analysis of this particular study. The analysis of this study was conducted using a mixed methodology, which is an appropriate research approach and was used to conduct the analysis.

According to Denscombe (2010), the strategy that is taken in order to obtain information for observation research is known as the search approach. This procedure is performed in order to gather the information that is needed. The most important subcategories that fall under this technique are the ones that involve documentation, interviews, analysis, and questionnaires. These divisions are capable of being subdivided even further into even more specialized subgroups.

Documentation and questionnaires are two of the strategies that have been chosen for the purpose of utilizing in this research study in order to collect information for the purpose of carrying out the research that is being conducted. The research needed to follow an exploratory development approach, which started with the gathering of qualitative information and then moved on to the collection of quantitative data in the correct sequence. To be more specific, the order was to "first collect quantitative data, then collect qualitative data."

The first step in the research was to obtain qualitative information from the related literature and records. This was the step that was done first, as it was the initial step in the investigation. At this point in the procedure, the goal was to collect as much information as possible concerning environmentally friendly building components.

The research project was divided into two sections, with the second step involving the gathering of quantitative data. The findings that were gained from the analysis of the paperwork that was obtained were included in the development of a questionnaire, which was then distributed to members of the Iraqi Engineers Association. The findings that were gleaned from the examination of the paperwork that was received were included in the construction of the questionnaire.

### 4.6 Ethical Perspective

According to Creswell (2017), the examination of ethical problems in fieldwork research is an essential component of every research project. Because of this, the researcher is now more conscious of the need to prioritize ethical concerns throughout the research process, beginning with the choice of the subject matter (topic selection) and continuing through the gathering of data, evaluation, and reporting of the findings.

According to Creswell (2017), the examination of ethical issues was required in order to improve the quality of the research, defend prevent inappropriateness, and safeguard both the participants and the organizations that they represented. After ensuring that certain prerequisites were met, the entirety of the research was carried out with a strong regard for the participants' privacy and the strictest possible confidentiality.

All of the participants were advised that the information they provided would be held in the strictest confidence possible. This allowed for participants within the population selected for study to participate voluntarily.

### 4.7 Structure of the Research

A research framework consisting of three stages, such as the one that is depicted in figure (4.3), may be employed to demonstrate the study technique that was used in this specific inquiry if it were chosen to be. The first step is conducting a thorough analysis of the relevant body of literature as well as a research into the sustainable building documents and the components that they contain.

In addition to the research on the documents and the review of the relevant literature that were both components of the first stage, the difficulty of assessing the barriers to the

implementation of investment construction projects in Iraq received a lot of attention during this stage. As part of the literature research on environmentally friendly building practices, this topic was discussed.

During the second part of the investigation, you will administer a questionnaire investigation, review additional documents, and do an analysis of the results. The findings of the research will be subjected to additional scrutiny and verification when we move on to the third step.

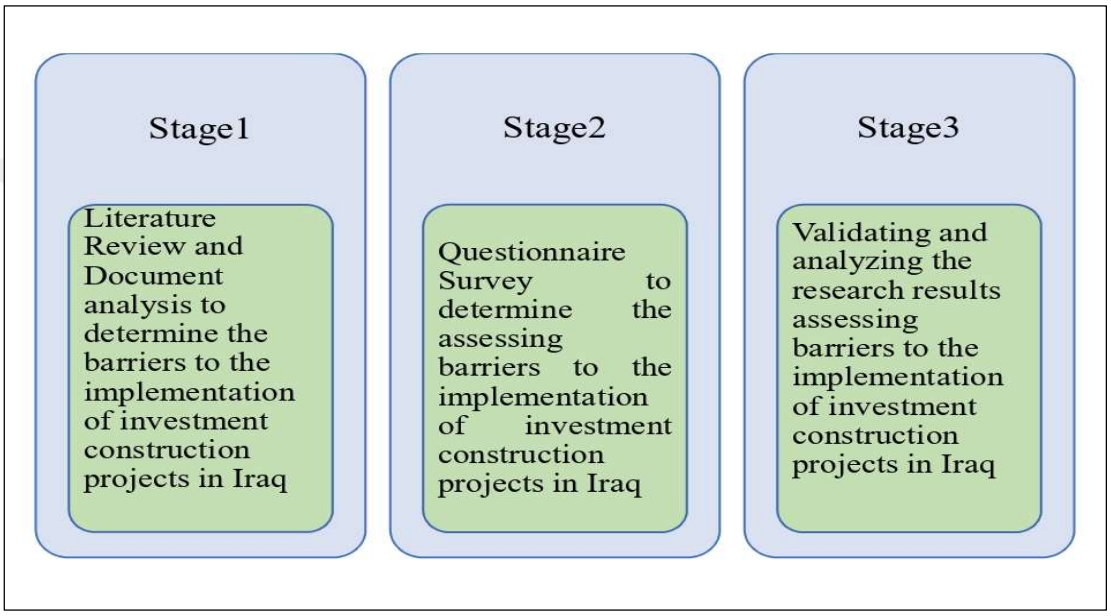


**Figure 4.3:** Framework of Research Stages

### 4.7.1 Stage 1

Along with providing support for the investigation's goals and objectives, the objective of the literature evaluation that was included in the study was to provide a solid theoretical framework applicable to the field of inquiry being investigated. After the results of the study were analyzed and interpreted, the researchers continued with the research process by conducting a literature review for the remaining steps.

According to Creswell (2017), carrying out a review of the relevant literature positions for a study helps to define the information gaps, provides a framework for showing the value of the study, and, as a result, provides an explanation for the issue statement. The study that addressed the theoretical framework for the analyzing the barriers to the implementation of investment construction projects in Iraq utilized the literature review as its primary source of information. The results of this study were discussed as a part of the study.

Purup and Petersen (2020) suggests that such an approach aims at arriving at a result on the recommended information of a subject based on a careful and unbiased review of studies that were carried out on the subject. This examination takes into consideration previous research that has been conducted on the subject. Regarding the subject of the information that was proposed, this review was carried out. This method was helpful since it allowed for the identification of a significant number of publications on the subject of the study. Nevertheless, these papers needed to recognize and define the assessing the barriers to the implementation of investment construction projects in Iraq.

During the course of the investigation, we combed through a wide range of written materials, including a variety of books, seminars, websites, and databases. In addition to that, we make it a point to read a variety of academic journals on a regular basis, including the Journal of Building and Environment, the Journal of Construction, Engineering and Management, and the Journal of overall quality management development.

#### 4.7.1.1 Documents Finding

The preliminary findings of the first step indicate that the study has shed light on the generalization to the number of (35) the obstacles that must be overcome before investment construction projects can be carried out in Iraq. These reasons have been broken down into its three component parts, which are represented as the "Political and Legal", "Technical and organizational", and "Financial and economic" obstacles in table (4.2).

#### 4.7.1.2 Re-Cording

For the purpose of using the SPSS program for data analysis, codes have been assigned to the scales for the perspective of participants on the critical relevance of the barriers to the completion of investment construction projects in Iraq. This was done so that the program may be used to analyze the data. These codes were also assigned to the levels for the participants' opinions regarding the degree to which there are obstacles in the way of the implementation of investment construction projects in Iraq.

Also as part of the data assessment, re-codes were allocated for the questions ranging from 1 to 34 regarding the respondent's perspectives on the aforementioned obstacles to the realization of investment construction projects in Iraq and were given the code range of B1 to B34.

**Table 4.2:** Barriers to the Implementation of Investment Construction Projects

| Barriers to the Implementation of Investment Construction | Re-Code |
|---|---|
| **1- Political and legal** | |
| The Lack of dedication to the terms of contracts within governments. | B1 |
| The lack of faith in the investment, as well as the low contract rates. | B2 |
| The lack to establish regular and ongoing collaboration between the government and private sectors. | B3 |
| The lack of legal backing from relevant entities originating in the private sector. | B4 |
| The lack of an assurance on the part of the government that investments will be returned at a satisfactory rate of return. | B5 |
| The lack to create the necessary legal and organizational infrastructures to facilitate partnerships with the private industry. | B6 |
| The lack of confidence that exists when it comes to the formation of public perceptions in municipalities. | B7 |
| The lack to develop a culture that is appropriate for the nation. | B8 |
| The potential threat to the political status quo as well as civil conflict. | B9 |
| The dedication to entering into extended contracts. | B10 |
| Execution of projects through the use of more conventional approaches | B11 |
| **2- Technical and organizational** | |
| The Lack of understanding and expertise among project contractors. | B12 |
| The lack prevalence of organizations that effectively reflect public perception. | B13 |
| The Lack of communication between the public and private sectors. | B14 |
| The lack to create updated legislation and regulations that are intended to entice private collaboration. | B15 |
| The lack of relevant organizations to develop organizational cultures that are suitable for their purposes. | B16 |
| The lack to provide problem-solving services for multiple aspects of investment by the necessary authorities. | B17 |
| The lack of training for authorities and governmental employees, which would strengthen their capacity for interaction and collaboration with the investment sector. | B18 |
| The lack of support and intervention from government entities in investment projects. | B19 |
| The corruption that exists within key organizations has led to a reduction in the level of partnership between the government and private sectors. | B20 |
| Obstacles posed by management and executives, in addition to the dangers posed by privatization. | B21 |
| The absence of enough information, promotion, and advertising for the private sector collaboration. | B22 |
| Protracted licensing procedures and an inappropriate environment for work. | B23 |
| The governmental organizations have problems with their administration and their ability to plan and control projects. | B24 |
| Management flaws and control issues emerged during the project revisions. | B25 |

| 3- Financial and economic | |
|---|---|
| The Lack in municipalities suffer from a deficit of financial expertise. | B26 |
| The lack of autonomy in organizational situations at investment organizations. | B27 |
| The lack to create efficient regulations for the purpose of recruiting corporate collaboration. | B28 |
| The lack to provide an atmosphere that is conducive to guaranteeing investment. | B29 |
| The lack to focus on decreasing expenses and management within the investment contractor sector. | B30 |
| Decreased reliance on public funding and taxation, as well as the establishment of other, long-term revenue streams. | B31 |
| Obstacles and dangers associated with the economy of the country. | B32 |
| The absence of an important relationship between economic liberty and public–private collaboration. | B33 |
| The investment sector suffers from an inadequate supply of resources. | B34 |

### 4.7.2 Stage 2

In order to provide a quantitative or mathematical explanation of the patterns, behaviors, or perspectives of an entire community by evaluating a sample of that group, researchers have devised a questionnaire survey (Creswell, 2017). This will allow the researchers to provide an explanation of the patterns, behaviors, or perspectives of the entire community.

At this point in the research process, as shown in figure (4.4), the focus switches to the preparation and processing of the survey questionnaire as well as the analysis of the results of the survey. This is portrayed as a shift in where the attention is being directed.

The questionnaire's overarching objective is to conduct an assessment of the logistical challenges that must be conquered in order for investment construction projects to be carried out in Iraq.

In the context of information analysis, a questionnaire is a written sequence of questions designed to precisely capture details from people and gather details that may be utilized for analysis. These details can then be used to draw conclusions about the information. It is necessary to rethink the layout of questionnaires so that they can be filled quickly, on one's own, and without the need for any support. They can be tough because to the fact that respondents are unable to express themselves in their own words, and the researcher might not always have the ability to independently evaluate the truth of the responses. Those two factors together can make them difficult to use (Gelling, 2015).

However, these are pretty easy to organize, and because all of the participants are obliged to answer approximately the same questions, and the responses are taken at random from the recordings, it is appropriate for quantitative analysis (Denscombe, 2017).

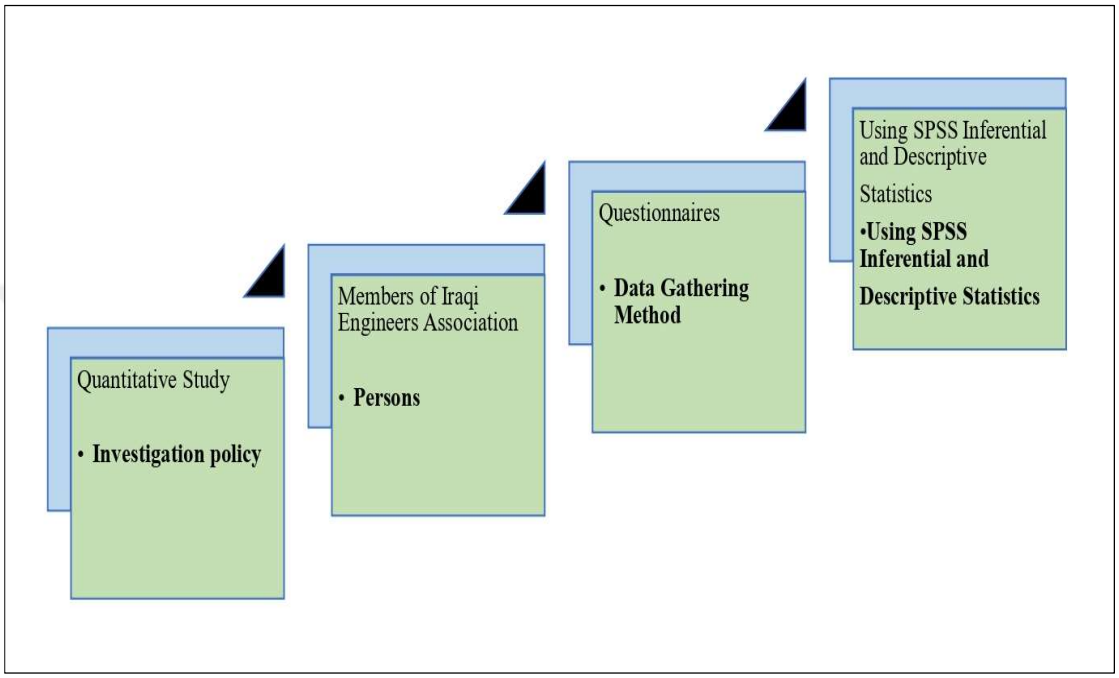


**Figure 4.4:** Steps of Questionnaire Survey

#### 4.7.2.1 Typical Examples of Questionnaires

The questionnaire research contains a quantitative technique that is specifically to the use of the sample principally, which picks individuals, choosing a number for several, and generalizing findings that might represent a larger population. Specifically, the use of the sample.

According to Denscombe et al., (2014), the extent to which a specimen represents a community is dependent on three factors: the specimen volume, the basic design of choice processes, and the specimen structure. The specimen volume refers to the number of people in the community from whom the investigator obtains data; the specimen design or sampling strategy can be referred to as the basic plan choice process; and the specimen structure is a list that represents the individuals who make up a community.

The questionnaires were directed at (173) individuals who are registered members of the engineering specialists and who work in the building construction industry. As was previously mentioned, the participants were reached by printing the questionnaire and

distributing it in papers, social media numbers, and email addresses collected from the register of Iraqi engineering specialists.

This was done in order to collect their responses to the questionnaire. When it was requested of the participants that they fill out the surveys and send them back using the same mode of receipting, and when it was specified that the questionnaires (139) be returned after a certain amount of time (30 days), then those questionnaires were returned.

#### 4.7.2.2 Construction of Questionnaires

The questionnaires should be designed to gather data that could be used for evaluation, provide a list of questions, and must ask people for data on identified research matters (Lee, 2006). where four key criteria must be met while questionnaires are designed:

- Theoretical awareness of the study conducted and obtained by analyzing submitted literature, or other qualitative study methods that may function as a pilot approach.
- The validity of the questionnaire, how the question tests what it has been designed to test, and the reliability of the questions whether these are consistent or relevant.
- Experience in writing a questionnaire, and the utilization of a broad variety of questionnaires published.
- Knowledge of the target demographic.

A sample of the questionnaire is included in appendix A.

The questionnaire includes a group of specific questions designed to gather the knowledge that will assist in achieving the aims and objectives of the study. Specific questions are designed with answers that only permit the answers to match into categories defined by the researcher in advance.

The questionnaire also included the scales defined as measurement levels, which are a method for arranging information in the measurement of indicators into the nominal and ordinal level, and also scales to determine the intensity, direction, amount, or power of a variable measuring in quantitative data.

Scales include Likert, Thurstone, the social distance of Borgadus, semantic differential, numerical ranking, and the scale of Guttman. They are utilized by social scholars to provide strong data quality, high precision and reliability, compare data sets, and improve data collection and analysis (Neuman,2014). The scale of measurements utilized for this study is nominal and ordinal (numerical and Likert) measurement scales.

The nominal measurement scale is used in section 1 of the questionnaire it's required from the respondent to select the specialty of his/her occupation and years of experience.

Section 2 (part 1 and part 2) deal with issues by using the ordinary measurement scale (Likert scales), Where they included a 5-point scale Likert, which requires respondents to indicate to what extent they agree or disagree about the obstacles to the realization of investment construction projects in Iraq.

where;

No.5=Strongly Agree,

No.4=Agree,

No.3= Neutral,

No.2= Disagree, and

No.1= Strongly disagree.

Due to its simplicity, flexibility, and reliability, the Likert scale is the most widely used form of scaling (Neuman, 2014).

### 4.7.3 Stage 3

The response ratio for the data collection is helpful in measuring the effectiveness of the questionnaires that were returned for the study because it provides this information. The distribution of the questionnaire that was used for the survey method is shown in table (4.3). After (173) questionnaires were delivered directly, either by printed papers or by sending questionnaire link (google format) through the social media numbers and email addresses, a total of (139) completed questionnaires were then returned, which resulted in an attendance rate of (80%) of participants.

**Table 4.3:** Response Rate

| Questionnaire | No. |
|---|---|
| The questionnaires that were handed out personally | 30 |
| The questionnaires sent by social media numbers | 122 |
| The questionnaires sent by email | 21 |
| Overall number of returned completed questionnaires | 173 |

#### 4.7.3.1 Reliability

When it comes to quantitative research, a reliability test provides crucial information as well as an evaluation of the inner coherence of responses between the questions in the questionnaire study. This information can be found in the reliability test. After considering all of this data and information, one might then arrive at a conclusion.

According to Roberts and Priest (2006) research, the method that is applied most commonly to measure the inter-item dependability and internal coherence of questionnaire responses is Cronbach's Alpha.

There are several other methods available for determining whether or not the data acquired from questionnaire surveys can be trusted. When using Cronbach's Alpha, the degree of acceptance on an evaluate of the internally reliability of the data gathered on the questionnaire research might range anywhere from (0.0) to (1.0). This is because Cronbach's Alpha measures the reliability of the data collected on the questionnaire. A result is considered to be completely untrustworthy if it has a score of 0, whereas a result that receives a score of 1.0 is considered to be completely reliable. Using the Cronbach's Alpha factor, the crucial level that is required to determine an acceptable degree of the internal dependability is defined as being (0.7) (Kapur and Pecht, 2014).

In order to determine whether or not the chosen scale is consistent, the reliability test is carried out. The alpha in Cronbach is the most widely used reliability test, as demonstrated by equation (4.1). The purpose of the reliability test was to demonstrate the reliability of the scales that were used to establish what, according to the literature review, are the impediments that are preventing investment construction projects from being implemented in Iraq;

$$\rho_T = \frac{k^2 \cdot \overline{\sigma_{ij}}}{\sigma_x^2} \qquad (4.1)$$

Where;

$\rho_T$ = alpha Cronbach

$k$ = refers to the number of scale items

$\sigma_{ij}$ = refer to the variance associated with the item i

$\sigma_x^2$= refer to the variance associated with observed total scores

Where the table (4.4) indicates that all values more than (0.70) value, its acceptable for Cronbach's alpha value, meaning that the scales are reliable for this analysis.

**Table 4.4:** The Cronbach's Alpha Values

| Components | No. of Items | Value |
|---|---|---|
| Barriers to the Implementation of Investment Construction | 35 | 0.906 |

### 4.8 Result and Finding

In this section, the primary details are presented, as well as a discussion of the conclusions of the research study that was conducted inside the building and construction industry in Iraq. The findings of the research were derived from a wide variety of different sorts of evidence in order to successfully complete the objectives of the study and achieve the anticipated results. The completion of questionnaires provided the most significant contribution to the verification effort.

In addition to that, the researcher came up with a number of interesting findings. Using all of these different bits of data, the results have been triangulated. This tactic makes it possible to investigate unique issues that have come to light as a consequence of the discoveries made during the data collection process but which were not anticipated in the prior research. These issues were not anticipated because of the findings of the prior study. In addition, we provide a critical analysis of the research methodologies as well as a discussion of the limitations of the findings from the study. Both the methods for conducting the evaluation and the explanation of the findings have been arranged in a fashion that is mostly based on the structure of the questionnaire survey tool. This organization was done in order to facilitate clarity (Zio, 2009).

#### 4.8.1 Pilot Survey

When collecting the final replies of the questionnaire from the entire sample, it is customarily desired to undertake an initial study to evaluate the viability and reliability of the questionnaire. This can be done before or concurrently with the collection of the final responses. It is important to take care of this matter before the questionnaire is used to collect the final data. According to Norris et al. (2021), the preliminary investigation affords the possibility of modifying the questionnaire, filling in the blanks, and determining the amount of time necessary for responding to the questionnaire.

The questionnaire was given to a number of professionals who are considered to be authorities on the topic that is the focus of this study so that this objective could be

determined. This was done in order to make any necessary modifications to the questionnaire, as well as to evaluate whether or not the questions are simple for the respondents to answer and easy to comprehend, as well as to determine whether or not the questions are excessively lengthy and uninteresting, or whether or not they are appropriate. This was done in order to make any necessary modifications to the questionnaire.

In spite of this, the most important thing is to home in on the questions that will make filling out the survey an enjoyable and interesting experience for the respondent.

### 4.8.2 General Respondents Information

The questionnaire was made available on the world wide web, and an email version of the questionnaire was sent to the individuals who had been chosen for the survey. The period of time needed to collect all of the required information was around two weeks long.

There were a total of (173) participants, and (139) of them completed out the questionnaire. At the outset, it was requested of the participants that they submit some background information, such as their job titles, years of experience, and highest levels of qualification.

#### 4.8.2.1 Employment Analysis

The majority of respondents in Iraq are employed by enterprises (public sector), which accounts for (85.6%) of the total number of respondents. On the other hand, the remaining (14.4%) of respondents in Iraq are employed by private firms (private sector), as shown in table (4.5) under the following heading.

**Table 4.5**: Employment Analysis

| Items | Qty. of Respondents | Percentage of Respondents |
|---|---|---|
| Public Sector | 119 | 85.6 % |
| Private Sector | 20 | 14.4 % |

#### 4.8.2.2 Engineering Specializations

The research was conducted at building companies, including government organizations and commercial consulting companies. The organizations represented the many engineering specializations, which are detailed in table (4.6).

**Table 4.6:** Engineering Specializations

| Engineering Specializations | No. |
|---|---|
| Civil Engineer | 88 |
| Architectural Engineer | 32 |
| Mechanical Engineer | 10 |
| Electrical Engineer | 7 |
| Other Specialization | 2 |
| The total number of completed questionnaires returned | 139 |

The findings of this survey indicate that (63.3 %)of respondents have a background in civil engineering, which is the highest percentage of engineers currently working in the field of building construction. The findings also indicate that (23.1 %) of respondents have a background in architectural engineering, that (7.2 %) of respondents have a background in mechanical engineering, and that (5.0 %) of respondents have a background in electrical engineering, while (1.4 %) other specialization as shown in figure (4.5).

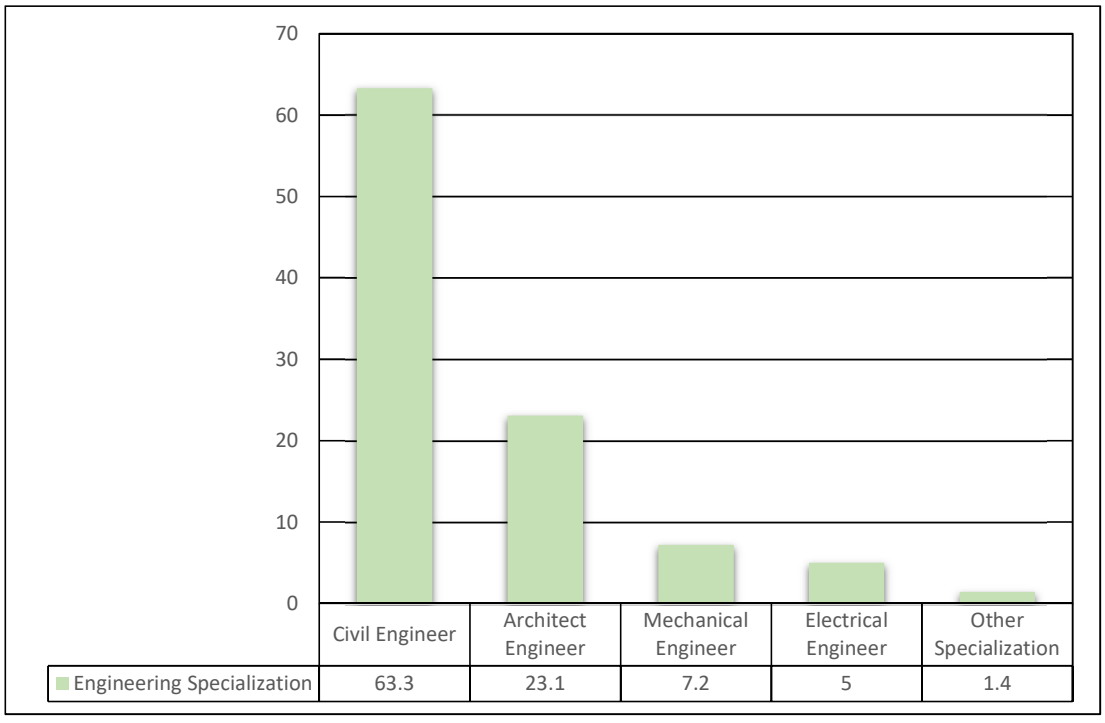


**Figure 4.5:** Engineering Specializations

#### 4.8.2.3 Engineering Occupations

The researcher provided the decision to include such engineering specialization levels for two reasons: first, to gain comprehensively information and evident opinions about the obstacles to the realization of investment construction projects in Iraq; and secondly, considering implementation of investment construction projects in Iraq is a comprehensive strategy that includes engineering occupations as support and management employees, as shown in table (4.7).

**Table 4.7:** Engineering Occupations

| Engineering Occupations | No. |
|---|---|
| Top Management | 61 |
| Middle Management | 42 |
| Senior Management | 33 |
| Supervisor | 3 |
| The total number of completed questionnaires returned | 139 |

The study shows questionnaire distribution regarding to engineering occupations the of the different participants as per figure (4.6), where (43.8 %) of participants with occupations top management, (30.3 %) of participants with occupations of middle management, (23.7 %) with occupations senior management, and (2.2 %) with supervisor occupations.

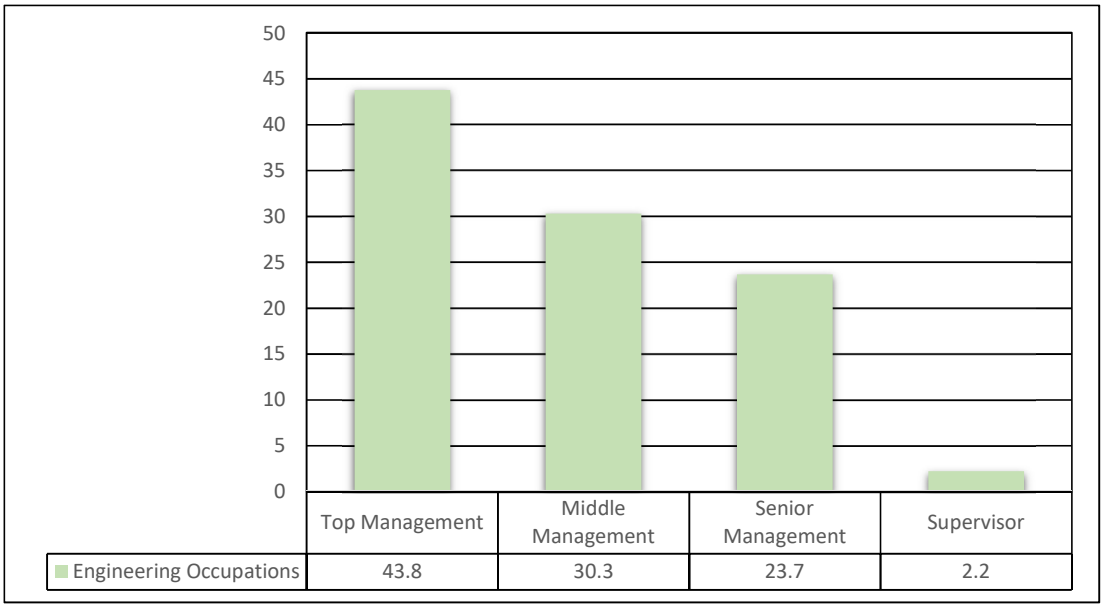


**Figure 4.6:** Engineering Occupations

#### 4.8.2.4 Years of Experience

As can be seen in table (4.8), the overwhelming majority of these engineering specializations with varying degrees of engineering employment were filled by people who possessed sufficient knowledge and had anywhere from fewer than 5 years to more than 11 years of experience.

**Table 4.8:** Years of Experience

| Years of Experience | No. |
|---|---|
| Less than 5 years | 93 |
| 5 to 10 years | 36 |
| more than 11 years | 10 |
| The total number of completed questionnaires returned | 139 |

The study shows years of experiencing the of the different participants as per figure (4.7), where (66.9 %) of participants Less than 5 years of professional experience, (25.9 %) of participants from 5 to 10 years of working experience, and (7.2 %) more than 11 years of professional experience.

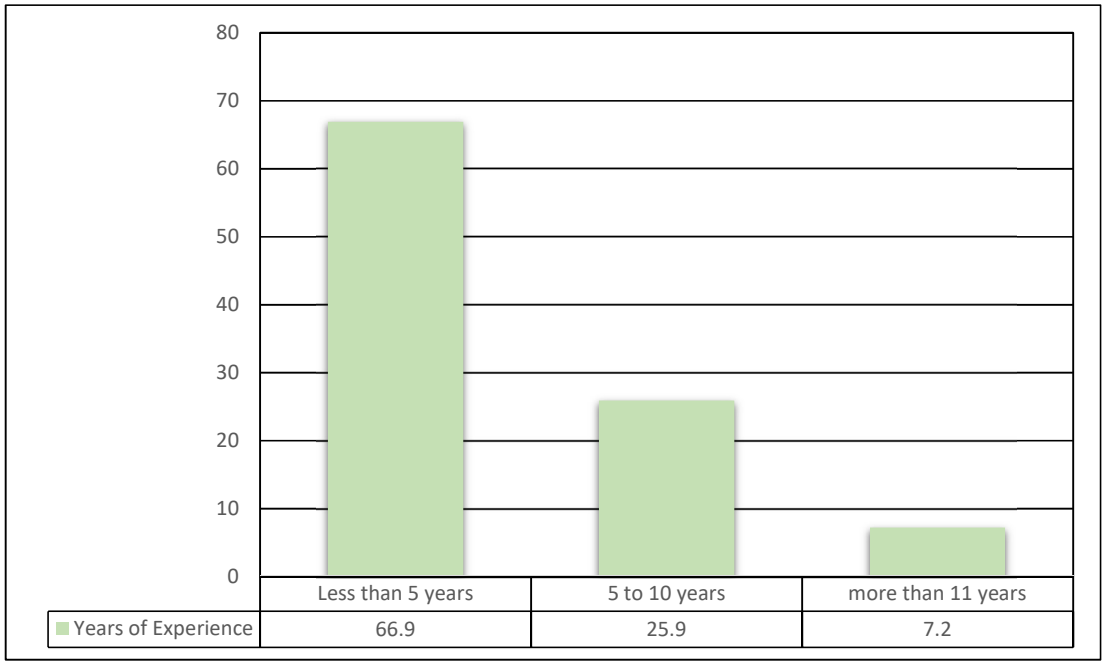


**Figure 4.7:** Engineering Occupations

#### 4.8.2.5 Education Background

The research was conducted within different levels of education gain comprehensively information and evident opinions about the obstacles to the realization of investment construction projects in Iraq at construction companies, which are detailed in table (4.9).

**Table 4.9:** Education Background

| Education Background | No. |
|---|---|
| Bachelor's Degree | 89 |
| Master's Degree | 34 |
| Doctor’s Degree | 9 |
| Other | 7 |
| The total number of completed questionnaires returned | 139 |

The study shows years of experiencing the of the different participants as per figure (4.8), where (64.0 %) of participants with bachelor's degree education, while master's degree within (24.5 %) from amount of participants, (6.5 %) with doctor’s degree, while (5.0 %) of participants with other education.

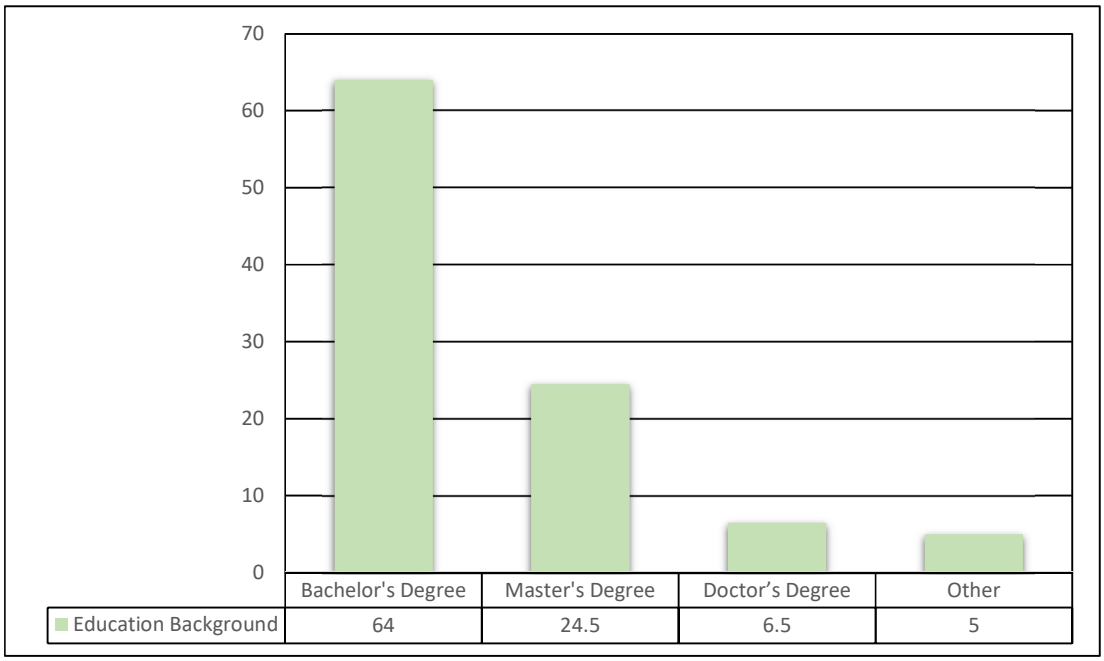


**Figure 4.8:** Education Background

### 4.9 Analysis of the Results

On the basis of the replies obtained from the questionnaire research, we will conduct an investigation into the level of significance of the results that will be presented in the following sections. In overall, all of the performance and its sub-parameters were deemed to be relevant by the respondents, and this was the case across the board. It indicates that there is a need for a comprehensive system of achievement management for the construction organizations, where the questionnaire assessment was created to evaluate the amount of importance of the elements based on the amount of agreement of participants. This signifies that there is a requirement for a broad system of achievement management for the construction organizations.

Following the completion of the necessary preparatory steps to input the gathered data into the SPSS program, the research next moved on to evaluating the data and ensuring that any errors had been appropriately accounted for before continuing.

A vital process that had to be carried out on a consistent basis was the verification that the method that was utilized to submit data was accurate. When doing the analysis of the results of the survey using SPSS, both a descriptive method and a differential approach were utilized. According to Calkins (2005), descriptive statistics typically define or identify a collection of data elements and attempt to deduce information obtained by sampling by graphically presenting the information or explaining its key patterns and how it is distributed when inferential statistics are presented.

Descriptive statistics and inferential statistics both attempt to explain how information is distributed. This article provides both descriptive and inferential statistics for its readers to consider.

### 4.10 Barriers to the Implementation of Investment Construction Projects

These barriers to the completion of investment construction projects in Iraq have been categorized into three components, each of which represents a different barriers regarding to terms of the political and legal society, technical and organizational, and financial and economic.

#### 4.10.1 Political and Legal

Where table (4.10) describes the level of the barriers to the implementation of investment construction projects belong political and legal.

**Table 4.10:** Political and Legal Barriers

| Code | Mean | Std. E. | Std. D. | Rank |
|---|---|---|---|---|
| B1 | 3.94 | 0.053 | 0.782 | **11th** |
| B2 | 4.42 | 0.063 | 0.762 | **2nd** |
| B3 | 4.22 | 0.058 | 1.011 | **7th** |
| B4 | 4.18 | 0.065 | 0.789 | **8th** |
| B5 | 4.28 | 0.049 | 0.901 | **4th** |
| B6 | 4.22 | 0.067 | 0.984 | **6th** |
| B7 | 4.11 | 0.044 | 0.769 | **9th** |
| B8 | 4.01 | 0.079 | 0.773 | **10th** |
| B9 | 4.24 | 0.076 | 0.763 | **5th** |
| B10 | 4.31 | 0.063 | 0.962 | **3rd** |
| B11 | 4.57 | 0.053 | 0.762 | **1st** |

It shows B11 “Execution of projects through the use of more conventional approaches” as the maximum value of a ranking 1st with main (4.57). This is followed by B2 " The lack of faith in the investment, as well as the low contract rates" as 2nd rank with main (4.42).

B10 “The dedication to entering into extended contracts" ranked the 3rd rank with main (4.31). While B5 “The lack of an assurance on the part of the government that investments will be returned at a satisfactory rate of return” followed with 4th rank with main (4.28).

B9 “The potential threat to the political status quo as well as civil conflict” ranked 5th with main (4.24), and B6 “The lack to create the necessary legal and organizational infrastructures to facilitate partnerships with the private industry” ranked as 6th with main (4.22).

### 4.10.2 Technical and Organizational

Where table (4.11) describes the level of the barriers to the implementation of investment construction projects belong technical and organizational barriers.

**Table 4.11:** Technical and Organizational Barriers

| Code | Mean | Std. E. | Std. D. | Rank |
|---|---|---|---|---|
| B12 | 4.47 | 0.087 | 0.902 | **2nd** |
| B13 | 4.04 | 0.078 | 0.895 | **14th** |
| B14 | 4.55 | 0.059 | 1.005 | **1st** |

| | | | | |
|---|---|---|---|---|
| B15 | 4.36 | 0.057 | 0.0774 | **5th** |
| B16 | 4.09 | 0.053 | 0.762 | **12th** |
| B17 | 4.24 | 0.058 | 0.903 | **10th** |
| B18 | 4.45 | 0.078 | 0.781 | **3rd** |
| B19 | 4.31 | 0.047 | 0.0734 | **7th** |
| B20 | 4.37 | 0.079 | 0.789 | **4th** |
| B21 | 4.32 | 0.043 | 0.709 | **6th** |
| B22 | 4.08 | 0.053 | 0.678 | **13th** |
| B23 | 4.23 | 0.068 | 0.981 | **11th** |
| B24 | 4.27 | 0.073 | 0.789 | **9th** |
| B25 | 4.27 | 0.056 | 0.694 | **8th** |

It shows B14 “The Lack of communication between the public and private sectors” as the maximum value of a ranking 1st with main (4.55).

This is followed by B12 "The Lack of understanding and expertise among project contractors" as 2nd rank with main (4.47).

B18 “The lack of training for authorities and governmental employees, which would strengthen their capacity for interaction and collaboration with the investment sector" ranked as the 3rd rank with main (4.45).

While B20 “The corruption that exists within key organizations has led to a reduction in the level of partnership between the government and private sectors” followed with 4th rank with main (4.37).

B15 “The lack to create updated legislation and regulations that are intended to entice private collaboration” ranked 5th with main (4.36). Followed B21 “Obstacles posed by management and executives, in addition to the dangers posed by privatization” ranked as 6th with main (4.32), and B19 “The lack to create the necessary legal and organizational infrastructures to facilitate partnerships with the private industry” ranked as 7th with main (4.31).

### 4.10.3 Financial and Economic

Where table (4.12) describes the level of the barriers to the implementation of investment construction projects belong financial and economic barriers.

**Table 4.12:** Financial and Economic Barriers

| Code | Mean | Std. E. | Std. D. | Rank |
|---|---|---|---|---|
| B26 | 4.32 | 0.047 | 0.547 | **1st** |
| B27 | 4.19 | 0.051 | 1.008 | **2nd** |
| B28 | 3.92 | 0.054 | 0.782 | **4th** |
| B29 | 3.96 | 0.076 | 0.981 | **3rd** |
| B30 | 3.72 | 0.078 | 0.876 | **6th** |
| B31 | 3.63 | 0.046 | 0.046 | **9th** |
| B32 | 3.70 | 0.071 | 0.071 | **7th** |
| B33 | 3.65 | 0.047 | 0.694 | **8th** |
| B34 | 3.78 | 0.047 | 0.694 | **5th** |

It shows B26 “The Lack in municipalities suffer from a deficit of financial expertise” as the maximum value of a ranking 1st with main (4.32). This is followed by B27 " The lack of autonomy in organizational situations at investment organizations" as 2nd rank with main (4.19).

B29 “The lack to provide an atmosphere that is conducive to guaranteeing investment" ranked as the 3rd rank with main (3.96). While B28 “The lack to create efficient regulations for the purpose of recruiting corporate collaboration” followed with 4th rank with main (3.92). B34 “The investment sector suffers from an inadequate supply of resources” ranked 5th with main (3.78).

## 4.11 Validation the Barriers to the Implementation of Investment Construction Projects

In order to assess whether or not registered members of the Iraqi Engineers Association (IEA) and those working in fields related to building construction are aware of the necessary to the implementation of investment construction projects, a questionnaire was developed and distributed. A total of 139 individuals filled out the survey questionnaire that was provided to them.

According to the findings, engineers are now engaged in the construction of buildings, and these engineers are able to evaluate how substantial the contribution of various barriers is to

the realization of investment construction projects. In spite of the fact that engineers' levels of expertise can vary widely, it appears that they are kept updated on the qualities of investment construction projects.

This section offers a report on the conclusions that arose from the data acquired from construction specialists through the use of a questionnaire. The data was collected from these individuals. The information was obtained from such specialized individuals. Throughout the entirety of the process of data collecting, a number of various documentation sources, such as a questionnaire, a factual review, archival materials, and direct assessments, were applied in order to increase the research project's internal validity. This was accomplished by utilizing a number of distinct documentation sources.

It turned out that the people who responded to the questionnaire, all of whom were specialists in the field of construction, did not have a sufficient degree of comprehension of the purpose of the obstacles that stand in the way of the realization of investment construction projects.

# CONCLUSION AND RECOMMENDATION

## 5.1 An Overview of the Introduction

A comprehensive analysis of the findings of this research will be presented here, along with a conclusion to draw from those findings. Following then, a discussion of the restrictions placed on the research will take place. After that, an illustration of the response to the research question as well as some recommendations for subsequent study will be provided.

The Iraqi investment construction sector is still in its early stages; despite its small size at the moment, growth in this sector is projected in the not too distant future. In the modern world, there is an increasing number of building owners that are looking for environmentally conscious construction procedures for newly built structures. In order to accomplish investment construction development, the results of the thesis were aimed at determining the potential correlations between the respondent's perspectives and actual scenario investment construction efforts. This was done in order to accomplish investment construction development.

## 5.2 Conclusion

Investors are aware of the fact that the regulatory environment and tariffs, in specifically, will change over the course of time. It is possible to implement changes in an approach that is visible, predictable, and prompt so that investors may have an understanding of the new risk offering. The conclusion of this thesis demonstrates that, from the perspective of those who participated in the questionnaire, the construction industry avoids Iraqi investment construction sector for three main causes:

- The construction contracting and tendering procedure prioritizes saving money and reducing the amount of time it takes over maximizing the performance of the structure.
- The provision of financial incentives by governments is not sufficient to propel investment construction industry.
- The design and construction of buildings are not held to a higher standard because regulations do not require this.

It may be helpful to design regulations in such a way that they place time limits not only on those who are governed but also on those who regulate. It is necessary to have a large amount

of involvement from the private sector in order to provide assets related to infrastructure that demand a lot of capital.

The entire oversight framework is a critical component that plays a role in defining the magnitude, speed, and expense of involvement from the private industry. A desirable regulatory framework satisfies the following requirements, when viewed from the prospective of a possible investor in infrastructure resources:

- Certainty, notably when the framework determines tariffs or payment streams (e.g. availability-based partnerships private and public sectors; renewable energy support policies; tariffs for regulated utilities).
- Scalability, which helps to prevent local or regional segmentation and enables international investors to have the perception that there is enough size in the industry.

### 5.2.1 Functional Interoperability

Companies believe that given the technology and organizations that they already possess, there will be a deficiency in their systems' ability to communicate and use knowledge cohesively. Additionally, they believe that this ability to communicate and use knowledge will be limited.

It is quite evident that legacy procedures will need to be updated in order to make it possible to conduct business in a timelier manner, with better transparency, and with seamless cooperation and communication. fears always arise in response to change, and those fears need to be alleviated. It is also a fact that construction companies have a difficult time competing with other industries, such as the information technology industry, for the attention and loyalty of qualified technology workers.

These problems can be solved by forming a partnership with professionals to develop a well-planned deployment of the technology, distinct training methods, and expert advise on how to enhance process, along with handholding and assistance.

### 5.2.2 No Alteration in the Attitude of Stakeholders

There will constantly be a barrier to development in the form of institutional attitudes against adapting to new technologies. This is especially true in more conventional industries such as construction. This includes a reluctance to adopt new technology as a result of previous unfavorable experiences, traditionalism, an inability to comprehend the potential of the

instrument, and an unwillingness to devote to sufficient implementation learning. In addition to this, workers are reluctant to "waste" the time they're being taught and to make changes to their schedule, which leads to a lower-than-optimal implementation of BIM on the job site.

To get through this obstacle, all of the relevant stakeholders need to have an understanding of how this technology has the ability to produce advancements in both their performance and the effect that their teams can provide.

The most effective way to move forward is to demonstrate in detail to the end-users immediately how the implementation of this technology would simplify and streamline their processes, and to involve them in the process even as they observe the change taking place. It is necessary to communicate clearly in order to answer all of their questions and propose effective answers to areas that are tough.

### 5.2.3 Difficulties in Legal Procedure

Concerns have been raised due to a shortage of awareness regarding the potential legal repercussions that may result from the utilization of new technology.

The truth of the matter is that the federal government is highly pro-actively supporting the implementation of investment. According to the findings of the tests, this technology has the potential to reduce costs for prospective and existing housing construction projects across the nation. The amount of time that needs to be spent on these projects can also be reduced with the help of this technology. The application of technology in a variety of construction projects carried out by the government, including the building of national highways, the development of airports and metro systems, and the refurbishment of trains, among other projects. The most iconic initiatives are now prioritizing effectiveness and efficiency. It is reasonable to anticipate that the technology will be around for the foreseeable future.

### 5.2.4 Implementation Expense

The additional expenses that will be incurred as a result of integrating new technologies are seen by many contractors as an unnecessary burden. This is as a result of the presumption that the costs of procurement, deployment, and training will be quite expensive. In order for businesses to overcome this mindset, they can learn how to harness technology to improve operational efficiency, hence lowering costs over time and increasing profits. Although there will be an initial financial outlay required to implement the technology, the cost reductions that result will quickly compensate for that.

It is essential to instill a sense of optimism regarding the long-term objective in order to effect behavioral shifts. Throughout the course of its history, software has been utilized to automate tasks, manage projects, and anticipate any problems well in advance of their occurrence. All of this contributes to the creation of a construction that is of the highest possible standard in the shortest amount of time. If a company does not implement these technologies, it may slip behind its adversaries, which in the overall run could be extremely detrimental to the company.

### 5.2.5 Challenges Concerning Usage Innovation

People are concerned about attacks involving ransomware and details breaches that could contain information such as project blueprints, employee data, bid information, pricing of resources, financial transactions, and more. Create a plan that addresses the safety of software used for project management, internet collaboration instruments, mobile devices, banking apps, and more in order to reduce the risk of this happening. Improved this by training staff on the different cybersecurity actions they can take to secure data on their own.

Additionally, additional tactics such as running restricted pilots can assist in the process of driving familiarity. The incorporation of the innovation into the educational program at the university level will assist in overcoming a good number of these obstacles. This would assist in influencing behavior modifications and in the creation of recommendations at the national level. Developing a product library geared specifically toward Iraqi innovations is another helpful solution.

According to recent research, one method for persuading businesses to adopt a new technology would be to gather representatives from the government, various industries, and educational institutions around. Academics have the potential to raise students' levels of awareness, who will then be the primary drivers of usage and innovation. Specialists from the industry are able to lead training courses. The government may do more to foster creative thinking inside proposals and reports. These actions will help ensure that this technology has the greatest possible impact and will contribute to the simplification of a great deal of the construction-related activities in Iraq.

## 5.3 Research Limitations

The fact that this study collected its data from a single source of information was the most major limitation of the research. Individuals who were employed in professional capacities within the construction industry in Iraq were the recipients of the questionnaires related to

the survey. However, some of the professionals are employed by international firms that specialize in investment sectors, and some of the experts are involved in organizations that have worked in other regions of Iraq. Both of these groups of professionals have experience working overseas. In accordance with the requirements of the Iraqi construction industry, studies were conducted to evaluate the assessments and measurements of the obstacles. Because of the changes that were made to the environment and the location of the building projects, it is probable that the evaluations and measurements of these barriers will be altered as a consequence of these.

### 5.4 Recommendation

In this part of the article, some suggestions will be made to researchers regarding the direction of future research based on what is described in the following:

- While the evaluation of the current situation of the investment companies was developed to manage effectiveness for Iraq and competition among the construction companies will improve rapidly with the passage of time, in the future additional investigations can be conducted by researchers who may involve current measures that are appropriate for the moment of the research.
- This research provided a framework to monitor and measure the achievements of the Iraqi investment construction sector while the survey was being carried out in Iraq. Consequently, researchers in other nations can utilize the measurements and the structure of this research by conducting a survey in their respective countries in order to manage and evaluate the achievements of the building industry inside their respective countries.
- Based on the findings of this research, a novel model for assessing and managing productivity at the level of the industry for construction (including projects, firms, and stakeholders) has been developed. It is possible to suggest that other academics independently construct new concepts at the project, firm, or stakeholder level and then present the resulting structures.

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## APPENDICE A

No.5=Strongly Agree, No.4=Agree, No.3=Disagree, No.2=Neither agree nor disagree, and No.1= Strongly disagree.

| No. | Barriers to the Implementation of Investment Construction | Main Categories | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 1 | The Lack of dedication to the terms of contracts within governments. | Political and legal | | | | | |
| 2 | The lack of faith in the investment, as well as the low contract rates. | | | | | | |
| 3 | The lack to establish regular and ongoing collaboration between the government and private sectors. | | | | | | |
| 4 | The lack of legal backing from relevant entities originating in the private sector. | | | | | | |
| 5 | The lack of an assurance on the part of the government that investments will be returned at a satisfactory rate of return. | | | | | | |
| 6 | The lack to create the necessary legal and organizational infrastructures to facilitate partnerships with the private industry. | | | | | | |
| 7 | The lack of confidence that exists when it comes to the formation of public perceptions in municipalities. | | | | | | |
| 8 | The lack to develop a culture that is appropriate for the nation. | | | | | | |
| 9 | The potential threat to the political status quo as well as civil conflict. | | | | | | |
| 10 | The dedication to entering into extended contracts. | | | | | | |
| 11 | Execution of projects through the use of more conventional approaches | | | | | | |
| 1 | The Lack of understanding and expertise among project contractors. | Technical and organizational | | | | | |
| 2 | The lack prevalence of organizations that effectively reflect public perception. | | | | | | |
| 3 | The Lack of communication between the public and private sectors. | | | | | | |
| 4 | The lack to create updated legislation and regulations that are intended to entice private collaboration. | | | | | | |
| 5 | The lack of relevant organizations to develop organizational cultures that are suitable for their purposes. | | | | | | |
| 6 | The lack to provide problem-solving services for multiple aspects of investment by the necessary authorities. | | | | | | |
| 7 | The lack of training for authorities and governmental employees, which would strengthen | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | their capacity for interaction and collaboration with the investment sector. | | | | | | |
| 8 | The lack of support and intervention from government entities in investment projects. | | | | | | |
| 9 | The corruption that exists within key organizations has led to a reduction in the level of partnership between the government and private sectors. | | | | | | |
| 10 | Obstacles posed by management and executives, in addition to the dangers posed by privatization. | | | | | | |
| 11 | The absence of enough information, promotion, and advertising for the private sector collaboration. | | | | | | |
| 12 | Protracted licensing procedures and an inappropriate environment for work. | | | | | | |
| 13 | The governmental organizations have problems with their administration and their ability to plan and control projects. | | | | | | |
| 14 | Management flaws and control issues emerged during the project revisions. | | | | | | |
| 1 | The Lack in municipalities suffer from a deficit of financial expertise. | Financial and economic | | | | | |
| 2 | The lack of autonomy in organizational situations at investment organizations. | | | | | | |
| 3 | The lack to create efficient regulations for the purpose of recruiting corporate collaboration. | | | | | | |
| 4 | The lack to provide an atmosphere that is conducive to guaranteeing investment. | | | | | | |
| 5 | The lack to focus on decreasing expenses and management within the investment contractor sector. | | | | | | |
| 6 | Decreased reliance on public funding and taxation, as well as the establishment of other, long-term revenue streams. | | | | | | |
| 7 | Obstacles and dangers associated with the economy of the country. | | | | | | |
| 8 | The absence of an important relationship between economic liberty and public–private collaboration. | | | | | | |
| 9 | The investment sector suffers from an inadequate supply of resources. | | | | | | |

## APPENDICE B

No.5=Strongly Agree, No.4=Agree, No.3=Disagree, No.2=Neither agree nor disagree, and No.1= Strongly disagree.

| No | Barriers | Main Categories | 1 | 2 | 3 | 4 | 5 | Total | Mean | Std.E. | Std.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | The Lack of dedication to the terms of contracts within governments. | Political and legal | 1 | 4 | 22 | 87 | 25 | 139 | 3.94 | 0.053 | 0.782 |
| 2 | The lack of faith in the investment, as well as the low contract rates. | | 1 | 2 | 13 | 45 | 78 | 139 | 4.42 | 0.063 | 0.762 |
| 3 | The lack to establish regular and ongoing collaboration between the government and private sectors. | | 0 | 8 | 15 | 54 | 62 | 139 | 4.22 | 0.048 | 1.011 |
| 4 | The lack of legal backing from relevant entities originating in the private sector. | | 1 | 4 | 14 | 70 | 50 | 139 | 4.18 | 0.065 | 0.789 |
| 5 | The lack of an assurance on the part of the government that investments will be returned at a satisfactory rate of return. | | 0 | 9 | 13 | 47 | 70 | 139 | 4.28 | 0.049 | 0.901 |
| 6 | The lack to create the necessary legal and organizational infrastructures to facilitate partnerships with the private industry. | | 1 | 3 | 23 | 49 | 63 | 139 | 4.22 | 0.067 | 0.984 |
| 7 | The lack of confidence that exists when it comes to the formation of public perceptions in municipalities. | | 0 | 3 | 29 | 57 | 50 | 139 | 4.11 | 0.054 | 0.769 |
| 8 | The lack to develop a culture that is appropriate for the nation. | | 2 | 8 | 27 | 52 | 50 | 139 | 4.01 | 0.079 | 0.773 |
| 9 | The potential threat to the political status quo as well as civil conflict. | | 0 | 4 | 16 | 61 | 58 | 139 | 4.24 | 0.076 | 0.763 |
| 10 | The dedication to entering into extended contracts. | | 0 | 8 | 19 | 34 | 78 | 139 | 4.31 | 0.063 | 0.962 |
| 11 | Execution of projects through the use of more conventional approaches | | 0 | 0 | 10 | 40 | 89 | 139 | 4.57 | 0.053 | 0.762 |

| No | Barriers | Main Categories | 1 | 2 | 3 | 4 | 5 | Total | Mean | Std.E. | Std.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | The Lack of understanding and expertise among project contractors. | Technical and organizational | 0 | 2 | 11 | 45 | 81 | 139 | 4.47 | 0.087 | 0.902 |
| 2 | The lack prevalence of organizations that effectively reflect public perception. | | 1 | 1 | 35 | 56 | 46 | 139 | 4.04 | 0.078 | 0.895 |
| 3 | The Lack of communication between the public and private sectors. | | 0 | 2 | 6 | 44 | 87 | 139 | 4.55 | 0.059 | 1.005 |
| 4 | The lack to create updated legislation and regulations that are intended to entice private collaboration. | | 0 | 3 | 16 | 48 | 72 | 139 | 4.36 | 0.057 | 0.0774 |
| 5 | The lack of relevant organizations to develop organizational cultures that are suitable for their purposes. | | 2 | 5 | 18 | 67 | 47 | 139 | 4.09 | 0.053 | 0.762 |
| 6 | The lack to provide problem-solving services for multiple aspects of investment by the necessary authorities. | | 2 | 4 | 20 | 46 | 67 | 139 | 4.24 | 0.058 | 0.903 |
| 7 | The lack of training for authorities and governmental employees, which would strengthen their capacity for interaction and collaboration with the investment sector. | | 0 | 1 | 13 | 48 | 77 | 139 | 4.45 | 0.078 | 0.781 |
| 8 | The lack of support and intervention from government entities in investment projects. | | 0 | 2 | 22 | 46 | 69 | 139 | 4.31 | 0.047 | 0.0734 |
| 9 | The corruption that exists within key organizations has led to a reduction in the level of partnership between the government and private sectors. | | 1 | 3 | 14 | 47 | 74 | 139 | 4.37 | 0.079 | 0.789 |
| 10 | Obstacles posed by management and executives, in addition to the dangers posed by privatization. | | 0 | 7 | 12 | 49 | 71 | 139 | 4.32 | 0.043 | 0.709 |
| 11 | The absence of enough information, promotion, and advertising for the private sector collaboration. | | 1 | 6 | 24 | 58 | 50 | 139 | 4.08 | 0.053 | 0.678 |
| 12 | Protracted licensing procedures and an | | 1 | 2 | 27 | 43 | 66 | 139 | 4.23 | 0.068 | 0.981 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | inappropriate environment for work. | | | | | | | | | | |
| 13 | The governmental organizations have problems with their administration and their ability to plan and control projects. | | 1 | 4 | 20 | 45 | 69 | 139 | 4.27 | 0.073 | 0.789 |
| 14 | Management flaws and control issues emerged during the project revisions. | | 6 | 2 | 12 | 48 | 71 | 139 | 4.27 | 0.056 | 0.694 |
| 1 | The Lack in municipalities suffer from a deficit of financial expertise. | Financial and economic | 2 | 0 | 19 | 49 | 69 | 139 | 4.32 | 0.047 | 0.547 |
| 2 | The lack of autonomy in organizational situations at investment organizations. | | 2 | 2 | 30 | 39 | 66 | 139 | 4.19 | 0.051 | 1.008 |
| 3 | The lack to create efficient regulations for the purpose of recruiting corporate collaboration. | | 1 | 9 | 33 | 53 | 43 | 139 | 3.92 | 0.054 | 0.782 |
| 4 | The lack to provide an atmosphere that is conducive to guaranteeing investment. | | 0 | 7 | 34 | 55 | 43 | 139 | 3.96 | 0.78 | 0.981 |
| 5 | The lack to focus on decreasing expenses and management within the investment contractor sector. | | 2 | 8 | 38 | 70 | 21 | 139 | 3.72 | 0.078 | 0.876 |
| 6 | Decreased reliance on public funding and taxation, as well as the establishment of other, long-term revenue streams. | | 3 | 6 | 44 | 73 | 13 | 139 | 3.63 | 0.046 | 0.046 |
| 7 | Obstacles and dangers associated with the economy of the country. | | 1 | 8 | 41 | 71 | 18 | 139 | 3.70 | 0.071 | 0.071 |
| 8 | The absence of an important relationship between economic liberty and public–private collaboration. | | 0 | 10 | 40 | 78 | 11 | 139 | 3.65 | 0.047 | 0.694 |
| 9 | The investment sector suffers from an inadequate supply of resources. | | 1 | 3 | 42 | 72 | 21 | 139 | 3.78 | 0.047 | 0.694 |