

Construction Claims Management in United Arab Emirates Construction Industry

Mosab Sael Rushdi Shadid

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Approval of the Institute of Graduate Studies and Research

Prof. Dr. Serhan Çiftçiođlu
Acting Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Civil Engineering.

Prof. Dr. Özgür Eren
Chair, Department of Civil Engineering

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Civil Engineering.

Assoc. Prof. Dr. İbrahim Yitmen
Supervisor

Examining Committee

1. Prof. Dr. Tahir Çelik

2. Assoc. Prof. Dr. İbrahim Yitmen

3. Asst. Prof. Dr. Eriş Uygur

ABSTRACT

The United Arab Emirates (UAE) have developed rapidly during the last two decades expanding in an astonishing and unbelievable manner. This development is seen through the increase of the production in construction industry over the years. One of the most negative constraint faced by the construction industry are the claims demanding either additional payment or/and time as a consequence or condition not stated in the contract. Construction contracts followed in the UAE are either Lump Sum or Unit Rate while Lump Sum Contracts are more dominant. The contract administration in the UAE is done by the same company that designed and made all required documentations of the construction in behalf of the owner. In this study the current claim management system followed in the UAE is examined and the nature of claims, type of claims, causes and effects of claims are analyzed in depth. This is done through an analysis of two projects constructed by the same company referred to as QWE Construction Company. The case study is carried out by conducting interviews that were questioning inquiries regarding claim management system, causes and effects, procedure of claim submission, initial steps for the claim resolution and resolution method or negotiation outcomes. Moreover a questionnaire was distributed to different firms and organizations in the construction industry regarding claim management, Fédération International Des Ingénieurs-Conseils (FIDIC) contracts, role of Engineers, and record keeping and documentation systems. Some of the findings indicate that there is a high dependency on a third party for claim formulation, the minimal interference of the Engineer for resolving the claim and the lack of record keeping and documentation. The study emphasizes on minimizing the loss of rights and elaborate on the other constraints that are faced in claim management.

Keywords: UAE construction industry, Contract Administration, Claim management, causes and effects, FIDIC contracts.

ÖZ

Birleşik Arap Emirlikleri (BAE) son yirmi yıl içinde inşaat endüstrisindeki üretimin artışı ile birlikte hızlı bir gelişme göstermiştir. BAE’nde tercih edilen inşaat sözleşmeleri ağırlıklı olarak Götürü Bedel sözleşmeler olmakla birlikte Birim Fiyat sözleşmeleridir. Sözleşme yönetimi, projenin tasarımını yapan ve malsahibi adına inşaat ile ilgili tüm dokümantasyonu hazırlayan aynı firma tarafından yapılır. BAE’de inşaat endüstrisinin karşılaştığı en zorlu sınırlandırmalardan biri sözleşmede belirtilmemiş şartlar sebebiyle ilave ödeme ve veya zaman talep edilen durumlardır. Bu tez çalışmasında şu anda yürürlükte olan sözleşme hak iddiası yönetim sistemi konu edilmiş olup, hak iddiası doğası, çeşitleri, gerekçeleri ve etkilerini detaylı analiz edilmektedir. Bu analizler QWE inşaat firmasının inşa ettiği iki projeyi kapsamaktadır. Vaka çalışmasında yapılan mülakatlarda yöneticilere hak iddiası yönetimi, gerekçeleri ve etkileri, hak iddiası talebi prosedürü, talebin çözümü ve metodu veya görüşmelerin çıktıları sorulmuştur. Ek olarak, inşaat sektöründeki farklı şirket ve kurumlara, hak iddiası yönetimi, Uluslararası Müşavir Mühendisler Federasyonu (FIDIC) sözleşmeleri, Mühendislerin rolü, kayıt tutma ve dokümantasyon sistemleri ile ilgili bir anket dağıtılmıştır. Elde edilen bulgular hak iddiası talebi formülasyonu için üçüncü bir partiye yüksek oranda bağımlılık olduğunu, Mühendisin iddianın çözümünde minimum rol oynadığını, kayıt tutma ve dokümantasyon eksikliğini ortaya çıkarmıştır. Bu tez çalışması hak iddiası yönetiminde ilgili tarafların hak kaybına uğramasını en aza indirmenin ve diğer ilgili sınırlamalar üzerinde durulmasının önemini vurgulamaktadır.

Anahtar Kelimeler: BAE İnşaat endüstrisi, Hak iddiası Yönetimi, FIDIC sözleşmeleri

DEDICATION

To the man whose name I so proudly carry, my heart dances with joy when I think of him. He was my teacher since childhood, he taught me wisdom, he took me by the hand, and guided me to the straight path to you my dear dad.

To the woman who suffered in patience, withstood being separated from me, she taught me good manners to my beloved, tender and kind-hearted mother.

To you both I dedicate this dissertation.

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The Arabs used to say "Mind your brother! Mind your brother, the one who is without a brother is like the warrior running to the heat of battle without a sword! My Brother Nael, you were always and always will be the best brother and friend a man could ever have. I beseech Allah to keep you my best supporter and aid exactly as Aaron was to Moses - Allah's Peace be upon both. O' Allah Nael, my brother, increase through him my strength, and let him share with me my task.

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Chapter 1

INTRODUCTION

1.1 Introduction

Contract is defined as a mutual agreement between two or more parties that consist of an “offer” and “acceptance” that is lawfully obligated both parties and entered voluntarily. Construction contracts are defined as a contract that binds two or more parties (usually owner/s and contractor/s) on a set of conditions (general and specific), policies and clauses decided by the owner/s, agreed on by both parties and recorded in a documentation form included within the contract. Conditions is a right based on an obligation stated and documented in the contract that affects a party’s contractual duties and will not be acquired before the fulfillment of the qualification stated; as a result conditions are time related thus there are three type of contracts which are either, before, during or after contractual duty is fulfilled (FIDIC, 1999).

Before the beginning of any construction project, the Employer and the Contractor sign a contract based on Fédération Internationale Des Ingénieurs-Conseils/ Federation Institute of Consulting Engineers (FIDIC) contract forms and clauses. FIDIC contracts are prepared, modified and documented over the years in order to minimize conflict between the parties involved in the project and to guarantee their rights. Although the contracts specify the relationship between the Employer and Contractor and list all the general clause and specific clause, there will always be disputes and argument over that cause claim to arise and demands to be solved (FIDIC, 1999).

During the execution and implementation stages of the project the Employer and Contractor have the right to ask for variations, break-down, recodification or alteration in specification and design and even have the right to submit a claim requesting and demanding what they believe to be their right. A construction claim is the proclamation of an ostensible right (most generally the main contractor in construction project) demanding either additional time or/and payment due to circumstance not stated in the contract (Chappell, 2011).

Construction claims are almost present in each and every project in the United Arab Emirates. In addition to that the number of claims submitted is increasing annually as there have been a rapid growth in the construction sector in the past decade (Zaneldin, 2005). As a result occurrence of claims have become very typical and normal in projects and they lead to severe setback in construction projects. The most common claims faced in the UAE are extension of time, prolongation and acceleration which are all explained and elaborated on in the literature review. In order to understand the nature of the claims, the frequency and types of claims are investigated. The causes and the subsequent impact of claims and methodology on how to resolve disputes and management of the claims are also examined (Moazzami et al., 2011).

1.2 Problem Statement

FIDIC provides more than one contract type such as: Percentage of Construction Contract, Unit Price Contract, Incentive Contract, Cost-plus Contracts and Lump Sum Contract (FIDIC, 1999). The most used procurement method in the UAE is Design-Bid-Build while most common contracts are Lump Sum Contract and Unit Price Contract. Although the contracts are different in various way but as stated in the introduction, construction claims are almost present in each and every project in the

UAE even though FIDIC contracts and clauses set guideline and methods to solve these constrains that lead to claims and disputes.

These constrains either come in the form of delays or additional costs and payments which shouldn't be a problem in normal cases but since the Engineer is partial and biased, the contractor tended to protect his rights and entitlement by issuing and submitting claims. The claims guarantee his monetary rights and extension of times and sometimes protect the contractor of liquating damage and penalties due to late delivery of the project.

These problems are undertaken in this research by taking an in-depth look into two projects constructed by QWE Construction Company which faces all of the problems mentioned above. The projects are under Lump Sum contracts which can be considered as typical projects constructed in the UAE. The choice of these two projects elaborates on the effect of the factors leading to disputes and claims such as improper documentation and record keeping, miscommunication and unprofessionalism towards variations and change orders occurring during the construction phase. Also the involvement of different parties and management of the projects contributing to the resolution of claims is illustrated.

By analyzing the case studies and questionnaires distributed, the research attempts to comprehend the nature of construction claims, its causes and impact from a managerial point of view. While the projects were also monitored through progress reports and changes, rescheduling, modifications and setback that might have led to indirectly to disputes are viewed and analyzed as well in order to further benefit and simplify the complexity of this vast field.

1.3 Aims and Objective

The most important and fundamental part of the research is to understand the very nature of the claims along with the causes that lead to claims and the subsequent effects. Moreover it is essential to know the contribution of the contracts on claims management. It is also fundamental to understand the role of different parties involved in claims such as the Engineers and Contractors and how the problems are solved and the contribution of each party into the resolution of claims. Lastly the impact of claims on the construction projects and the contribution of record keeping and documentation in project control are also investigated.

The case study carried shows the impact of various construction project activities and event in practice and they impact on claim management. Furthermore a connection between the literature and conceptual ideas is made with practical situations which require analysis and studying. The case study can be considered to be the common projects in the UAE and it is of high importance to understand the nature of work and claims management procedure followed in the construction industry. The outcome of this dissertation is to avoid disputes in project and try to reduce claim through guarantying the rights and entitlement so the parties involved. Which but its turn will reduce the time for project delivery that will result in an increase in the profit of the construction industry of the UAE and thus resulting into higher GDP.

The aims and objective can be summarized as shown below:

- To comprehend the nature and types of the claims faced in the UAEs' construction industry.

- To find the causes that lead to claims and the subsequent effects and impact of claims on construction projects.
- To understand the role of each: Contractor, Engineer and Owner, in claim management, disputes and resolution.
- The elaborate on the methodology of dispute resolution and provide possible alternatives.
- Study the available data regarding claim management in the UAE and try to find a connection with the literature review.
- Establish a plan for a possible idea claim management system the will be efficient and implementable, reduce loss of entitlement and decrease hostility between involved parties.

1.4 Methodology

The research focuses on two sources of investigation. The first is cases studies of projects recently constructed in the UAE while the second is a questionnaire distributed to organizations and firms in the construction sector. The primary source of investigation is the case studies which services as a qualitative source of information while the secondary source of investigation is the questionnaire used to have a slight understanding of the situation in the construction sector. The primary source was researched in depth while the secondary was used for clarifications and general understanding of the issue investigated.

As the secondary source of data is the questionnaire which is a quantitative one, it can be analyzed statistically through various methods and means. While the assessment of the case studies prove to be difficult since it is a qualitative thus the assessment will be done based on different factors. The analysis will be done under the following

procedure: categorizing information, identifying patterns and connection between the identified categories, interpretation of data through cutting and sorting and lastly by making a choice after considering all the possible alternatives (Taylor-Powell E., Renner M., 1999).

1.5 Limitations

Claims management and disputes are very diverse and wide topic. Not all problems can be discussed and not all perspectives can be included as the research is focusing on the contractor's point of view. Also the methodology followed need to be more diverse and more in-depth which would be difficult as the information required is confidential. The limitation of the case studies is that the view of the Engineer, Owner, claim specialist or consultants are not taken into account.

Limitations that could lead to future research include three primary issues. First, this study will take place within the frame of reference of one branch (contracting firms) of a complex system (the construction industry). Second, this study will examine only local private companies in United Arab Emirates construction industry. Third, the selected projects for the case studies are private commercial and residential building projects in the UAE.

1.6 Thesis Structure

The thesis consist of the following chapters:

Chapter 1 introduces the background of the thesis stating the problems, explaining the aims and objective of the research, the limitations and scope of the research along with the methodology.

Chapter 2 consists of the previous research studies done in the past related to the topic of the study. It also contains a comprehensive literature review discussing claim management and related topics.

Chapter 3 gives out a brief description about the UAE's construction industry and focus on the contract management, causes of claims and claim management procedure.

Chapter 4 details the methodology followed in the research and the analysis that will be conducted on the data collected.

Chapter 5 involves the analysis of the results comprising a combination between comprehension of the literature review and discussion of the analysis of the data collected to provide an understanding of the claims in the UAE.

Chapter 6 contains the conclusions, outcomes and findings that have been studied in the research along with a recommendation for future improvements.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

Before the beginning of any research it is fundamental to study and explore the literature, theories and concept that has been previously been studied with relevance to the research area and similar fields (Fellows and Liu, 2008). Thus this chapter will contain a comprehensive and thorough study and evaluation of claims, types of claims and causes leading to claims pinpointed by previous scholars and how it was theorized and defined. Furthermore understanding the effects and relevance of different aspects that effect claims management is of high importance. As a result construction claim description cannot be done without considering construction laws and managerial approaches to claims along with limitation of contracts.

This chapter will initially define claims and the basic requirement of any claim along with the documentation methodology. Following that a more in-depth literature understanding of types of claims, and causes of claims will be explained. After understanding the basics of claims, the apprehension will be reinforced by explaining the process and procedure followed in claims management; in addition to assisting the impact of claims and reviewing tools and factors identified by specialists.

2.2 Construction Contracts

As stated earlier, contract is defined as a mutual agreement between two or more parties that consist of an “offer” and “acceptance” that is lawfully obligated both

parties and entered voluntarily (“Elements of a Contract”,2005).While construction contracts are defined as a contract that binds two or more parties (usually owner/s and contractor/s) on a set of conditions (general and specific), policies and clauses decided by the owner/s, agreed on by both parties and recorded in a documentation form included within the contract (“Main types of contracts”, 2014).

2.2.1 General Terms in Contracts

The following terms are the one that are usually used in contracts with their respective definition or meaning taken from the Red Book issued by FIDIC (1999):

- 1- **Contract Value:** The value agreed on by both parties during the formation of the contract and it is the value named in the Letter of Acceptance
- 2- **Contract Price:** It is the total price of the contract at the end after the variations cost addition/deduction are considered.
- 3- **Contract Clause:** It is a written agreement that will address aspects that might be faced by one or more party which will ensure that all parties understand and comprehend what would be expect of them and what are there liabilities and responsibilities.
- 4- **Specification:** The specification and descriptions of the item required stated and referred to in the tender document. The specifications are also referred to by the scope.
- 5- **Site:** It means the positions of the land of which the construction work will be conducted on or any other related work such as piping and electrical connection.
- 6- **Inspector:** It can refer to the party/individual chosen by the owner to inspect the entities and work done and check whether it has been done according to

specifications or not. The inspector is the role usually taken by the Engineer and the Engineer/Inspector can be the owner himself.

- 7- **Notice of Award of Contract:** It is a letter sent by the Employer/Owner to the Contractor stating that the Contractor's proposal has been accepted and that his signature is required to seal the deal and make it official and authentic.
- 8- **Date of Contract:** It is the date on which both the Employer/Owner and the Contractor has signed the contract.
- 9- **Final Acceptance:** It is a letter that is signed by the Owner/ Employer which proves that the Owner/Employer accepts the work done after the completion of the project.
- 10- **Guarantee/ Warrant/ Maintenance Period:** It is the period of time that the contractor will still be responsible of the maintenance or replacement of any defective item or part of the work that has been performed by himself.
- 11- **Liquated Damage:** It is the penalty placed on the Contractor that will be given to the Employer/ Owner due to delays beyond the deadline agreed on in the contract without extension of time.
- 12- **Performance Guarantee Test:** It is all the test and checks done and performed to approve the capacity and efficiently of the work done. It also shows that the work done is within the agreed on specifications and up to the international approvals such as American Society of Testing Material (ASTM) and International Organization for Standardization (ISO).
- 13- **Force Majeure:** It when a delay, halt or freeze of the work due to causes beyond that of the Contractor or Employer/Owner. It also is cannot be foreseen or expect thus it is not avoidable and no party is held responsible due to that.

Most common example of Force Majeure are earthquakes, hurricanes, floods or acts by government.

2.2.2 Types of Contracts

As illustrated and elaborated in the Red Book issued by FIDIC (1999) the types of contracts are shown below:

- 1- **Lump Sum Contract:** The projects has a fixed price which the owner and the contractor agree on thus it is also known as Fixed Price Contract. This type of contract is well-suited for projects with a defined and known schedule and scope of work which gives both the Engineer and the Contractor some flexibility with work and ability to maneuver and avoid delays. It is also used when the owner or Employer does not have enough experience with the scope of the project thus it heavily depends on the Contractor and Engineer experience and professionalism. It is a very common type of contract that is used and can be considered the mostly used contract in the UAE.
- 2- **Unit Price Contact:** Rather than estimating the price of the project by the Contractor or Engineer, this type of contract is done after calculating the quantities of all items needed in the project and then giving an overhead for the contractor. As a result the final price of the project will be the cost of all estimated quantity plus the overhead charge agreed on by the Employer and the Contractor. This is suitable for projects that the employer has previous experience with the scope of the project.
- 3- **Incentive Contracts:** This specific type of contract is dependent of the quality of the work done, schedule and budget. After the Contractor and the Owner decide on a maximum project price dependent on the three factors list above, the profit of the contractor at the end of the project will be calculated differently

on whether the three values were met within the maximum price project or not. In case of an underrun project the profit will be directly proportional to the difference between the final project's price and the maximum project price agreed on while in the case of overrun it will be inversely. Incentive contracts are classified as either Fixed Price Incentive Contracts or Cost-Reimbursement Incentive Contracts.

4- **Cost plus Contract:** The payment of the project is made as a percentage of the project with special consideration. The main concept is that that Employer/Owner pays the cost of the project (material and labor) plus the contractor's overhead charges and profit in case of profit while in most cases the contractor will be liable for most of the extra costs in case the cost becomes higher than what agreed on. This type of contracts is used when the scope of work isn't clear such as project that are constructed during the research and development phase, the quantity of the project is not known or the basic items such as labor, material and equipment are fluctuating in prices and there is uncertainty in their availability also it can be used when the Employer/ Owner wants to take some of the risk. The types of the cost plus fixed fee are generally the following:

- **Cost-Plus Fixed Fee (CPFF)** is an agreement that the contract will be paid a certain fee regardless of overrun or underrun of project. The fee is agreed on at the time of contract formation by both the Employer and Contractor.
- **Cost plus Percentage of Cost** which states that the contractor payment is a percentage of the initial contract cost.

- **Cost-Plus Incentive Fee (CPIF)** is a contract that combined the Incentive Contract and Cost plus Contracts together. The contractor usually gets an initial payment as a percentage of the project like in the case of cost plus percent of cost contract and will obtain the difference between the initial and final cost of the contract like Incentive Contracts.
- **Cost plus Award Fee (CPAF)** is a contract that will award the contractor his payment based on the work performance done. The award fee is determined either subjectively or objectively. This will be done by observing the speed, quality, payload and percentage of work done as the bases of the payment given.

2.2.3 Structure of Contracts

The contract consist of different documents and papers that are necessary and important. These documents are usually as follows (FIDIC, 1999):

1- Bidding Documents (Invitation to Bid or Request for Proposal, Bid Form and Instructions to Bidders)

The bidding document shows the procurement method followed in the following contract which is usually Design-Bid-Build in the UAE. The bid form consists of a quick brief version statement of the general terms and conditions of the bidding offer, the format of the payments, commercial terms and the method of payment. Bid security, requirement for public projects by the government regulation and conditions and lastly supplementary information that the owner might request in order to know the bidder and the quality of work that was done by the bidder.

2- General Conditions of Contract

It is a very detailed and elaborated, clause by clause of all the general terms and conditions that will be under the contract. Usually the general conditions of contract

are the same in most projects and rarely changed due to the fact that it can be applied to all project with nothing binding to one specific project.

3- Special Condition of Contract

Specific conditions are the condition set for very special sites with a certain consideration. Structures such as Burj Khalifa,, the World Islands, Masdar City and other special structure.

4- Specifications

Specifications are the documents that precisely show the agreement of one party agreeing to perform the work according to scope and quality stated. As a result it is a very technical document stating and showing all the item that will be used in construction in elaborated and descriptive manner.

5- Drawings

Drawing are the documents that provides the designer's point of view and the party that will be responsible for the construction of the project. The drawings should be clear, well-planned, coordinated and concise so there will not be any confusion from any party. There are different types of drawings such as architectural drawings, structural drawings, electrical drawings, MEP drawings, and coordinate drawings.

6- Reports of Investigation of Physical Conditions

It includes disclaimers, geotechnical tests and conditions, soil borehole logs along with the mechanical and physical properties of the soil. It may consist of weather records as well.

2.3 Definition of claim

Various scholars have investigated the topics of claims and have written many research papers especially in the topic of claims in construction. Thus many definitions came to surface and are used but the difference between them should be noted.

The word “claim” is derived from the old French word “claime” (Wood R.D., 2006). The word “claim” is defined as “A request for something considered one’s due/property” or “a right or title to something”. While the Canadian Law Dictionary, defines a claim as “a failure to complete obligations under a contract” (Sodhi, 1980).

In the conference “Claims in perspective” held in 1992, Hughes and Barber defined a claim as “a request, demand or application for payment of presumed entitlement to which the contractor, rightly or wrongly at this stage, considers himself to be entitled with respect to an agreement that has not yet been reached”. Scott (1991) stated that claims should be defined as “assertion of a right”.

Although the definition of claims have varied from scholar to another the most technical definition of the term “construction claim” is the assertion of an ostensible right by a claimant (most generally the contractor) demanding either additional payment or/and time as a result or circumstance not stated in the contract (Chappell, 2011).

It can be easily deduced that the definition of a construction claim from the contractors perspective is the request for additional monies or/and time extension request for

hurdles or hindrances during the execution of a construction duties of the scope of work.

When claims arises it will not be settled unless both the contractor and the owner come to a mutual agreement. In the case of agreement a modification/ a change order is made to document the new contract. While in the case of disagreement from either sides a construction contract dispute is created which will cause delays and further issues may arise.

2.4 Basic Requirement in Claims

Typical to any contract or legal and authentic documentation there are some basic requirement need to be present in order for it to be valid and proven and the same case applied to construction claims. The basic requirement for a claim to be proven are as follows:

2.4.1 Contract Clauses

The claim should be based in one of the contract clauses which are very general and required in all contracts. These general conditions are present in the Fédération Internationale Des Ingénieurs-Conseils/ Federation Institute of consultant Engineers (FIDIC) and all other contracts. Some of the contract clause are listed to but they not limited to:

- ✓ Variations.
- ✓ Suspension of work.
- ✓ Extension of time for completion of the project.
- ✓ Payment in case of contract termination.
- ✓ Variations in cost and legislation.

2.4.2 Timely Notice

If some or any of the contract clauses or circumstances occur and the Contractor believes that any time extension is needed for completions or/and any addition payments; the Contractor should inform and provide evidence describing the activity or circumstance causing the claim to the Engineer (or Consultant depending on the situation type of contract) (FIDIC, 1999).

The notice should be given as early and timely as possible and in no case should the Contractor give the notice 28 days after the contractor has been aware of the issue that has rose. Failing to do so the Contractor will not be given any extension of the time for completion or/and any extra payments. Furthermore the Employer (usually the Owner) will not be held liable or responsible in relevance with the claim (FIDIC, 1999).

2.4.3 Proof of Entitlement and Proof of Damages

When a claim is submitted a general proof of damages and a proof of entitlement should be submitted along with it as to show the required amount of money or/and the required extension of time. When a claim is given under the contract clauses it redeemed and the recoverable cost should be calculated in a similar manner to that of the initial or original cost of the job or event. Thus the claimant should be able to prove an accurate amount and quantity of damages that occurred along with any extra cost needed that are not included in the recovery cost yet required for the recovery. The exact or an accurate amount must be calculated using payroll records, timesheets, invoices, daily reports and progress records. In the case of no accurate estimate made the claimant and defend each will make an estimate and will be compared and an agreement will be made between the two parties (Contract and Claims, 2011).

2.4.4 Causes and Effect Relationship

As a construction project is consistent of numerous activities that has various relationships such as start to start, finish to start, start to finish and finish to finish, it is necessary to show that if any issue or claim rises up it directly effects the project as a whole thus causing delay which would result in a claim for extension of time and/or additional payments. The most practical and suitable method to show the direct link and demonstrate the cause and effect would be by utilizing the Critical Path Method (CPM) Schedule. As a result the Claimant would have showed a valid proof of the cause and effect relationship between the activities of which a claim has been issued.

2.4.5 Burden of Proof

Contracts and Claims (2011) states that the burden of proofs would be the responsibility of the party seeking recovery and consist of three main elements to be met. The first question would be whether or not the contract states that the claimant might be entitled to any recovery. The second element that need to be met is if a claimant has suffered monetary or quantitative damage or not and the extent of the damage that has been done. The last element discusses that possibility to draw a cause and effect relationship and calculate the damage done is based on the obtained relationship.

2.4.6 Mitigation Requirement

Even though if a party might have sustained damaged and is entitled to a claim in relevance to the contract clauses, it is the parties' responsibility to minimize damages throughout any legal means. Therefore the injured party cannot apply claims demanding extension of time or additional payments for avoidable and unnecessary damages. This also applies to damages caused by Force Majeure in addition to decreasing and minimizing possible delays in the overall performance of the

construction. Not only that but any party that will have been affected and will cease or halt its construction jobs due to Force Majeure has to notify other parties in a written and authentically documented manner.

2.5 Record and Documentation

For any professional and strong construction company a well-rounded and thorough documentation and record keeping system is fundamental and essential in any claim management system. As a result when any party that is involved in the construction claim demands a claim, these well documented and detailed information are used as a proof to decide whether or not that party is entitled for an extension of time and/or additional payments. The documents that can be used in claim management are not limited to progress reports, meeting minutes, logs and personal diaries and most importantly reports (Baram, 1992).

In various parts of the world it has been consistently noticed that the claim management sector has been suffering greatly from the lack of proper documentation and notification procedures especially in the public sector. Furthermore it has been found that over 70% of the changes and variations of projects in the Egyptian public sector were done based on oral information without the Contractor, Consultant (Engineer) or Owner documenting these changes. As a result many change orders and rights have been lost due to the absence of documentation or unauthentic documentation (Hassanein and El-Nemr, 2008).

It is a necessary procedure that FIDIC contract forms contain is for contractors to double check and document verbal instructions given to them by the architects/engineers (consultants) or owner through using a valid documentation

method that the instructions will be followed and will not be unless a written document is sent within a specified period states otherwise (Keane and Caletka, 2008). While verbal instruction comes from a higher up or a different party with higher authority the rightful, professional and practical thing to do is by initiating either a letter of intent or a change of order (Bu-bshait and Manzanera, 1990).

2.5.1 Record Keeping

2.5.1.1 Requirement for Documentations

The period and type of which records are kept is a necessity in any construction project since claims can be introduced even after the completion of the work done in years. Even though that extent, the amount and the importance of which records are kept is mostly up to the Contractor, some records are required to be kept because:

- 1- It is required by the law in all countries.
- 2- It is stated in the FIDIC contracts terms of any contracts signed between the Owner, Engineer/ Architect (Consultant) and the Contractor.
- 3- It is required to monitor and stay updated with the on-going work along with the making the progress reports.
- 4- It shows the amount of work done which giving an indication on the progress of the project per time.
- 5- It is a necessity for the contractor to maintain his right under the contract and receive the payments.

The first reason started above shows that even though the Employer or Owner have control over the working environment and place the governmental regulations, rules and laws still apply whether they are stated directly or indirectly. The second reason is present in the general terms and conditions of all FIDIC contracts and mostly in other contracts. It is easily determined that all parties included in the

construction project have to monitor and keep records or carried out activities and proofs of effective communication specially when there are special conditions and technical requirement present in the scope of work. The third, fourth and fifth reason are in the hand of the contractor as it is beneficial for the contractors party to keep documentation as it can be used for addition payment and extension of time when dispute occur.

2.5.1.2 Major Sources of Documentations

There are five major resources claim management utilized and are considered an authentic and valid documentation methods for record keeping and be used to support any claimed document. There five major areas are (Turner, 1995):

- 1- Memos, E-mails, phone conversations records, text messages, messages over phone applications by either the Employer (Owner) or his representative party (Engineer, Architect or Consultant)
- 2- Stacking and keeping detailed records or comprehensive summaries of documents that can be used in a retroactive analysis and is of relevance to the claimed document.
- 3- Any form of visual proof (photographs, videos, etc...) with both the time and date of when was the visual proof taken must be included; moreover it should be taken repeatedly in order to avoid any confusion and to clarify at which stage of the project have been the visual proof been taken.
- 4- Periodic reports or progress reports (daily, weekly or monthly) which can be inclusive of:
 - Interferences from Employers (Owners) side which led to delays in deliveries of materials or other possible delaying causes.
 - Pictures of visual evidence elaborating or viewing the work done

- Reports including the figures, facts and date of the progressed work that are signed by the responsible party/parties.
- Reports stating any circumstance that occurred in the working environment that has affected the progress of work such as weather circumstances.
- Any form of documented means of message or information shared between two parties including the date of submission and the date of reply.

5- Meeting minutes should be recorded and kept in a chronological order with the answers and/or comments on each meeting that has been done.

2.5.2 Proper vs Improper Record Management

The main cause and reason why so many disputes occur is due to the fact that no proper documentation is present to hold a party liable and all other parties start accusing one another especially in large construction projects. Since keeping records is mostly beneficial to the contractor, most of the blame falls on his part. Due to the sole fact that most contractors tend to forget the importance of maintaining the records and the most professional and practical way possible which results in the loss of essential project data or valuable information that has been done in the initial or early phases of the construction project. As a result, the contractor may lose his right for additional payment or/and extension of time when a dispute over a claim is present because the records are not authentic. A comparison is shown below between advantages and disadvantages of proper record management and improper record management respectively when it comes to claim management.

<ul style="list-style-type: none"> - Establishment of a case in the event of changes, delays and obstacles imposed by the Engineer and Employer. - Easy access for the claims management team to various and critical documents needed for the claim, which saves the time and effort of the claims management team. 		<ul style="list-style-type: none"> - Loss of evidence for directives made by the Employer or the Engineer, resulting in a weak and poorly substantiated claim. - Difficulty in formulating the claim which leads to high costs to employ claims specialist and loss of time in retrieving the necessary data.
Proper Record Management		Improper Record Management

Figure 1: Proper and Improper Record Management

2.6 Types of Claims

With the intense amount of research done by scholars on the topic of claim management and the thorough analysis of the reason and types, different scholars came with different types and classifications of claims. Wood (2006) classified the type of claims into two categories which are as either contractual claims or extra contractual claims while Barber and Hughes (1992) classified the types of claims into three categories which are:

- ✓ Claims under the law of the country, statutory remedies or equitable
- ✓ Claims that come under the contract or contract clauses

Other scholars claim that the type of claims are more diverse and need to be classified by the causes. One of these scholars who discussed that there are four main types of claims and are listed in his book (Rustom, 2005).

When taking a more practical and subtle approach toward the every day to day activities that occur in construction sites, it is noted that that the claims that are entitled within the contract such as variation from the Employer (Owner) or his representative (Architecture or Engineer) there are no disputes and usually extension of times and/or additional payments are given without any form of dispute or disagreement. As a result when further analyzing the reasons for disputes it is for claims that are entitled for any breach of the contract terms by one or more party involved in the construction Project which result into disputes. Therefore it is these alleged breaches or breaches of contract claims that causes dispute which require studying and documentation (London & McGroge, 2008).

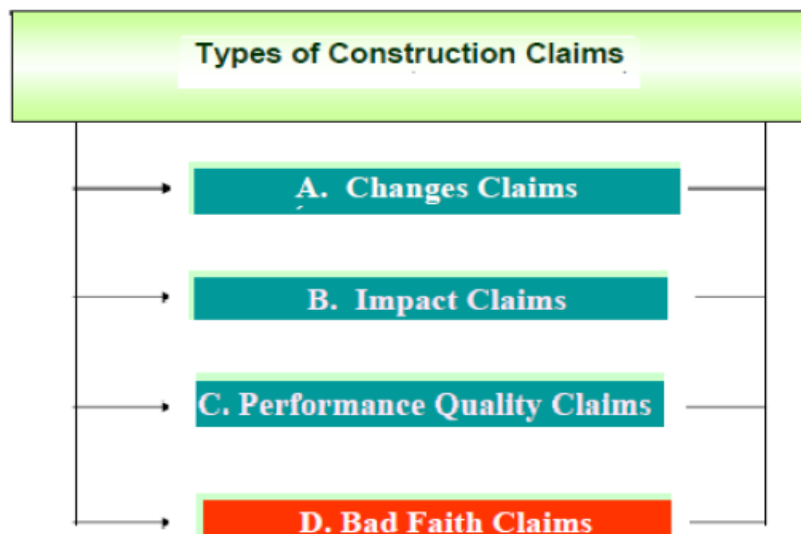


Figure 2: Types of Construction Claims (Rustom, 2005)

A study was done on the construction claims from the United Arab Emirate (UAE) that came from Abu Dhabi and Dubai mainly were collected, studied and indexed. The total amount of claims studied were around 124 claims that were entitled from a variety of different project scopes (Zaneldin, 2006). The types of claims and their relative indexes are listed in Table 1:

Table 1: Frequency of Each Claim Type (Zaneldin, 2006)

Types of Claims	Index (%)	Rank
Variation claims (Change and Extra-work claims/ extension of time claims)	60.5	1
Prolongation Claims (Delay Claims/ extension of time claims aftermath)	52.3	2
Acceleration Claims	41.1	3
Different Site Condition Claims	38.8	4
Contract Ambiguity Claims	32.4	5

The three most common claims as per the study are as follows: Extension of Time Claims, Prolongation Claims and Acceleration Claims. Since these are the three most common types the research would mainly focus on how to solve them and to further study the causes and effects of each type. Thus a review of each claim is essential to understand and have a clear vision of the claims.

2.6.1 Extension of Time (EOT) Claim

The Extension of Time Claims (EOT) are the most common claims because it is faced by each contractor in almost every construction site. The extension of time claim occurs in project of which the contract hold the largest part of the liability and is responsible of the execution of the project as a whole. In general the projects are delivered past their due dates and this is when the extension of time claim is most crucial and that is because the contractor is responsible to pay the liquidated damage (LD) which is a penalty for the delay of completion. If the delay is from the contractor's side then the contractor has to fully pay all the LD that is proposed in the

contract terms and conditions but if the delay is caused by the owner's side then the contractor is entitled for an extension of time claim (Williams, 2003).

Whenever the contractor has to pay for LD due to delays whether or not he was entitled for an extension of time or not can minimize the damages and reduce the amount of the payment he has to give and in some cases removes it completely. If the extension of time that was entitled for the contractor is equal to or larger than the duration of the delay, the contractor is not liable for LD. In comparison to, the fact that if the extension of time is less than the delay period then the difference is calculated with the reduced amount that the contractor has to pay and the extension of time would cover up the rest because it wasn't the contractor liability (Ribeiro, 1996). Because the extension of time claim is very important for the Contractor as it can be highly beneficial and gaining, the contractor has to present a very well structure extension of time with all the proper reasoning, documents and supporting evidence. Thus preparing an extension of time is a very complex and difficult but at the same time cliché and typical. Figure 3 shows that steps used by Contractor that give a well-structured accurate extension of time claim:

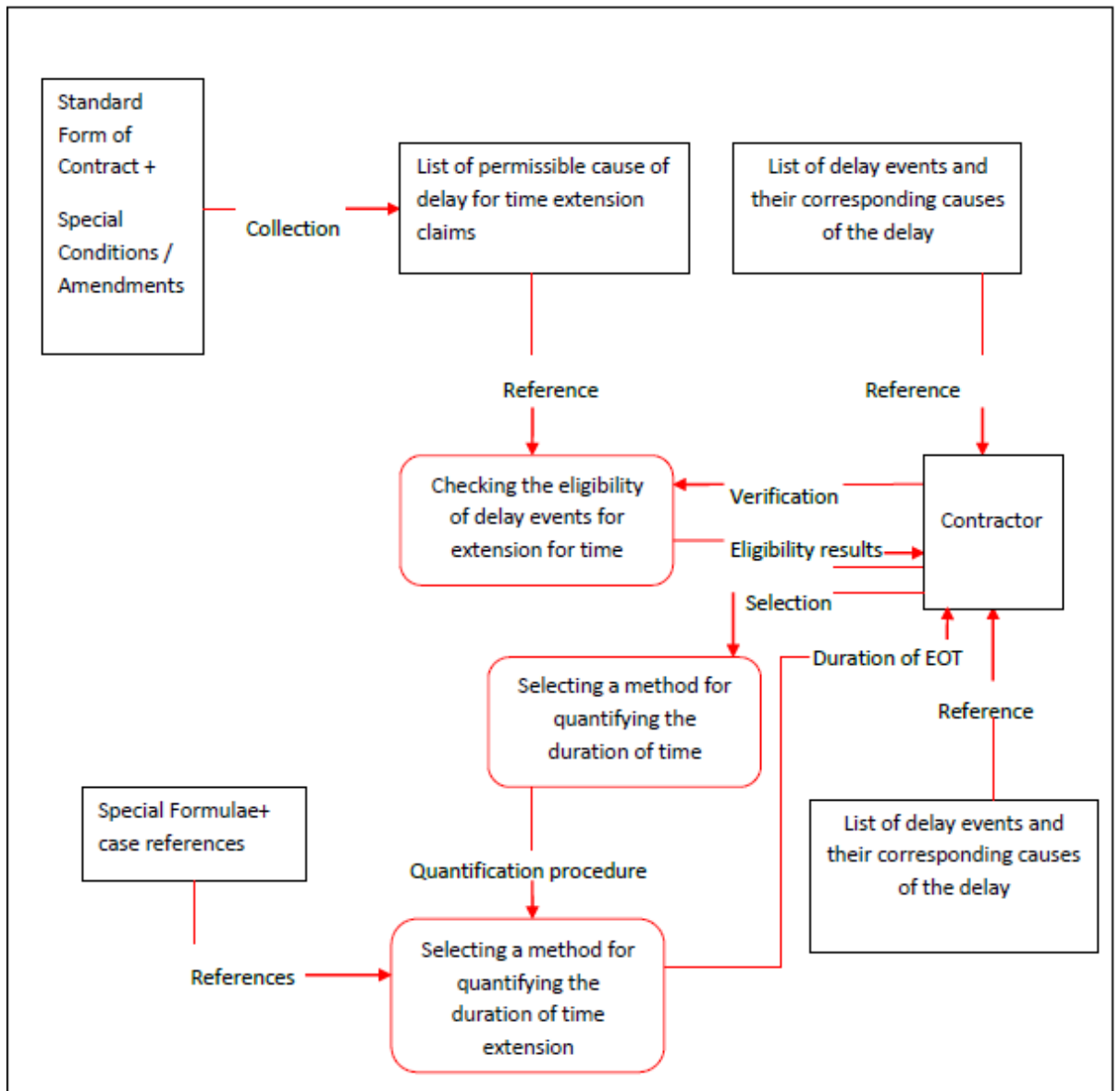


Figure 3: Flowchart for estimating Extension of time Duration for Contractor (Palanseeeswaran & Kumaraswamy, 2008; Zubaida N. 2012)

The extension of time is not deemed eligible or permissible unless all the causes of the delay are determined and evaluated then check to whether or not the reason are valid for extension of time request as per the contract clause. As a result the contractor cannot not assess and estimate the time needed due to the delay and the time of delay unless everything is verified which reduces the chances of fraud.

Although the advantage of the flowchart model above is that the extension time is calculated accurately in a manner that is suitable for all parties included in the construction project but it is very lacking when the calculating that additional payments and cost due to the delay. Since that with every delay in time an additional cost is also required as a delay can be considered of somehow a damage (Monsey, 1993). It is important to evaluate the impact of the delay cause in a monetary value as the determination of the quantum of cost (Williams, 2003).

After the Contractor evaluates the reasons and causes of the delay and their eligibility for an extension of time; he determine the quantum of time and addition time needed, he then submits the claim into the Employer (Owner) or his representative (Architecture, Engineer or Consultant). Although the reason and causes of an extension of time claim is unique and different for each construction project, the lifecycle and the stages of which the extension of time passes through is typical. The Figure 4 summarizes the various stages of an extension of time claim:

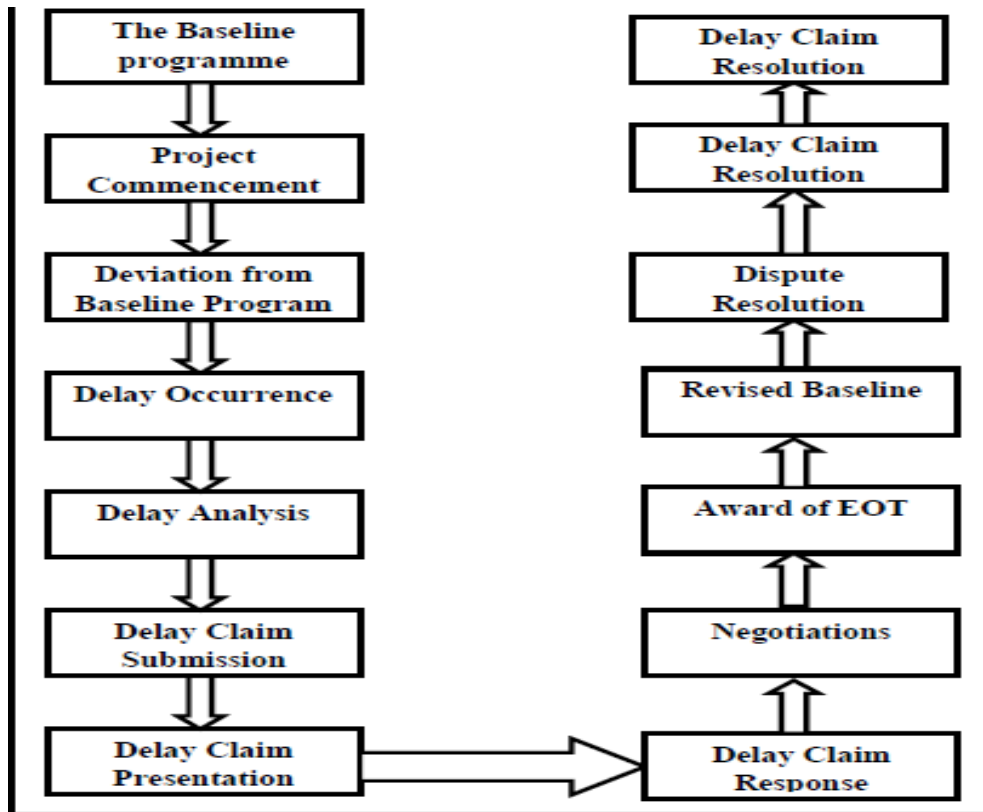


Figure 4: Extension of time claim formation (Keane & Caletka, 2008)

The most critical stage in the life cycle for the contractor of an extension of time claim is the claim submission stage. This is because the contractor has to include different factors for the submission to be completed detailing all leading factors to the claim. The five major documents that need to be submitted along with the extension of time claim were given by Gibson (2008) and are as follow:

- 1) The job/material of which the extension of time has arose.
- 2) Possible of impact on the critical path and the delay of on the completion day of the project.
- 3) The source behind the damage or event that lead for the extension of time to be submitted.
- 4) The effect on other work and jobs to be done in the construction site and the relationship of the damages or causalities to them.

- 5) How relevant is the cause of the claim to a contract document and is the contract entitled for an extension of time due to the cause or not.

After the contractor submits the claim, it is checked for the validity of the element that it is included in it. The elements and claim structure was formulated by Thomas (2001) and is as follows:

- ✓ The claim should be supporting the contractual provisions in the construction contract between the parties involved. Also the cause should be detailed with relevance the contractual provisions as well or the contract clauses.
- ✓ The date of which the owner party or his representative (Architect, Engineer or Consultant) and it should be no more than 28 days after the occurrence of the delay.
- ✓ The date of which the delay had occurred along with the interval of which the delay was percent.
- ✓ Document and records of the activity/job and its progress attached to the extension of time claim.
- ✓ A cause-effect relationship and study made showing the effects of the delay.
- ✓ A reviewed planning schedule which notes the delay and the effect of all other activities with reference and relevance to the baseline program.
- ✓ Analysis done showing the effect has on the critical activity part and the possibility of float per each activity and the total float of all paths.
- ✓ A letter or a formal statement requesting and extension of time with all the basic documents in any claim and other supporting document.

After the contractor submits the extension of time claim and the owners representative (Engineer or Consultant) has to reply to the Contract whether he agrees or disagrees

within no more than 42 days of which the full claim document is received (Ndekugri et al., 2007). Thus the Engineering understanding and judgment comes into place and play a major role in claims disputes or agreement. The role of the Engineer (Contractor) will be explained with relevance to the FIDIC guidelines to assess a Contractor's claim.

2.6.2 Prolongation Claims

Prolongation claims are directly related to the extension of time claims as they come directly afterward. Prolongation claims is a claim that focuses on the quantum of cost than the quantum of time as a result the claim includes both the cost due to the direct cost and indirect cost which was resulted by the delay (Ren et. al., 2001). Since the connection between the extension of time claim and prolongation claim is strongly visible, contractors submit the prolongation claim after the extension of time claims has been approved by the Engineer and the contractor has the privilege for extra time to finish the required job. In that time, the prolongation claim rises as it is submitted near the completion of the project by the Contractor (Ingram, 2004).

When applying a Prolongation Claim, the contractor requests additional payments for the off-site overhead, labor overhead and other forms of recovery cost. This is because the job/work duration has been expanded by a certain duration due to the extension of time claim thus increasing the working days for the contractor. As various different parties can be included in the construction project the additional payments are not limited to overhead charges but also can be expanded to other forms of payments such as electricity or rental of equipment (Ingram, 2004).

Therefore getting an exact value of the required and entitled additional payment is almost impossible and as a result an estimate need to be determined through

relationships to the materials and construction project size or contract and both are very difficult and hard to evaluate (Thomas, 2001). As a result a more subtle approach is used through utilizing a mathematical model known as Hudson's Formula.

$$\begin{aligned}
 & \textit{Addition Cost}_{\textit{Estimated}} \\
 & = \frac{\textit{Overhead Charge Percentage (Profit Percentage)}}{100} \times \\
 & \frac{\textit{Original Contract value}}{\textit{Contract Period}} \times \textit{Duration of Delay}
 \end{aligned}$$

Because the prolongation cost is variable from a project to another as each has different working conditions and is dependent on the cause and effect of the delay assisting the quantum of cost could be rather challenging, difficult and time consuming. Therefore using the above equation, gives the estimated additional cost of the Contractor per unit of time (Day or month) and it inclusive to the costs of each working with relevance to the profit of the Contractor and the amount of delay with reliance to payment per day as per agreed in the contract between the involved parties.

2.6.3 Acceleration Claim

By definition Acceleration Claim is a request that can be proposed from either Contractor or Employer to increase the productivity and progress of the construction job or project and that is to make up for the time lost due to delays (Gibson, 2008). As a result it is mainly used when the construction project might be very important, high risk or foreseeable unavoidable delay situations (Sun & Meng, 2009).

Since accelerating the job or work required means achieving more work in less time it has the usually increases the overall cost of the construction projects because more labor and effort needs to be placed (Chappel, 2011). As the project is done faster it needs to be referred in order to make a relevant point thus it is usually with relevance

to the due date of completion or the maximum allowable duration of delay of the project that is stated in the contract.

Various scholars classified the Acceleration Claim as either constructive or instructive. From the name instructive would be instructed or request from the Employer (Owner) to the Contractor to accelerate the work done and it would be up to the Contractor as to agree or not depending on the additional payment along with the claim terms. While constructive acceleration is a claim purposed from the Contractors party and usually takes place when the contractor experience delay without an eligible cause and the extension of time claim was not given; moreover the Contract bares all additional cost resulting from this acceleration claim (Greenstreet et al., 2005).

Just like the Extension of time claim, prolongation claim or any other form of claim the acceleration claim takes place under mutual agreement from all parties involved in the construction Project. Since acceleration without prior agreement from all parties might negatively impact the contractor's acceleration claim. The situation where an acceleration claim is needed and agreed on by all parties is usually one of the following reason Chappell (2011) discussed:

- 1) When a delay is caused by the contractor no EOT will be given which required the contractor to finish more work in last time due to his delay.
- 2) The Employer (Owner) request the project to be finished before the agreed contract duration.
- 3) When delays from the Employer (Owner) side cause the Contractor to be eligible to an extension of time but he needs the project to be done within the contract duration.

- 4) It could be due to delays cause by both Employer and Contract with valid causes.

Just like how an extension claims is issued in order to obtain extra time then it is followed by a prolongation claim which assets the extra payment and cost resulted from the delays. Thus after the acceleration claims has been approved and agreed on, the Contractor will calculate the cost of this acceleration to avoid any fraud or inconvenience for both the Employer and Contractor. The Contractor is entitled to claim cost on the following items:

- 1) The cast of usage of extra resource and machinery.
- 2) The cost of using extra manpower and cost of addition working hours.
- 3) Staff (Engineers, foremen) overtime working hours if required.
- 4) Cost for any other extra work or item that seen and found to be required.

2.7 Causes of Claims

Although Claims management is one of the most important items and a fundamental step of any developed construction organization and construction industry, little advancement and research has been done on it over the years especially in the Middle East and most specifically the Gulf region. In general the Middle East has the world highest claim value ratio:

Region	Dispute values (US\$ millions)				Length of dispute (months)			
	2010	2011	2012	2013	2010	2011	2012	2013
Middle East	56.3	112.5	65	40.9	8.3	9	14.6	13.9
Asia	64.5	53.1	39.7	41.9	11.4	12.4	14.3	14
US	64.5	10.5	9	34.3	11.4	14.4	11.9	13.7
UK	7.5	10.2	27	27.9	6.8	8.7	12.9	7.9
Continental Europe	33.3	35.1	25	27.5	10	11.7	6	6.5
Global Average	35.1	32.2	31.7	32.1	9.1	10.6	12.8	11.8

Figure 5: Dispute values & Length of disputes (Global Construction Disputes, 2014)

Figure 5 indicates that although the dispute values is decreasing but the length of disputes is increasing which indicates an increase in the amount of disputes that have been proposed in the last two years in the Middle East in general.

The causes that lead into claim have been studied by many various scholars and researches and listed in the books. Most of the reasons that have been collected in McGorge and London (2008) are listed below:

- Conlin et al. (1996) considered the following to be the causes of disputes are:
 - Bad Performance
 - Improper planning leading to delay
 - Inconsistent administration and monitoring
 - Overall bad quality
 - Shortage of time or delays
 - Restriction in payments and budget
- Bristow and Vasilposlos (1995) considered the following to be the causes of claims:
 - Unclear contract terms and conditions.
 - Demotivation or friction between different parties or decrease in productivity.
 - Un-met expectations concerning different working parties or components.
 - Bad Communication between different parties involved in the construction project.
 - Unprofessionalism in work leading to unexpected outcomes.

- Blake Dawson Waldron(2006) considered the following to be the causes of claims:
 - The demand of extension of time.
 - Unprofessional communication channels leading to late or incomplete transfer of fundamental information.
 - Limited site access.
 - Readiness of resources and materials.
 - Variation in the specifications.
 - Bad working conditions
 - Delay due to pending approvals
 - Improper design of the MEP network or interfering between the MEP and civil work
- Skes (1996) generally noted that the two main reasons for claim are:
 - Unpredictability
 - Misunderstanding

While some scholars believed that tackling the sources of claims and analyzing them would be more sufficient and easier to manage. As a result analyzing the main sources that might be included in the construction project and would cause claims to arise (Al-Mohsin, 2012). The causes of each sources are listed below:

- Contractor:
 - Not bending to the scope of work and specification
 - Ignoring the instruction of the Consultant and/or Owner
 - Refusal to Co-operate with the other parties
 - Not keeping progress reports and updating the schedules

- Not meeting the deadlines and progress agreed on in the contract or meetings.
- Consultant:
 - Lack of expertise in quality control and quality assurance.
 - Bad coordination between his side and that of the contractor
 - Not monitoring the progress of the jobs done in-site and unprofessional schedule management.
 - Not holding job progress meetings with the Contractor and the Employer (Owner).
 - Improper record management.
- Employer (Owner):
 - Delaying approvals of changing orders and taking time to decide on the change order.
 - Not obtaining permits from the needed authorities.
 - No enough experience in either management or engineering.
 - A very diverse and branched project organization delaying the information to be reach the required party.
- Contract Document:
 - Drawing might not be showing the relationship between different structural and MEP components.
 - Unclear or Inadequate clauses.
 - Responsibilities and liabilities of each party involved in the project are not stated clearly.
 - Schedule either enforce and unrealistic, relationship between jobs is not clarified.

The study was later modified to include:

- Third parties interferences:
 - Unions strikes or labor disputes
 - Bad working conditions
 - Public disorders
 - Changes in government rules and regulations

A research was done by studying and analyzing the conflicts which were leading to claim disputes. One hundred twenty four projects were studied by conducting a questionnaire. The results shows that the Employer is responsible for 35.6% of the conflicts and disputes while the Consultant and Contractor were responsible for 34.18% and 30.22% respectively.

With all the various sources and causes of claim disputes, all factors should be considered when doing an overview and research to maintain a high level of accuracy. But most generally the main problem is due to either miscommunication or improper schedule planning. Miscommunication can contribute to schedule overrun and delays which will then cause an extension of time claims and prolongation claims which will increase the contract value leading the Employer to give out additional payments. While schedule planning can cause overrun between different parts of the project and disputes between different parties involved within the contract.

Correspondingly the contractor needs to revise the proposed work schedule and the contract terms in a thorough and detailed manner. Moreover all parties should hold weekly meeting in order to clarify any confusion as they rise and the implementation

of claim management is a must which will reduce the amount of delay and the cost factors that are subsequent to the claim.

2.8 FIDIC

The Fédération Internationale Des Ingénieurs-Conseils/ Federation Institute of consultant Engineers (FIDIC) was formed in 1923 for the main reason to uphold and maintain the rights of each party involved within any construction contract. FIDIC is a form of contracts that is the base of all other contracts that are used in that country. The United Arab Emirates made its locals construction contracts between the Employer and Contractor to follow the FIDIC contract regulations in 1999.

2.8.1 FIDIC View in Claim Management

FIDIC specified several clauses and sub-clauses for claim management and disputes which must be followed by both the Employer and his representatives and the Contractor. Thus Table 2 represents the clauses that deal with claims or of relevance for claims:

Table 2: FIDIC clause, sub-clauses and definitions with relevance to claim (FIDIC, 1999)

Clause, sub-clauses and definitions related to claims of relevance to claims	References
“Cost” is defined as all the expenditures both incurred or to be incurred by the contractor. The expenditure can be of the activities done off or on the construction site and it has to be including the overhead charges and other required extra cost excluding the profit.	Definition 1.1.4.3
Employer claim which states that if the employer believe to that he is entitled for any additional. The Employer or his representative (Engineer) have to inform the contractor and give him full notice.	Clause 2.5
When a conflict is present the Engineer has to consult each party in a meeting and try to reach a possible agreement. If either parties refused to reach an agreement or an agreement is no reached then	Clauses 3.5

the Engineer has to evaluate the situation with all the relevant circumstances and make a justified and professional determination.	
The Employer has the right to issue a Take Over Certificate of the permanent work as a whole or just parts. Given that the Employer shall not use any item until the certificated is issued and all the liability is removed from the contract	Clause 10
“Variation” is defined as any change of work which was either instructed or approved by the Employer or his representative party (Engineer).	Clause 13
Employer claim which states that if the employer believe to that he is entitled for any additional. The Employer or his representative (Engineer) have to inform the contractor and give him full notice no later than 28 days after of which he has become aware of the circumstance or event leading for the claim	Sub-clauses 20.1

2.8.2 Engineering Role in Claim Management under FIDIC contracts

As seen above many FIDIC clauses and sub-clauses gives the Engineer a fundamental role in claim management. Since the Employer (Owner) does not always have a sufficient engineering understanding, the Engineer is responsible for defending and arguing instead of the Employer or acting like an advisor to the Employer so the decision taken would be that of the highest interest to the Employer while not breaching or ignoring the terms and conditions of the contract (Winkler & Chiumento, 2009). The Role of the Engineer is very obviously noted in the Red Book of FIDIC and shows the steps that a claim has to follow after submission under the FIDIC contract form. Figure 6 below shows the procedure in details:

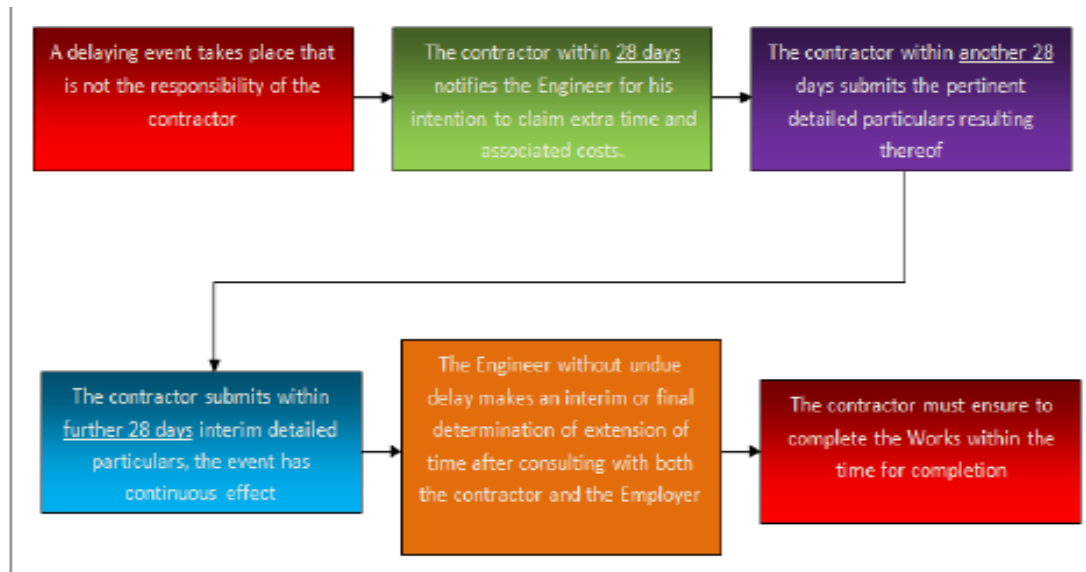
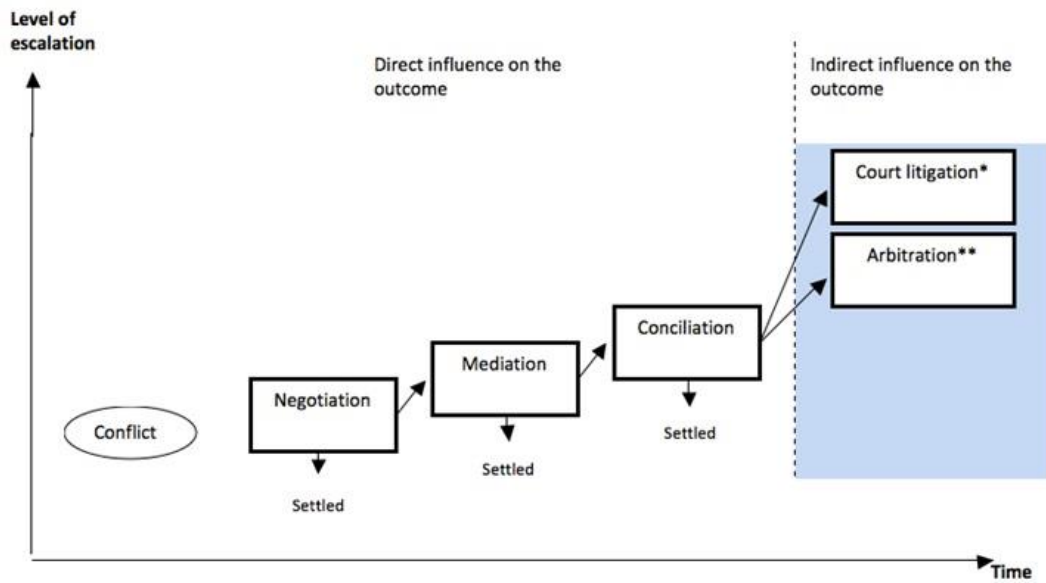


Figure 6: Role of Engineer in FIDIC contract (FIDIC,1999)

As time passed the importance of the Engineer role in claim management decreased and that is because of the tendency of the Engineer to take side or be bias for various reasons. As a result FIDIC contracts have reviewed this possibility and stripped the authority from the Engineer to agree and/or determine the EOT and/or extra payment that the contract might be entitled to if the delay or damages were not caused by him.

A new technique is followed now which is Alternative Dispute Resolution techniques (ADR) involving steps to be taken that increase in the importance of the claim as they raise and increase the cost. As a result both parties would benefit from solving the dispute in the earlier steps to avoid extra cost and loses (Cheung, 1999; Groton, 1992).

The steps that are followed are shown in the Figure 7 below:



* Settled via court decision.
 ** Settled via award.

Figure 8: Level of escalation & cost vs Time

Gradation of Dispute Resolution Methods

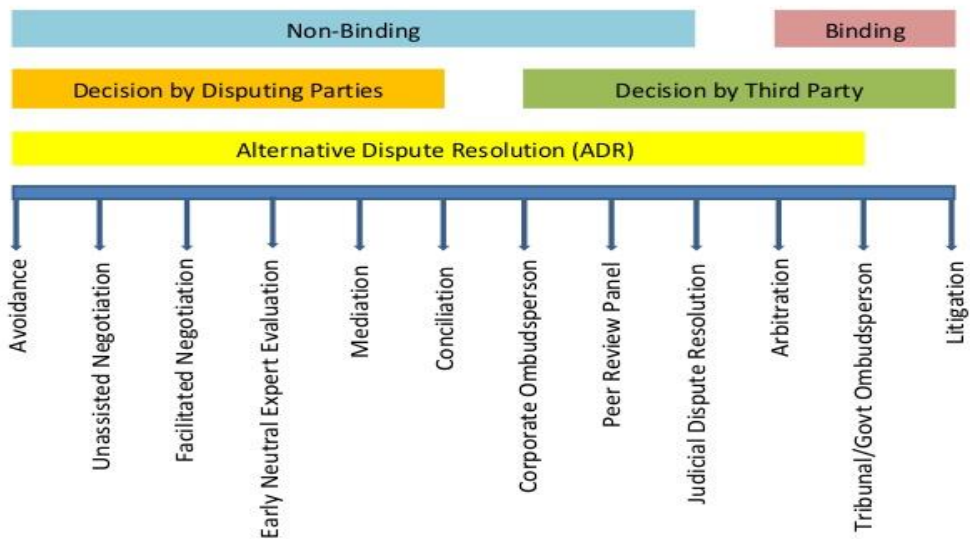


Figure 7: ADR formality procedure and degree of involvement in decision (Cheung, 1999; Groton, 1992)

Chapter 3

CONSTRUCTION INDUSTRY IN THE UAE

3.1 Introduction

The United Arab Emirates is considered one of the fastest and most rapid developing country in the Middle East in the last decay and this is shown through the advancement in the construction sector. The government invests billions and millions of dollar annually in order to upgrade the already existing infrastructure and establishing better facilities. The infrastructure development is described as phenomenal at both federal and local levels as the cities have been raised from the desert. (Zaneldin, 2005).

As a result the construction industry from both private and public sectors respective can be considered the single largest industry in the UAE. The construction sector is responsible for more than 40 billion USD billion in Gross Dometsic Product (GDP). Such rapid development and expansion is bound to have some difficulties and disadvantages and such as the increase in the rate of claims that has its impact on the work force, industry and the country as a whole (Zaneldin, 2006).

3.2 Contract Management

Contract management is also known as contract administration which typically falls under the label of construction administration. Contract Management is to monitor various day to day duties and other jobs which Fisks and Reynolds (2010) listed as follows:

- 1- Communication channels and open and used.

- 2- Business systems is secure and functioning well.
- 3- Procedures are followed according to standards and specification.
- 4- Responsibility and authority of each party is known.
- 5- Duties of all parties involved in the construction project.
- 6- Documentation procedures and requirements are followed.
- 7- Construction operations, planning and scheduling are up to date.
- 8- Payment administration.
- 9- Change orders and extra work is documented and accepted.
- 10- Proper and impartial dispute procedures and claim handlings are followed.
- 11- Negotiations of claims and administrative closeout

3.2.1 Role of Engineer in Contract Management

It can be understood that these duties are usually carried out by the Engineer having contract management duties on his shoulders. These duties may differ from one project to another as the Employer assigns them to the Engineer but in general they are the same in most projects. Since it's the Engineers duty to monitor and administrate on the contract and projects it is typical that he will act as a reference to the Contractor and Employer/ Owner in case of dispute or unclear understanding of the contracting clauses relating to an issue or problems (Chirumento and Winkler, 2009).

The Engineer plays a major role in contract management and construction project therefore he has to be impartial and fair with all parties as he is somehow of a reference. Subsequently the Engineer being neutral and independent is essential for the success of any construction projects (Ndekugri E., 2007). The Engineer needs to be impartial and discrete with his decisions because if any party felt that the Engineer is being partial would claim that they have conspired with the other party to avoid giving him his real and agreed on payment which might lead to claims and hostility between

parties in the long run. Needless to say it is both the Contracts and the Employer/ Owner's right to have a fair assessment of claims under the provisions of any construction contract.

3.2.2 Contract Management in the UAE

Since contract management mainly depends on the Engineer fairness, discretion and impartiality, it is difficult to maintain this in the UAE. This is due to the high pressure on the Engineer as his payment is received from the Employer/ Owner who forces the Engineer duty to shrink, diminish and practice unfairness.

It is shown in later in this research mainly in the fifth chapter during the interview conducted with the Contractor's party that the Engineer is rarely ever partial and his role in claim management and dispute resolution is almost negligible and is not of importance. Yet most of Contractor agreed that his monitoring duties are carried out in a proper manner.

3.3 Main Causes of Claims in the UAE

A study done by Essan Zaneldin (2006) gathered information of 124 claims from different and various construction project from the Abu Dhabi and Dubai. To specific Emirates were chosen because around 78% of total investment in the UAE is from these two Emirates according to the UAE industrial reports. The data collected from the projects were from 71 different personals which were 9 Employers/Owners, 29 Contractors and 33 Engineers/Consultants and the construction projects were from various and different areas of specialties. The results of Zaneldin's (2006) study are shown below:

Table 3: Profile of Respondent (Zaneldin, 2006)

Respondent Positions	Number of respondents	Number of claims	Company's specialty field			
			Residential & Commercial	Industrial	Road and Highways	Heavy Construction
Employer/ Owner	9	18	0	0	0	0
Designer/ Consultant/ Engineer	33	57	12	1	15	5
Contractor	29	49	10	2	11	6
Total	71	124	22	3	26	11

The study went more in-depth with the type of the projects that were included in the studied and reviewed all of them. As a result the breakdown of all the projects is shown in the pie chart below:

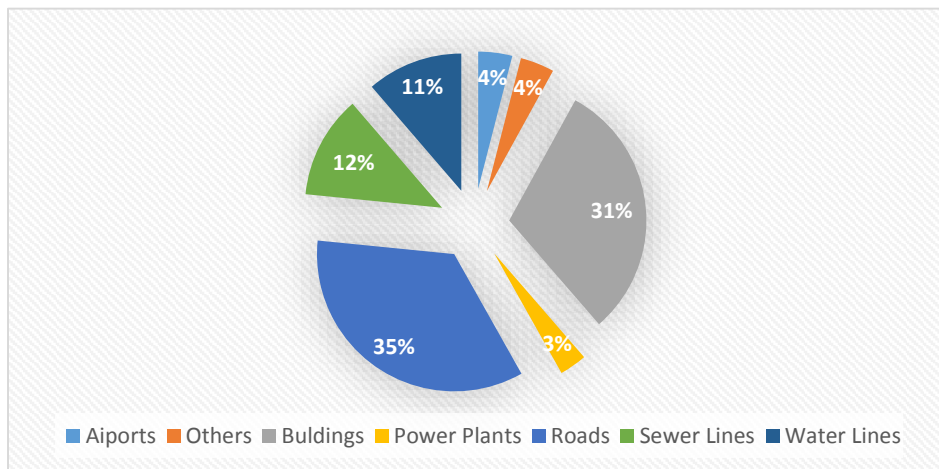


Figure 9: Distribution of the 124 projects (Zaneldin E., 2006)

After thorough analysis and various statistically studies performed on the data collected in the study the causes of claims were listed according to their frequency which are shown in the table below:

Table 4: Ranking of claim causes to their frequency (Zaneldin, 2006)

Cause of claims	Importance Index (%)	Rank
Variations and change orders	55	1
Delays caused by the owner	52.5	2
Verbal variations by Employer/ Owner or Engineer	51.4	3
Delay of payment from the owner side	48.9	4
Rock-bottom value or cost of contract due to high competition in the construction industry	48.6	5
Variations in the cost of labor and materials	46.1	6
Employer perspective and attitude towards the other parties in the project	45.1	7
Variation in quantities calculated by either Owner or Contractor	44.7	8
Sub-contracting problems	44	9
Delay resulted from the contractor	43.7	10
Contractor has lack of management and organizing skills which led to document loss or miscommunication	43.7	10
Contractor financial issues	43.7	10
The work done by the contract is either of bad quality or quality that is not as required in the specifications	42.6	13
Government regulations and checks might cause delays and/or extra costs.	40.1	14
Approximation errors	39.1	15
Schedule errors	39.1	16
Errors in design or drawings that are difficult to implement due to unexpected site conditions	38.4	17
Execution errors due construction phase	37.7	18
Bad or insufficient communication between parties involved in the project	37.7	18
Subsurface problems	37	20
Lack of consistency between the drawings and the specifications	35.6	21
Terminations of contract	35.6	21

3.4 Claim Management

3.4.1 Introduction

Various and different forms of risk are faced by the firms and organizations in the construction industry such as: economical risks, natural condition risk, construction

risk and contract risk. As a result of the consistent increase of the high risk present in construction industry, claims are thought of as a contractor's way to ensure his rights and entitlement thus reducing the risks (Lihong, 2011).

This leads to an increase in claims which notifies that the problem of claims are deprived from both increase in risk and the deficiency of the current management to deal with the activities, different stages of construction project (Levin, 1998). Just as stated earlier contractors believe that claims is a method to ensure their rights and entitlement and this was illustrated in Scott and Harris (2004) where they used an approach to study and analyze the contractors' justifications for claim and how they are beneficial to them. This was done by interviewing contract administrators, contractors and even claim consultants in order to get an overall view regarding the impacts of claims.

Therefore contractors are starting to employ claim managers or hire claim specialists in order to establish a claim that can identify the problems in the construction project in order to prepare them for the initial stage of claim management (Keane, 1994). Claim management process goes through a life cycle that consist of seven standardized processes. Levin (1998) listed the process as follows:

- i- Recognition and identification of problem
- ii- Notifying the engineer and the Employer/ Owner in a timely manner
- iii- Accurate and reliable documentation
- iv- Time, cost and delay analysis
- v- Pricing
- vi- Negotiation
- vii- Resolution of dispute and settlement

3.4.2 Claim Management System

A comprehensive claim management system is one that is developed to stand up to the expectation of all the parties included in a construction project and the construction industry. As a result this system should be consistent of all the factors that are considered substantial to claim management. Zubaida (2012) concluded in his research that these substantial and factors are considered as the core of claim management and are illustrated in Figure 10.

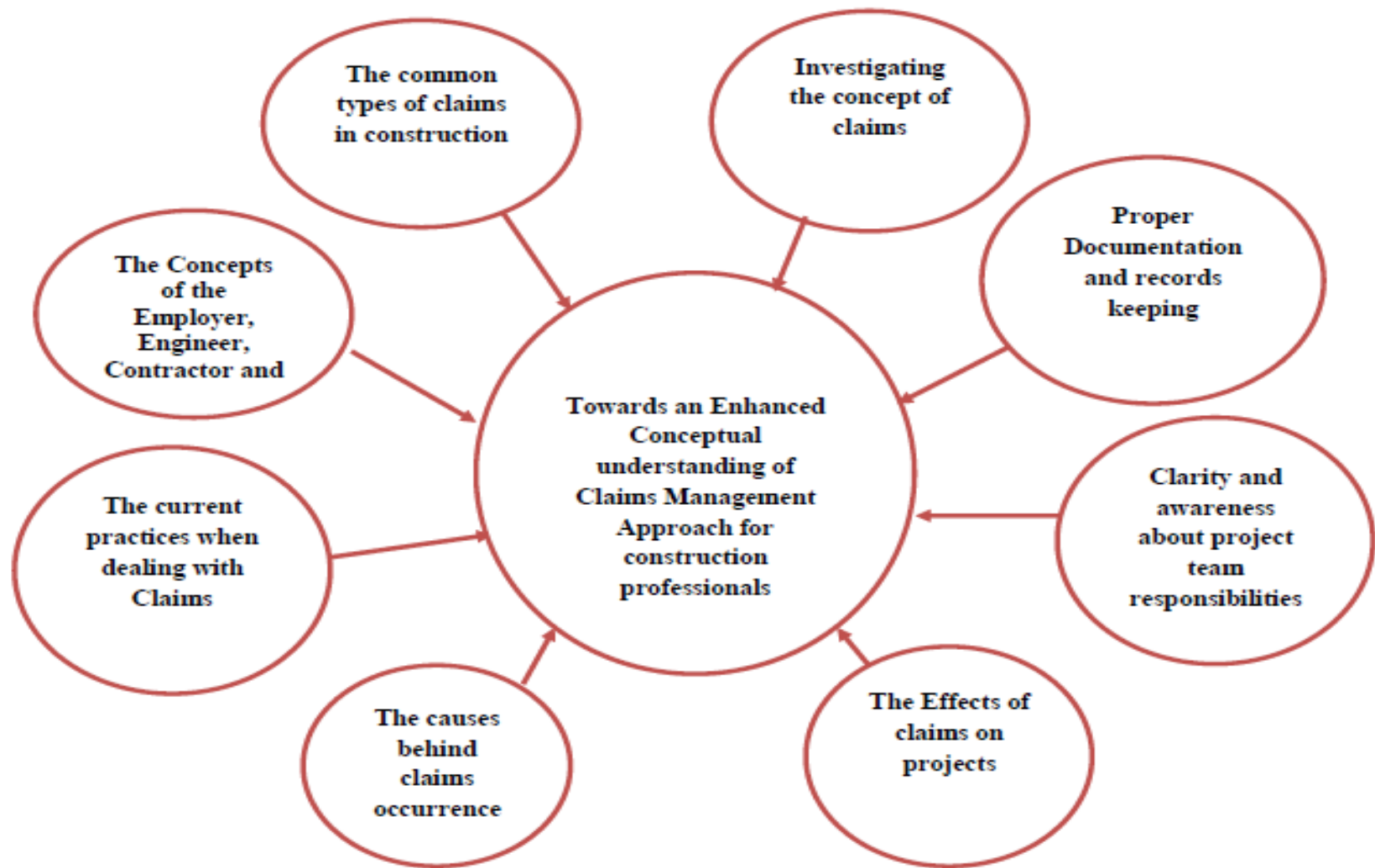


Figure 10: Claim Management System (Zubaid , 2012)

3.4.3 Claim Management in the UAE

As discussed earlier in the literature review there is a new technique followed known as the Alternative Dispute Resolution (ADR). It consists of steps taken in order to achieve a resolution for the claim and dispute that occurred (Cheung, 1999). The typical steps followed are:

- i) Negotiation
- ii) Mediation
- iii) Conciliation
- iv) Arbitration
- v) Litigation

The further the method used to use to solve the claim the less they can interfere with the solution and the more binding the solution is. Furthermore the solution becomes costlier and more time consuming down the list. In reference to the UAE Civil Procedure Code the same methods mentioned above aside from conciliation are used to still claims. According to the study made by Zanelidin (2006) the majority of the claims in the construction industry are solved through negotiation. Figure 11 below shows the percentage of claims solved by each of the above methods used in the UAE:

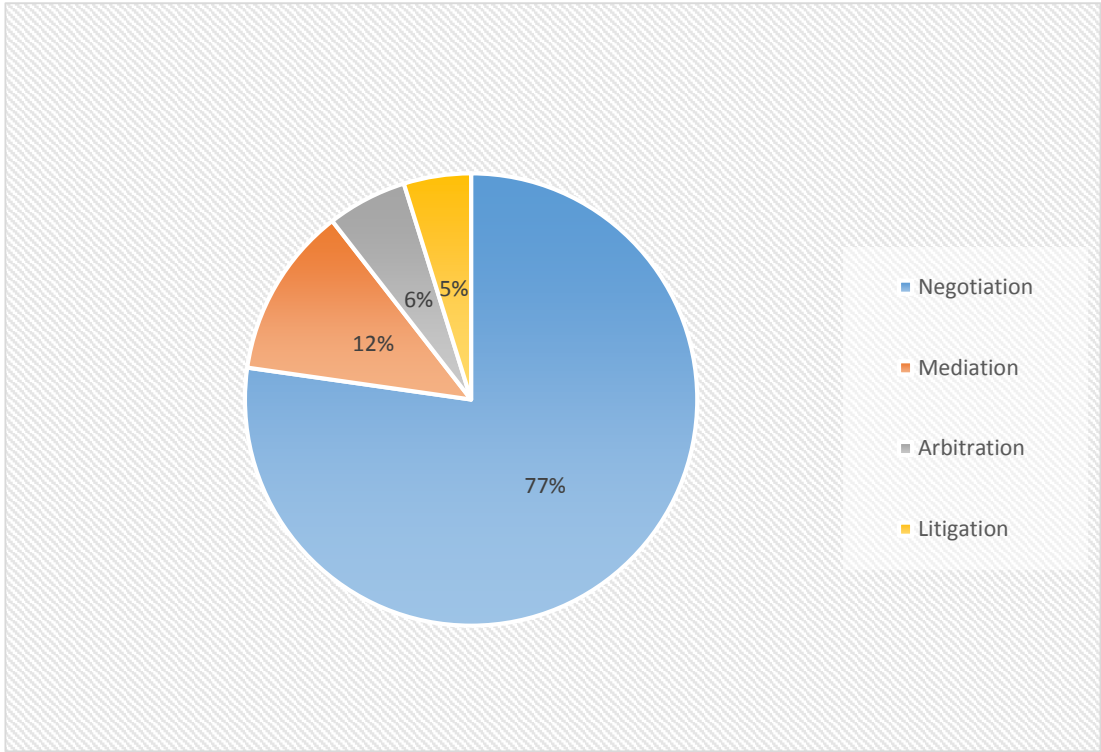


Figure 11: Resolution Method Frequency in the UAE (Zaneldin, 2006)

Chapter 4

METHODOLOGY OF RESEARCH

4.1 Introduction

Researching is the processes of finding out things in a systematic and controlled manner in order to increase the knowledge and expand upon existing one (Saunders et al., 2005). This specific research aims to study and manage claims in the UAE's construction industry. Subsequently the goal and main objective of this specific study is to investigate and add on the already existing knowledge of claim management in a more direct and practical manner.

In order to obtain the practicality and reliability, this research not only considers the theoretical and conceptual findings and studies but also contains case studies from construction firms and solutions to the every day to day issue that rise and might lead to claims in the long run. To obtain these results, both a qualitative and a quantitative approach are taken wherever each is more suitable than the other thus obtaining questionnaires, case studies and reviews along with the theoretical proofs.

4.2 Research Approach

In order to conduct an overall accurate research and study, different components should be taken when analyzing claim management. The main sources used in this research were divided into:

- Primary Sources involve two cases studies with an interview tackling various problems and questions that might have occurred during the claim.

- Secondary Source involve a questionnaire to determine the overall understanding of claim causes and impact in construction sector in the UAE.

4.3 Case study investigation

The primary source of the research is a qualitative one which includes two cases studies regarding claims in two different companies. Although various scholars and researchers gave out different definitions of what a case study means, the research will stick with the most general one. By definition a case study is a strategy undergoing a research or a study that consists of an empirical investigation and analysis of a certain occurrence or phenomenon by taking an exam of a real situation and using different evidences and proofs to validate or come up with empirical relationships or assumptions (Robson, 2002).

4.3.1 Case Study

The case study illustrates the cause of the claim, interviews with contracting party included or involved in the claim and how it was solved. This serves as a standard example of a claim issue in the United Arab Emirates. Moreover it shows a practical and professional real life exam which is used to tackle down solutions and prevention methods.

These cases studies also give insight to the methodology of thinking of the Employer, Contractor and Consultant (Engineer) and how sometimes friction between different parts can affect the fairness and opinions. In addition to that understandings, beliefs and opinions of claim management were viewed and understood.

4.3.2 Interviews

The purpose of interviews was to get the perspective and perception of the parties involved thus evaluating the core of the problems. Due to the time limitation of each

interview to be kept as maximum thirty minutes, the questions mainly focus on the categories that are mainly concerning the very core of claim management. The nature of the questions were under the following categories:

- ✓ General Inquires about the Project.
- ✓ Record Keeping.
- ✓ Change Orders and Change Management.
- ✓ Claim Management.
- ✓ Role of Engineers and FIDIC contracts in solving the presented dispute.

The advantage of meeting up and having an interviews that information and personal opinions and experience are given which helps with the evaluation as it shows the real situation is the site. Furthermore all interviews were very co-operative, giving time to explain and elaborate on all which was unclear and answer all questions asked.

The interviews done were face to face mostly done in the offices of each representative and all were done with one individual that contributed to the claim in some way or another. As the interviews were based on real events which contain critical and confident information, no names or reference to frames will be used.

4.4 Questionnaire Survey

The secondary source of the research is a questionnaire designed in order to look at the overall understanding of claim management in the construction sector as it gives a quantitative approach to the research. Since the questionnaire is used as a secondary source of information it will not be elaborated and research in-depth. There are different types of survey questions that can be used in a questionnaire leading to a

more or less accurate result thus choosing the correct form of survey that will be followed.

The questionnaire was based on the understanding of the literature review consisted mainly of multiple choice questions and a question to express their opinion in the matters discussed. Moreover the questionnaire was divided into 5 sections which are:

- General Information Questions (I)
- Questions regarding the Role of Engineers and FIDIC contracts (II)
- Question related to organization of the respondent and the method of planning and management (III)
- Questions regarding effects of change on claim management (IV)
- Questions of the documentation and record keeping in claim management (V)

The first section includes questions about the individual being asked such as qualification level, years of experience, and position in the company. In addition to that information about the firm/organization the respondent is working for, the size of the project he works in at along with the specialization of the company. Lastly the respondent was asked very general questions about both FIDIC contracts and claims and how familiar is the respondent with both.

The second section titled “Questions regarding the Role of Engineers and FIDIC contracts” emphasis on the previous questions regarding claims but includes the respondent’s opinion when it comes to the role of Engineer on site and the FIDIC contracts.

The third section consists of questions regarding claims management. The questions focus on the claims, causes, effects and the respondent belief of which was the reason for the claim. Also it measures the understanding of claims and the initiation and cause of any variation or change order and the average time it takes to solve a dispute along with the respondent's experience with claims.

The fourth and last section measures the effects of record management and record keeping. It also consists of questions regarding the firms/organizations record keeping, record management and the documentation process followed in the firm. Moreover it details the accessibility of the information during and after the construction project.

4.5 Data Collection

4.5.1 Case studies

The data was collected from projects DXB and SHJ that were constructed by QWE Construction Company. Project DXB was constructed and finished in Dubai while project SHJ was done in Sharjah. The interviews conducted were done face to face and is considered as a good form to obtain qualitative data. In both projects the interviews were done with the project manager and construction manager in the contracting company who were directly involved with the claim from the very beginning.

Although the interviews with both projects were done around the same time but access to information that are considered as classified or confidential until a special permission was granted. As a result the information received was accurate, authentic and reliable. Some of the information received and studied were:

- The contract between the Employer (Owner) and Contractor
- Schedule and plan of the projects

- Weekly and month reports signed by both the Contract and Engineer
- All correspondent and E-mail between the parties included in the project in chronological order.

4.5.2 Questionnaire

The questionnaire was done using Google Forms thus getting statistics and probabilities as more questionnaires are filled. The surveys link was disputed via E-mail and face to face meetings to around 96 different firms and organization in different parts of region of the country. The goal was to obtain at least 56 complete questionnaires and it was accomplished as 62 questionnaire were returned.

4.6 Objectivity, Reliability and Validity of Research Instruments

4.6.1 Defining the terms

Just like all other terms validity and reliability have been defined in a various way by different scholars and researchers while objectivity has a fixed definition that almost every scholar agree on. Objectivity is defined as “the quality of being impartial, fair, just and absent of prejudice”.

Most scholars agreed to define reliability as how relevant and close will the data collected be using the same methodology of collection but at different circumstances and occasions (Lancaster, 2005). While validity was defined differently by different scholars Lancaster (2005) has the most complete and well-rounded definition. Validity is defined as how relevant and accurate the data collected is to the data that was supposed to be or was initially purposed to be collected in both measurement and description.

4.6.2 Study Cases

In order to be as objective as possible all the data collected and reports done were made in an unbiased and fair manner therefore no opinions were considered. In addition to that all the data that was reported didn't include opinions and utilized only facts which makes the research objective (Dees, 2003).

The reliability of this research is directly related to the involvement of the interviewee with the problem which in this case is the claim management. The more involved the interviewee the more reliable and accurate the data is and it can be compared to the authentic data received such as records, e-mails, correspondents and related documents. Moreover interviews with different parties are conducted thus more than one sources of data is used and more than one perspective and in case of dispute or confliction documents and records can be reviewed.

The research methodology is valid if the questions asked during the interview are of relevance to the topic of the research which is claim management as the questions focus on FIDIC contracts, claim causes and effects, record keeping and documentation and mainly claim management.

4.6.3 Questionnaire

Since most of the questionnaire are given to professionals at random intervals in different locations and working positions, the randomness of the questionnaire is a proof for its objectivity and can be considered as fact and it overall covers most of the topic regarding claim management and includes different parties view.

The questionnaire is divided into five sections which relate to claim causes and effects, record and documentation, claim management and FIDIC contracts. Moreover the data

can be considered both as valid and reliable as the questions are highly relevant to the purposed topic, measure and describe the purpose topic. Since the questionnaire is used as a secondary source of information, it will not be elaborated and research in-depth.

4.7 Methodology of Analysis

Since the questionnaire is a quantitative data, not qualitative like the case studies, it is essential to do an in-depth analysis. This will add more reliability and validity to the result which will give a more accurate and realistic conclusion.

As discussed earlier the questionnaire is divided into 5 parts. Section I can be easily analyzed since it discusses personal information about the respondents through the usage of pie charts. While the other four parts tackle problems shown and studied in the research a more analytical is needed to obtain accurate, precise and reliable results.

As a result different analysis methods are utilized such as:

- Factor Analysis and Reliability Test
- Relative Importance Index (RII)
- Pearson Correlation Analysis
- Hypothesis Testing (T-Test Method)

4.7.1 Factor Analysis and Reliability Test

The Classical Test Theory was used in order to test and check the reliability of internal consistency along the homogeneity of the data used. Classical Test Theory utilizes Cronbach's α (alpha) which mainly depends and measures the consistency of a number of items or sets of variables and their interactions together (Yitmen, 2011). Cronbach's α (alpha) ranges from zero to one where zero means that the variables have no consistency or interaction at all while one means that variables are directly consistency

and dependency on each another (Nunnaly, 1978). The acceptance rule of is shown in Table 5:

Table 5: Internal Consistency (George, D. & Mallery, P., 2003)

Cronbach's α (alpha)	Internal Consistency rank
$\alpha < 0.5$	Unacceptable
$0.5 \leq \alpha < 0.6$	Poor
$0.6 \leq \alpha < 0.7$	Questionable
$0.7 \leq \alpha < 0.8$	Acceptable
$0.8 \leq \alpha < 0.9$	Good
$0.9 \leq \alpha$	Excellent

As shown in Table 5, the minimum value for Cronbach's α to be accepted in 0.7 or higher to show a good correlation and consistency.

4.7.2 Relative Importance Index (RII)

Some factors are required in order to get an understanding of the each and relate to the significance of each factor. The most primarily and basic factors are the mean value and the standard deviation.

$$\bar{x} (\text{mean}) = \frac{\sum x}{n} \quad \& \quad \sigma (\text{Standard Deviation}) = \sqrt{\frac{\sum_{i=1}^n (\bar{x} - x_i)^2}{n}}$$

Parameters:

n: The total number of respondents or answers received.

x: The relative value of the respondent's answer.

In a multi-selection questions such as the ones used in the questionnaire, each of the answers is ranked in order. This order has to present how significant does the respondent feels the answer should be. Using this ranking or weight system a more accurate and reliable average will be obtained called the Relative Importance Index as it takes into consideration the significant of the answer chosen by the respondent (Mackebach & Kunst, 1997).

$$RII = \frac{\sum w}{w_{highest} \times n}$$

Parameters:

W: Weight/ rank of each answer between 1 to 5 where “1” stands for “Strongly disagree” and “5” stands for “Strongly Agree”

w_{highest}:The highest weight/ rank that can be obtained which is “5”

n: The total number of respondents or answers received.

As it can be seen above from the formula the value of RII will always be greater than zero but smaller or equal to one. The same reference for the acceptance value will be used therefore RII value of 0.7 or greater is accepted.

4.7.3 Pearson Correlation Analysis

Pearson correlation analysis is done by determining Pearson Product-moment correlation coefficient (PPMCC) also known as Pearson’s **r**. Pearson’s **r** measures the simple linear correlation and the relationship between the variables. The values of **r** (sometimes referred to as **ρ**) are between negative one and positive one where a negative value shows a negative correlation and a positive value shows a direct and positive correlation. As such the Figure 6 further elaborates this point:

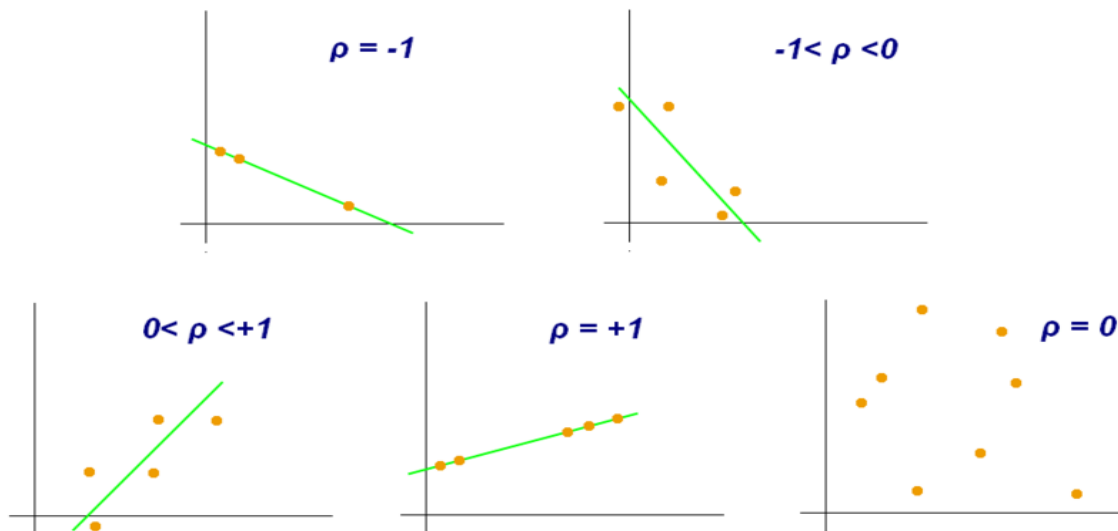


Figure 12: Different values of correlation coefficient (Kiatdd, 2012)

Just like Cronbach's α and RII there is a limit and degree of acceptance for the correlation value which is illustrated in the Table 6:

Table 6: PPMCC value range strength (Bruce, 2007)

PPMCC	Degree of Acceptance
$-0.3 \leq r \leq 0.3$	Weak
$-0.7 \leq r < -0.3$ or $0.3 < r \leq 0.7$	Moderate
$-1 \leq r < -0.7$ or $0.7 < r \leq 1$	Strong

As shown in Table 6 the minimum value for the PPMCC or Pearson r value should be smaller than -0.7 or greater than 0.7 if not so the correlation is considered not accepted.

4.7.4 Significance Test Analysis

In order to determine the significance of the values obtained and to deduce any statistically relationship, PPMCC or Pearson r value is obtained beforehand and then a significance test is performed. The significance test is done by assuming a hypothesis depending on the PPMCC sign.

In the case that PPMCC is positive then the hypothesis will test whether there is a positive relationship or not. Subsequently the following assumptions are made:

$$H_0: \rho = 0 \quad \& \quad H_1: \rho > 0$$

While in case that PPMCC is negative then the hypothesis will test whether there is a negative relationship or not. Subsequently the following assumptions are made:

$$H_0: \rho = 0 \quad \& \quad H_1: \rho < 0$$

Since the significance value is dependent of ρ , then the hypothesis will be proven significant if the ρ is less than or equal to 0.05.

4.7.5 Hypothesis Testing (T-Test Method)

In order to test the hypothesis Statistical Package for the Social Sciences (SPSS) software was used along with the t-test method. The null hypothesis is accepted if the ρ is less than or equal 0.05 while it is rejected if it is larger than 0.05.

Chapter 5

DATA ANALYSIS AND DISCUSSION OF RESULTS

5.1 Introduction

Data Analysis is a process that consists of identification, distillation, classification and communication of data in order to derive a theoretical, imperial or correlation of the data present (Lancaster, 2005).

The analysis method will be done by analyzing one sources at a time, since the research consist of only two sources (two cases studies and a questionnaire). The case studies will be evaluated first and then the questionnaire results.

5.2 Primary Source Analysis

5.2.1 Introduction

The two selected projects belong to the same contracting company (referred to as QWE) but the management is different for each project along with the project itself and the location of each project. Not only that but also the consultant of each project is different which is a typical case in the United Arab Emirates.

Although all the parties involved within the project are distinctly different yet both contracting companies international with employees that have worked across the global and have settled in the UAE. This gives better data as the interviewees do not only possess international knowledge of claim but also local understanding and comprehension of the construction sector and contracts used. Moreover since the

companies are international, they have proper documentation and record keeping system that allow easy and direct accessibility to important documents.

In addition to that both projects interviewee selected are project managers and construction managers in the contracting party with direct involvement in the claims that were issued in each project. QWE Construction Company had to ensure its rights by requesting extension of time claim and prolongation of claim to ensure the additional payment and costs.

The projects that will be discussed in the case studies and analyzed are described in Table 7 below:

Table 7: Project Description

Project Name	Project Description	Location
Project DXB	22 story commercial building that consists of 5 parking floors, a mezzanine floor and a floor for health care center and a GYM.	Dubai
Project SHJ	It is a commercial villas compound that consist of 26 villas each villa consist of 2 floors with an area of 160 m ² per floor. Each villa has its own entrance and a small garage attach to the villa.	Sharjah

The projects have some similarities which are required to be known before analyzing the situation in each project. The points below explain and summarize the similarities:

- Both projects have an overall estimated cost before the additional cost of claims to be over 125 million AED.
- Both projects had EOT claims and prolongation claims issues.
- The contractor QWE were granted EOT in both projects.
- Although the EOT was granted till this day the prolongation claims were not settled and the final cost of the projects still isn't determined.

5.2.2 QWE Construction Company

QWE Construction Company was established in 1986 in the United States of America (USA) and has branches all over the globe and focuses mainly on work done in the middle-east especially Qatar, Saudi Arabia and United Arab Emirates. QWE opened its branch in the UAE in around 1996 as a construction company in Dubai and later expanded to Abu Dhabi.

It was that period of time between the years 1998-2007, QWE gained a very rapid increase in profit and size as it was one of the top leading construction companies in the UAE. At the peak of its success it has almost 13,000 thousand employees who are skilled labors, engineers and staff.

After 2007 till the end of 2011 the company was facing many difficulties mainly after the global crisis which had noticeable impact on the company. Thus many projects during that period faced overrun time, penalties or extra cost due to delays and failures to meet the deadline. Furthermore the clients that the company was dealing with at the period were also affected and some of them ran away or went bankrupt leading to great losses to the company.

QWE had to request claims which entitle them to additional cost and time in order to remove the penalties because the delays were beyond QWE's responsibility and it wouldn't have been possible to avoid or foresee. Some of these projects were under negotiation and were just recently solved by arbitrations and other methods.

After the end of 2011, QWE regained its success and finish most of its problems that were accumulated over the years. It also revised and improved its management system to avoid any issues that might rise in the future. Furthermore QWE developed a new procedure for contracts and claims that might be faced in the future. The two projects, Project DXB and Project SHJ, are the ones that the company started the construction of midway of 2012 and have been finished but the final payment is still pending due to prolongation claim demanding more amount than required.

5.3 Analysis of Project DXB

5.3.1 Introduction

As discussed and described earlier, Project DXB is a 22 story commercial building that consists of 5 parking floors, a mezzanine floor and a floor for health care center and a GYM. The project started on July of 2012 and was concluded on February of 2015. The project is a typical concrete structure with aluminum cladding and glass. Each floor has an area of around 620 m² and the finishing is done by QWE while the internal design is done by another company chosen by the Employer.

The initial value of the Project DXB as 232,000,000 AED as per the original contract that was signed by QWE and the Employer. The value is not finalized yet as there is still calculation regarding the change orders and variations requested by the Employer and the prolongation claim is not yet settled as it can highly effect the price.

Since there was a number of variations requested by the Employer, QWE was typical entitled to EOT claims. Although some variations were requested beforehand and gave a timely notice for QWE to be well prepared therefore no EOT was given. Around six EOT claims were submitted by QWE throughout the duration of the project requesting around 140 calendar days in total. The main EOT claims were the second which was a request of redesign for the foundation as the conditions in the site were different than the geotechnical lab report due to a recent earthquake occurred two months before the start of the project causing around 20 calendar days delay. While the sixth EOT submitted was due to late arrival of ceramic which was caused by the Employer and EOT submitted request 95 calendar days.

The first submission that requested the EOT due to re-designing was negotiated with all the involved parties and QWE obtained an extra 20 days for project completion. The EOT submitted at first was not fully approved by the owner but after some time and extension of only 35 days was given as an EOT. QWE submitted another EOT requesting more time and emphasizing the delay has on the progress of the project; after the second negotiations QWE were granted an additional 60 days making the total 95 as requested by QWE. Thus obtaining a total of 115 days of extension.

This EOT allowed QWE to be secure against liquidated damages and/or penalties for the delay. Moreover it gives QWE more time to manage and be able to re-arrange and re-schedule the jobs required which can be very beneficial for them.

While the other submission are due to the Engineer and Employer requesting a total of 427 changes which are some in documented change orders while others were given as verbal instructions. In addition to that the impact from the change orders submitted by

the Employer and/or Engineer were not accepted as the Engineer state that they were informed before 28 days of execution or beginning of the required jobs while the others only caused a delay of maximum 3 days which can be compromised by the project manager if he well manages the resources and reschedule few jobs.

QWE managed to work and put an effort to professionally manage all the resources and it has and the experience of the project managers and the engineers with him lead to the project finishing in 17 days before the extended deadline of the project. QWE believes that they are entitled for cost of prolongation for the days beyond the original contract deadline, along with the cost of the full 17 days even though they did not worked or no job was done during that period and lastly the cost of the variations and change orders that were requested by the Employer and the Engineer.

The documentation required for the proof of the above claims and entitlement provided by QWE are as follow:

- The general and specific contract clauses signed by all the parties directly involved in the project.
- Daily, weekly and monthly progress reports with photograph as visual proofs and an in depth analysis of the daily progress and a daily detailed description of the work done by QWE.
- The change orders and variation submitted and signed by the Employer or/and Engineer along with a breakdown of the additional cost required.

A full overview of the claim management and final settlement was achieved by conducting interviews with OS and OA whom are the Project Manager and the Construction Manager in QWE supervising the work in Project DXB

5.3.2 Case 1- Interview 1

OS is a 62 years old British national of Iraqi origins that holds the position of a project manager in QWE Construction Company and is responsible for the execution and delivery of Project DXB. OS is a civil Engineer that worked 11 years in Iraq, 16 years in UK and the rest was in the UAE.

He obtained his certificate in Project Management Profession (PMP) around 13 years ago. Most of the projects that OS was involved in were based on FIDIC contracts. Moreover that his knowledge of project management is built not only through his educational work but also through many years of experience and practice.

The following shows the interview that occurred between the author of this thesis and OS in the format of Q&A:

- 1) **Question:** Can you define a claim from your point of view?

Answer: A claim is a way to escape from the penalties agreed on in case of the delay and finishing the project after the agreed deadline.

- 2) **Question:** What are the usual the types of claims that you faced in this project and what are the ones you face in other projects?

Answer: Generally speaking every project has to have change orders and variation requests and that comes in hand with both EOT and prolongation claims. These were the two claims that we faced in this project but in general a contractor might face acceleration claims as well.

- 3) **Question:** What are the purpose of claims?

Answer: In general contractor request claim entitlement to cover up for their delay or request extra payment. To add on that they are also used to ensure the rights of the contractor and make sure that he is still making profit.

4) **Question:** What is a claim entitlement dependent on?

Answer: Proper planning, reasonable causes and most importantly good management and admiration from the project manager and the Engineer.

5) **Question:** What is the role that the planning department in claim management?!

Answer: The role of the planning department is to take detailed photographs capturing all the progress of the project through the construction phases. This should be done on a daily passes with an official and authentic document sent to the Engineer as it could be used to solve disputes and use to ensure claim entitlement.

6) **Question:** What do you think of documentation and record keeping?

Answer: Well although it is easy yet tedious and annoying it is very important and essential when it comes to claim management. It is the very proof that makes you entitle for a claim in case of disputes which generally occur.

7) **Question:** How is that documentation system used in QWE Construction Company?

Answer: I really believe it's bad as it only consists of some excel sheets and hard copies of comments. It is "conventional" as it is cheap and doesn't need any training but it is very simple and need to be improved. Although it is the system that is used by most companies a more linked and direct software should be used and implemented by the government to keep it under check and make sure it is followed by all companies. It is bad since some papers do not have back-ups of or we forget to make a copy for safe keeping due to the busy schedule thus the loss of a single paper can lead to devastating effects on any contracting or construction company.

8) **Question:** What are the issues that you face in this project that lead to claim disputes?

Answer: The Employer was very sincere at the beginning saying that no need for letters as we can solve everything through negotiation and friendly methods. Sadly as the Employer is known to be one of the biggest investor and entrepreneur in the UAE we believed so. Moreover it was very difficult to keep record of all the variations and change orders as there were almost one every other day. If I didn't step up and told the Site Manager that I will still do my work professionally we could have lost all the entitlement for extra days due to delays and additional cost.

9) **Question:** What are the required documents for prolongation and acceleration?

Answer: When we are talking about prolongation and acceleration claims we are talking about extra payments and cost which everyone hate to hear. Thus the Employer usually ask the Engineer to provide all supporting documents that are authentic and signed by all the involved parties to try to minimize or reduce the extra payments as much as possible.

10) **Question:** What do you believe is that reason behind variations or change orders?

Answer: In my opinion the main reasons for variations are one of the two. The first is that the designer is not well experiences doing tiny mistakes that accumulate thus requiring change orders. The reason is when the Employer is moody and like to keep on changing the specification because he thinks it is a simple matter although that mostly occur when constructing private villas most of the time.

11) **Question:** What is the impact of variations on the construction project and what do you think of them?

Answer: Well most contractors love it when there is a variation or change order especially after job has been done because that means more work and time for them to finish off. I personally got costumed to the many changes and variations we face during construction so I find it normal although I prefer not to have any of them cause that will mean for once no claim will be required in a project. But what most contractor fail to realizes is that variations is a double edge weapons cause if there was poor management from the contractor side it might lead to delays that he will be liable of an eventually losing profit. Also it is a known fact the variations means delay in completion of the construction at the specified deadline in the original contract.

12) **Question:** How do you issue claims and what procedure do you follow?

Answer: Since the development of the new system and the frequent occurrence of claims, the company deals with claims specialists hired for this sole purpose. We give him all the required documents and inputs such as the contract document, work progress reports, correspondence between the parties involved and other information that might be required. As for the procedure there is no specific procedure or system that I personally follow as it could backfire and require more time to solve. So what I personally do instead is keep things in check and look at the progress of the whole project on daily bases if I see a slight delay or an indication that delay might occur in the near future I prepare a notification of delay with all the required documents that goes along it.

13) **Question:** What are the elements that lead for a successful claim presentation?

Answer: What we fail to realize that a claim can be rejected due to simple and

obvious element being missing or ambiguously stated. These error and mistakes will cause further delay to the entitlement and evaluation of claims.

14) **Question:** Are FIDIC contract formats suitable for the project in the UAE or not?

Answer: Well the FIDIC is an international consultant institute and can be considered the highest authority in contracts in the civil engineering projects. Sadly Employers here utilize the clause that empower, protect and help the Employer/ Owner and include it in while neglecting the clauses that secure the Contractors right which lead to many insecurities and issues.

15) **Question:** What is the actual and right role of Engineer? And what is that happens in practicality?

Answer: The engineer is supposed to impartial and unbiased in his decision while monitoring the progress and trying to help the contractor meet the deadline and to avoid delays as much as possible. Sadly that is fairy tales as in real life some engineers acts all high and almighty sometimes demanding bribes in an indirect way to allow the work to be done and it get job done and some do not have enough experience while other times the Engineer is not present. I cannot completely blame because in the UAE because in general the Engineer is responsible for more than one project and it can get hard to monitor them.

16) **Question:** What is the role of the Engineer in claim management? And how effective is it?

Answer: The Engineer has the power to evaluate the claim submitted by the contractor and to negotiate on the terms, number of extension due to delay days and/or the additional payments needed. But at the end of the day everything

goes back to the Employer whether or not he finds the evaluation as good enough or beneficial for him.

17) **Question:** What was the role of the Engineer in Project DXB?

Answer: He was particularly useless since after he finished the assessment that was obviously biased and didn't truly evaluate the correct monetary value of the claims. The Employer didn't like it because it was more than he expected and he hired a 3rd party to evaluate the claim.

18) **Question:** What is the reason behind the unfair and bias interaction of the Engineer if any were shown?

Answer: With all honesty the engineer cannot always be honest, fair and unbiased because he is hired by the Employer and will get his salary from him. Moreover the consultant company usually try to be biased with the owner, so they will be hired in other or future project thus pressuring the Engineer to be unbiased.

19) **Question:** Is there anything you would like to add on?

Answer: Nope, I guess you summed up the whole idea about claims management.

The interview ended with the last question and OS welcomed any other questions or remarks that the interviewer would like to add.

5.3.3 Case 1- Interview 2

OA is a 54 years old American national of Jordanians origins that holds the position of a construction manager in QWE Construction Company that is responsible for the execution and delivery of Project DXB. OS is an Architectural Engineer but worked in the civil engineering discipline. OS has worked 8 years in Iraq, 12 years in USA and the rest was in the UAE.

He has not obtained his certificate in Project Management Profession (PMP) or any higher educational degrees. Most of the projects that OS was involved in were based on FIDIC contracts. Moreover that his knowledge of project management is built not only through years of experience and practice. Even though he is a consultant, he has a contracting company in Jordan and has a branch in the UAE.

The following shows the interview that occurred between the author of this thesis and OS in the format of Q&A:

1) **Question:** Can you define a claim from your point of view?

Answer: Claims are the insurance that contractor will obtain his rights and entitlements.

2) **Question:** What are the usual the types of claims that you faced in this project and what are the ones you face in other projects?

Answer: Well you can say that it's typical that every projects must have an EOT claims which comes hand in hand with a prolongation claim. At least these are the two claims that we dealt with in this project although there was a proposal for an acceleration claim but was deemed unnecessary by all the involved parties.

3) **Question:** What are the purpose of claims?

Answer: As I said earlier they are needed to insurance that contractor will obtain his rights and entitlements. But the issue we have here in the UAE is that contractors use it to cover up for their delays or uncalculated and unexpected costs.

4) **Question:** What is a claim entitlement dependent on?

Answer: It is highly dependent of tackling and detecting factors that might or have already caused delay and to elaborate on them thus proper delay analysis would be the leading factor for claim entitlement.

5) **Question:** What is the role that the planning department in claim management?!

Answer: The role of planning department is to analyze the data that lead to the delay and formulate the claim professionally that will help presenting the claim and its entitlement.

6) **Question:** What do you think of documentation and record keeping?

Answer: Documentation and record keeping should be easily access wanted and required document anytime and should always have an available copy.

7) **Question:** How is that documentation system used in company you are working for?

Answer: Sadly the company follows a primitive method of keep hard copy documents in archives that can be easily damaged or stolen/

8) **Question:** What are the issues that you face in this project that lead to claim disputes?

Answer: This main project is just like any typical project the reason disputes occurred was the fact that not all claims were informed earlier on and a timely notice didn't not reach the Engineer at the correct time thus losing some of our rights and entitlements which were around 25 days along with their payments.

9) **Question:** What are the required documents for prolongation and acceleration?

Answer: A copy of the both the general and specific contract clauses, authentic document detailing the payments required such as: invoices and other proofs of payment and exchange of money. Moreover the cause for the claims such as

delay and in the case of acceleration the impact the acceleration claim has on the project duration.

10) **Question:** What do you believe is that reason behind variations or change orders?

Answer: In my opinion the main reasons for variations is the employer as he tends to decide and order as much changes as he like. Thus the Employer is the main reason for variations while there are other factors such as poor designing and due to inexperience of the designers. These are rare occasions and sometimes they are be avoided with simple understanding of the drawings and specifications.

11) **Question:** What is the impact of variations on the construction project and what do you think of them?

Answer: Variation can be sometimes considered as positive or negative such as once that reduce the amount of work or are used to substitute an items or materials for another in order to reduce the importing time while other delays might cause delays to the project. In addition the Employer might decide to remove some items from the main contractor and gives them to another contract which can be view as good or bad depending on the circumstances.

12) **Question:** How do you issue claims and what procedure do you follow?

Answer: Honestly speaking I am not fully aware of the procedure followed in claims management but all I know is that the company hire a specialist claim manager that would write the claim after he is given all the information he required and the input along with what do we as an end result from the claim.

13) **Question:** What are the elements that lead for a successful claim?

Answer: The leading factor towards a successful claim is a well-made

presentation that include all factors that include all the data causing the delay in an elaborated fashion thus obtaining the entitlement of a claim.

14) **Question:** Are FIDIC contract formats suitable for the project in the UAE or not?

Answer: FIDIC contract forms are perfect for most of the countries in the world. But sadly fairness is not practiced when deciding on the general clauses of any contract as the Employer tends to take advantages while reducing the rights of the contractor because the public view is that contractor are the thieves that would drain the money.

15) **Question:** What is the actual and right role of Engineer? And what is that happens in practicality?

Answer: I personally believe that all the individual working for certain party to report all the event that occur during the project or activities that might cause problem in the future to the management of his company whom are unaware of these information. Gladly this is the case in most of the project although many the Engineer is usually responsible for more than one project which can be difficult to manage and handle.

16) **Question:** What is the role of the Engineer in claim management? And how effective is it?

Answer: The Engineer is supposed to evaluate the claim submitted to our party and to negotiate its terms needed. The Engineer is supposed to help and pressure the Employer to make the professional and right decision while being fair and unbiased to all the parties involved in the project.

17) **Question:** What was the role of the Engineer in Project DXB?

Answer: Sadly the Engineer in Project DXB did almost nothing and was silent whenever the master was about the claim entitlement which made the claim negotiations harder because the owner believed we are not entitled for any additional payments and that we have exaggerated the EOT claims.

18) **Question:** What is the reason behind the unfair and bias interaction of the Engineer if any were shown?

Answer: The fact that some contractors tend to over exaggerate the value of the project hoping to obtain an edge that will help to cover any claims or delays that might cover up to delays or to obtain higher profit from the projects which makes the contractor biased as it's the contractor's nature to inflate the projects value and prolongation claims to obtain maximum profit.

19) **Question:** Is there anything you would like to add on?

Answer: Nope and I would like to thank you for studying this field as more research and development need to be done on the issue.

The interview ended with the last question and OA welcomed any other questions or remarks that the interviewer would like to add.

5.3.4 Comparing the results from both interviews

After conducting the interview with both engineers OS and OA who work as a Project Manager and a Construction Manager in QWE Construction Company. There were many similarities and few differences between the two interviewee which is clarified in Table 8 below:

Table 8: Comparison between Interviewee 1 and Interviewee 2 in Case 1

Interview questions and inquires	Feedback of Interviewee 1	Feedback of Interviewee 2
If the interviewee have a thorough experience in Project Management in the UAE.	Yes	Yes
Is familiar with FIDIC contract forms and the clauses and sub-clauses utilized in contracts in the UAE	Yes	Yes
Have obtained certificates that relates to project Management in anyways such as (PMP, MBA, etc...)	Yes	No
Have attended seminars or training sessions for construction and claim management and didn't get the knowledge only through experience	No	No
Was very involved in the claim that rose in the project and play a major role in the presentation and negotiations	Yes	Yes

Although there are clear difference in the qualifications of each engineer most notably in the years of experience and self-development but in the case of the claims in project DXB it was obviously clear that both engineers have a clear understanding of the situation and what is the correct procedure to be followed. Moreover there are many similarities between the two engineers which shows that they are professionals and are used to work pressures. Both personnel gave similar answers when discussing topic that include claim and record keeping management.

5.4 Analysis of Project SHJ

5.4.1 Introduction

As discussed and described earlier, Project SHJ is a commercial villas complex that consist of 26 villas each villa consist of 2 floors with an area of 160 m² per floor. Each villa has its own entrance and a small garage attach to the villa. The project started on September of 2012 and was just recently concluded. The project is a typical concrete structure while the garage is a small steel structure. QWE Construction Company is responsible for everything thus finishing and small part of interior design is there responsibility.

The initial value of the Project SHJ as 184,000,000 AED as per the original contract that was signed by QWE and the Employer. The value is not finalized yet as there is still calculation regarding the change orders and variations requested by the Employer and the prolongation claim along with the acceleration claims are not yet settled as it can highly effect the price.

Due to delays caused by the contractor that were estimated to cause the project to be concluded after agreed on baseline stated in the original contract. In addition to the existence of immense number of change orders and variation requested was around 548 change orders between official letters and verbal instructions. The huge number of variations led the project to be also be delayed but the main cause of the delay was caused by the contractor to suffer serve losses. In order to compromise for the delays QWE caused due to the variations, acceleration procedures were taken for a period of time.

As the estimated delay caused by the contractor would be around 11,840,000 AED which would drastically decrease the net profit and overhead of the project value. In order to cover the delay the Contractor caused also demanded EOT for the variations caused by the Employer and gain just enough extension to finish the project in time.

The conflict between the Employer and Contractor was the fact that the Employer was convinced and believed that the acceleration claims are due to the delay caused by the contractor not due to the variations requested because they were simple and didn't require much time. While the contractor wants to compromise and obtain as much profit as possible. As a result the Contractor is requesting the cost of the contract value, prolongation cost, acceleration cost and additional work cost.

The documentation required for the proof of the above claims and entitlement provided by QWE are as follow:

- The general and specific contract clauses signed by all the parties directly involved in the project.
- Daily, weekly and monthly progress reports with photograph as visual proofs and an in depth analysis of the daily progress and a daily detailed description of the work done by QWE.
- The change orders and variation submitted and signed by the Employer or/and Engineer along with a breakdown of the additional cost required.
- Invoice which include additional cost figures attached to the claim with a detailed breakdowns. The breakdown included: Labor, machinery and equipment additional chargers, direct and indirect staff cost and head office overheads and sub-contractor additional costs.

To further understand the situation leading to the claim and final settlement an interview was conducted with NA and SS who are the project managers in QWE and the Consultant Company of Project SHJ respectively.

5.4.2 Case 2- Interview 1

NA is a 59 years French national project manager in QWE Construction Company and is responsible for the execution and delivery of Project SHJ. NA is a civil Engineer that worked in different parts of Europe and has been working in the UAE for around 11 years.

He obtained his certificate in Project Management Profession (PMP) around 11 years ago in addition to that he had pursued higher educational degrees obtaining Master in Project Management. He also has attended training sessions on claim management and FIDIC contracts. Moreover that his knowledge of project management is built not only through his educational pursuits but also through many years of experience and practice all over the globe.

The following shows the interview that occurred between the author of this thesis and NA in the format of Q&A:

1) **Question:** Can you define a claim from your point of view?

Answer: A method to intimidate the other parties to waive any chance for the Engineer or Employer to imply penalties on you. Also it can be used to cover up for the mistake done throughout the project.

2) **Question:** What are the usual types of claims that you faced in this project and what are the ones you face in other projects?

Answer: The common claims in every project are EOT, prolongation and acceleration claims and Project SHJ is not different than any other project.

3) **Question:** What are the purpose of claims?

Answer: Well with all honesty the claims that were used in the project were done to compromise for the delay caused by both parties mainly ours. This ensured our rights and minimum impact on our profit. They can be used to avoid liquidated damages as well. I wouldn't say it is the most ethical thing to do but this is the truth in most of the projects around the globe.

4) **Question:** What is a claim entitlement dependent on?

Answer: At the end of the day after bring all the data present, it can be futile. The successful entitlement of a claim depends on a good team and individuals with really good communication skills and that are experts at negotiations.

5) **Question:** What is the role that the planning department in claim management?!

Answer: The planning department should schedule and decide all the baseline and milestone required along keep the progress under check.

6) **Question:** What do you think of documentation and record keeping?

Answer: Recording and documentations are compulsory components of any construction project. It also is an essential part in claim management in the later stages of the project.

7) **Question:** How is the documentation system used in QWE Construction Company?

Answer: The issue in most construction and contracting companies is that they do not understand the importance of developing an effective and a smart way of archiving the data. Also the manual keeping of hardcopies is terrible. A software that links all the parties involved and keeps track and back up of all submitted documents and meeting memos should be developed.

8) **Question:** What are the issues that you face in this project that lead to claim disputes?

Answer: In order to obtain the project, the company made an underpriced quotation to win the tender. Since the Employers in general prefer the cheapest available quotation ours company landed the project. Since it was underpriced with similar specification yet different lifespans the Employer was forced to request variations at almost daily basis. This gave us the opportunity to change our losses to profit and to cover up for any delays from our side. Although the project barely finish in time even though we had submitted an acceleration claim to speed up the work and conclude the project.

9) **Question:** What are the required documents for prolongation and acceleration?

Answer: Just like any claim you always need proofs that are present in progress reports, correspondence, meetings memos, contract clauses and documents. What's different about prolongation and acceleration claim is that they need a detail breakdown of the additional payments need with solid proof such as invoices, payrolls, copy of cheques and any proof of money transaction with complete detail and description for the reason behind that.

10) **Question:** What is the impact of variations on the construction project and what do you think of them?

Answer: Variations and change orders are beneficial for contractors as they usually come with extension of time and extra profit. Personally speaking I have got accustomed for the many variations and changes in projects so I do not really have any preference with whether there are variation or not. Regardless to say, some contactors fail to realize that the owner can enforce variations which might negatively impact the profit of the contractor.

11) **Question:** How do you issue claims and what procedure do you follow?

Answer: Personally speaking I do not believe there is a specific management

process for claims as the circumstances around each claim is different and how the parties involved deal and negotiate with it is also different. Not to forget that before reaching arbitrary process there will be negotiations and there can't be a system to follow when you are negotiating terms since some of the things negotiated are done outside the contract as it is simpler that way.

12) **Question:** What are the elements that lead for a successful claim presentation?

Answer: The success of a claim depends on the technicality of the reports provided and requests made that is why it's always better to hire a claim specialist to review the document before submission. Moreover since its dependent on negotiations having a good relationship with the Engineer and Employer always help along with conducting meeting and showing progress using visual aids such as pictures and figures because people love that for some reason.

13) **Question:** Are FIDIC contract formats suitable for the project in the UAE or not?

Answer: FIDIC contract forms are used internationally and all over the world and will be used for the coming years. So the question isn't not whether I think FIDIC is suitable for the UAE or not it's a matter of whether I have been accustomed and used to the contract form or not and glad I have been.

14) **Question:** What is the actual and right role of Engineer? And what is that happens in practicality?

Answer: The Engineer is supposed to monitor and administrate all the jobs done in the project. Also he should inspect, give permission of jobs before starting and keep the Employer with constant updates. When finishing major jobs the

contractor has to check whether or not the sub-contractor has received his rights and payments without interfering between the contractor and sub-contractor

15) **Question:** What is the role of the Engineer in claim management? And how effective is it?

Answer: I do not mean any disrespect but when it comes to claims the Engineers is useless due to the pressure he has from the employer and his own company thus practicing fairness is almost impossible for him.

16) **Question:** What was the role of the Engineer in Project SHJ?

Answer: Just as stated above the Engineer didn't particularly do anything and we were left with the Employer fighting for our rights and the entitlement of claims. Although the Engineer tried to advice and help the Employer by being biased towards him it backfired as the Employer though the Engineer was bribed and he couldn't trust him.

17) **Question:** What is the reason behind the unfair and bias interaction of the Engineer if any were shown?

Answer: In my whole experience I have only met two impartial and unbiased Engineer, even though FIDIC call for impartially and fairness; the exact opposite happens in real life. The reason behind it is that the Engineer needs to please the Employer or in some case the contractor after he hands him down a nice cheque for himself. It's very unethical and little ethic is practiced in construction projects.

18) **Question:** Is there anything you would like to add on?

Answer: Thank you for taking the time for interviewing me and trying to understand the complexity of claims. To fully understand the complexity of claims you have to be involved in one.

The interview ended with the last question and NA welcomed any other questions or remarks that the interviewer would like to add.

5.4.3 Case 2- Interview 2

SS is a 34 years old Swiss national who holds the position of a construction manager in QWE Construction Company that is responsible for the execution and delivery of Project DXB. SS is an Architectural Engineer but worked in the civil engineering discipline. OS has worked most of his life in Europe and just quite recently he has moved to the UAE and worked here.

He has not obtained his certificate in Project Management Profession (PMP) or any higher educational degrees. Most of the projects that SS was involved in were based on FIDIC contracts and clauses. Moreover that his knowledge of project management is incomplete due to changing different projects although it is built through experience in different countries it isn't yet perfect.

The following shows the interview that occurred between the author of this thesis and SS in the format of Q&A:

1) **Question:** Can you define a claim from your point of view?

Answer: It is the documentation of the contractor's right and entitlement when delays and additional expenses are required due to various circumstances that the contractor is unable to control.

2) **Question:** What are the usual the types of claims that you faced in this project and what are the ones you face in other projects?

Answer: In most of the projects I have worked in as a construction manager, I faced EOT and prolongation claims and this is the first project that I will be directly

involved with an acceleration claim. Do not get me wrong but I have had known about acceleration claims but I was never directly involved with them.

3) **Question:** What are the purpose of claims?

Answer: Well sometimes it is to really ensure the rights of the contractor for delays and additional payments while other times contractors use claims to cover up their failures and delays.

4) **Question:** What is a claim entitlement dependent on?

Answer: Claim entitlement depends on developing a teams the combined both good technical background with food managerial skills with the right communication skills in order to develop a claim that can be justified and valid.

5) **Question:** What is the role that the planning department in claim management?!

Answer: I have not been in touch or directly involved with the claim management department so I do not fully comprehend its duties.

6) **Question:** What do you think of documentation and record keeping?

Answer: They can be considered the pillar and very foundation of claim entitlement and can never be underrated.

7) **Question:** How is that documentation system used in company you are working for?

Answer: The system is easy to access but the problem is that all the paper and documents are in hard copy thus you have to make a copy in order to use it or you have to wait from the individual that is currently using it to finish which. It is also reachable and easy to breach which leaves almost no kind of privacy for the parties included in the project.

8) **Question:** What are the issues that you face in this project that lead to claim disputes?

Answer: Well the high number of variations along with the fact that project SHJ was under budget so we dependent on claims to cover up that and conclude the project with a high profit. Although it isn't ethical but his method was used by many companies during the global crisis in order to have the tender and then depend on variations to increase prices and gain profit.

9) **Question:** What do you believe is that reason behind variations or change orders?

Answer: The main reason for variations and change orders is that the Employer himself does not know, comprehend or understand his needs during the design stage which lead to many variations due the construction stages.

10) **Question:** What is the impact of variations on the construction project and what do you think of them?

Answer: The variations and change orders can be consider to be one of the leading reason for high construction cost. Any variation at any point in the project can have a strong impact on the project deliver date and value. Although they are beneficial for the contractor, they are tiresome and somehow annoying as well.

11) **Question:** How do you issue claims and what procedure do you follow?

Answer: Claims should be formulated by combining the managerial skills of the project manager and construction manager and the technical skills of claim specialist to formulate a very comprehensive claim detail the situation. Although till this very day many claims are still rejected due to simple error and mistake that can be simply avoided with cautious planning.

12) **Question:** What are the elements that lead for a successful claim?

Answer: The main element that led to the success of our claim was that the claim was well-structured and contained all the required and necessary documentation that discussed the core of the claim.

13) **Question:** Are FIDIC contract formats suitable for the project in the UAE or not?

Answer: FIDIC contract and very reasonable and guarantee the rights of all the parties involved in any construction project. The problem is that not everyone follow the correct methodology and guidelines set by FIDIC contracts.

14) **Question:** What is the actual and right role of Engineer? And what is that happens in practicality?

Answer: Saying it straight forward, the Engineer has done nothing in the claim entitlement at all. Even though the Engineer has many administrative power over the contractor and Employer he tends not to enforce it.

15) **Question:** What is the role of the Engineer in claim management? And how effective is it?

Answer: The Engineers main purpose is to stop the contractor from using the claims as a method to maximums his profit and cover up his delays. Although it has been shrunk in the past couple of years and effect be the involvement of the Employer in the project.

16) **Question:** What was the role of the Engineer in Project SHJ?

Answer: The only role that the Engineer played SHJ is basically pass correspondents between our party as the contractor and the Employer; aside from that he has done absolutely nothing.

17) **Question:** What is the reason behind the unfair and bias interaction of the Engineer if any were shown?

Answer: Well since the Engineer almost did nothing I can say he was either unfair or biased during the construction stage or when it came to claim management.

18) **Question:** Is there anything you would like to add on?

Answer: I would like to thank you for making this interview with me and considering my humble experience

The interview ended with the last question and SS welcomed any other questions or remarks that the interviewer would like to add.

5.4.4 Comparing the results from both interviews

After conducting the interview with both engineers NA and SS who work as a Project Manager and a Construction Manager in QWE Construction Company. There were many similarities and few differences between the two interviewee which is clarified in Table 9:

Table 9: Comparison between Interviewee 1 and Interviewee 2 in Case 2

Interview questions and inquires	Feedback of Interviewee 1	Feedback of Interviewee 2
If the interviewee have a thorough experience in Project Management in the UAE.	Yes	No
Is familiar with FIDIC contract forms and the clauses and sub-clauses utilized in contracts in the UAE	Yes	Yes
Have obtained certificates that relates to project Management in anyways such as (PMP, MBA, etc...)	Yes	No
Have attended seminars or training sessions for construction and claim management and didn't get the knowledge only through experience	Yes	No
Was very involved in the claim that rose in the project and play a major role in the presentation and negotiations	Yes	Yes

Although there are clear difference in the qualifications of each engineer most notably in the years of experience and self-development but in the case of the claims in project SHJ. It was obviously clear that both engineers have a clear understanding of the situation and what is the correct procedure to be followed. Moreover there are many similarities between the two engineers which shows that they are professionals and are used to work pressures. Both personnel gave similar answers when discussing topic that include claim and record keeping management.

5.5 Data Analysis

After the completion of all the interviews conducted a cross comparison have to be done in order to find out similarities and deduce some generalizations. Moreover the differences have to be noted and further researches to find out the reason for the differences.

5.5.1 Similarities between Interviews

In all interviews the project manager and the construction manager were well-aware of the concept of claim, the different type of claims, causes of claims to the project and were able to deal with the claim that rose in their respective project. In addition to that they agree that the claim formation requires helps from the project manager, construction manager, planning engineer and has be reviewed by a claim specialist; noting that there will be always mistakes and technical errors in the claim even after the intensified reviewing. Sadly all interviewee also agreed that claims were used in the project to cover up for delays caused by the contractor or to increase the profit margin of the project.

They note that all change orders and variation automatically lead to delays and change in the project value. This might lead to problems in the future which by extension will lead to claims to rise in the project. It also shows that most changes occur during the implementation and execution stages of the projects. Changes and variations are beneficial for contractor although might be tiresome and annoying since it required extra work.

All the managers interviewed were very familiar with FIDIC contract and clauses and find that FIDIC contracts are very suitable if used fairly by all parties as it is globally accepted and admitted. In addition to that all interviewee agree that the Engineers part in the project was minimum and almost did nothing or didn't play a major role in claim management and the disputes that occurred. Furthermore they noted that the Engineers are usually biased due to the fact that they are pressure by the Employer and have no real essential value in the project other than for administration, inspections and forwarding correspondents and progress reports to the Employer.

All interviewee stressed on the importance of documentation and record keeping, the need for a new documentation, record keeping and archives system is essential for all the parts included in the construction project. They also stressed on the importance of have quick access to important documents when needed.

5.5.2 Difference between interviews

The difference between the educational level and experience between the interviewee played a role in their respective project claim dispute and how they solved it. The notice for claim was not always given in timely notices as per the clauses of the contract which led to small variations and disputes. Not all interviewee were familiar with the acceleration claim which was present in Project SHJ. In addition to that not

all document were accessed easily and in timely notice and that there was a need for the documentation and record system to be changed as not all manager found it suitable. Another difference that was noticed in the interview was the fact that different personnel deal with verbal instructions in different manners which can lead to different outcomes in the long run.

5.6 Secondary Source Analysis

Since the questionnaire is used as a secondary source of information it will not be elaborated and research in-depth. Although the questionnaire was distributed to around 96 different firms and organizations only 62 respondents were reviewed which was higher than the need goal of 40 respondents. Before discussing the results first few tests need to be shown to determine the reliability, correlation, important and a hypotheses test.

5.6.1 Factor test and reliability Test

In order to make certain that the questionnaire result and values are reliable and test has be conducted. The test to check the reliability of the collected data was done through the usage of Cronbach α that analyses the reliability. The analysis was done using SSPS that does the analysis of the data given. The results are summarized Table 10:

Table 10: Loading Factor and Reliability of the Questionnaire (Cronbach α)

Questionnaire Questions		Loading Factor	Cronbach α
FIDIC and Role of Engineers			
Awareness of FIDIC contracts, clauses and sub-clauses		0.814	0.79
Suitability of the FIDIC contracts for the construction sector in the UAE		0.745	
		0.736	

The Engineer is biased and partial when being involved with disputes and claim management.			
As a contractor the Engineer is partial and unfair when it comes to disputes and claims		0.784	
During the Assessment of the claim, the Engineer role as minimum and didn't contribute directly into the resolution of the claim		0.853	
	Organization, management and Planning for claim management		
Variations and/or change orders are unbeneficial for the project		0.678	0.733
Variations and/or change orders are initiated or requested by the Employer/Engineer		0.665	
Claims lead to disputes, disagreement, friction or hostility between the parties involved in the construction project?		0.761	
The claim/s you have most were most recently involved in were resolute after many negotiations and disagreements		0.710	
The claim/s you have most were most recently involved in were solved after the interference or hiring a claim specialist		0.880	
Variation and change orders lead to the formulation of claims and lead to disputes		0.701	
	Documentation and Record Keeping		
The firm you work for doesn't not have a record or a bad documentation system		0.878	0.805
The documentation system in the organization/ firm you are in is hard to access when it comes to important claim documents		0.839	
Proper documentation system and record keeping prevent and helps with resolving disputes and claim management		0.771	
Claims can be rejected and rights can be lost due to improper record keeping and documentation system		0.730	

As shown in the table above the reliability varies over each category and in between questions within the category. The factors varied from a minimum of a minimum of 0.665 to 0.878 thus some values that are under 0.7 are considered unacceptable. While the overall for each category is over 0.7 thus the category as a whole is considered acceptable. The documentation and record keeping has the highest Cronbach's α and loading factors between all the other categories.

5.6.2 Relative Importance Index (RII)

While Cronbach's α shows the reliability of each question and category, the significance is shown through the relative importance index, standard deviation and mean value. As elaborated in the methodology any value of RII below than 0.7 or a mean average below than 3.5 is considered reject. The RII of each question varied from 0.697 to 0.8 with a RII group average between 0.

Table 11: Mean, SD, RII and Category RII of the Questionnaire Data

Questionnaire Questions	Mean	Standard Deviation	RII	Average RII for the category
FIDIC and Role of Engineers				
Awareness of FIDIC contracts, clauses and sub-clauses	4.065	1.134	0.813	0.736
Suitability of the FIDIC contracts for the construction sector in the UAE	3.903	1.027	0.781	
The Engineer is biased and partial when being involved with disputes and claim management.	3.484	1.292	0.697	
As a contractor the Engineer is partial and unfair when it comes to disputes and claims	3.857	1.301	0.771	
During the Assessment of the claim, the Engineer role as minimum and didn't contribute directly into the resolution of the claim	3.765	1.113	0.753	
Organization, management and Planning for claim management				

Variations and/or change orders are unbeneficial for the project	3.613	1.183	0.723	0.740
Variations and/or change orders are initiated or requested by the Employer/Engineer	3.613	1.210	0.723	
Claims lead to disputes, disagreement, friction or hostility between the parties involved in the construction project?	4.032	0.999	0.806	
The claim/s you have most were most recently involved in were resolute after many negotiations and disagreements	3.548	1.266	0.710	
The claim/s you have most were most recently involved in were solved after the interference or hiring a claim specialist	3.759	1.250	0.752	
Variation and change orders lead to the formulation of claims; and lead to disputes	3.645	1.317	0.729	
Documentation and Record Keeping				
The firm you work for doesn't not have a record or a bad documentation system	3.704	1.271	0.741	0.787
The documentation system in the organization/ firm you are in is hard to access when it comes to important claim documents	4.074	1.120	0.815	
Proper documentation system and record keeping prevent and helps with resolving disputes and claim management	4.000	1.078	0.800	
Claims can be rejected and rights can be lost due to improper record keeping and documentation system	3.963	1.347	0.793	

5.6.3 Pearson Correlation

To obtain the correlation between the three different categories Pearson correlation was obtained through the usage of SPSS. The Significance is dependent on ρ which indicated a very strong significance if the value is less than or equal 0.05. It can be understood that the close the value is to 0.05 the more significant it is. The significance of 10 relationships obtained between the five questions that had the highest RII. The relationship and the values are shown in Table 12:

Table 12: Significant value (Pearson's r)

Questions	Significant Value* ($\frac{\text{Correlation}}{\rho\text{-value}}$)				
Awareness of FIDIC contracts, clauses and sub-clauses	1	--	--	--	--
As a contractor the Engineer is partial and unfair when it comes to disputes and claims	$\frac{0.954}{0}$	1	--	--	--
Suitability of the FIDIC contracts for the construction sector in the UAE	$\frac{0.983}{0}$	$\frac{0.891}{0}$	1	--	--
The documentation system in the organization/ firm you are in is hard to access when it comes to important claim documents	$\frac{0.903}{0.019}$	$\frac{0.762}{0}$	$\frac{0.693}{0}$	1	--
Claims lead to disputes, disagreement, friction or hostility between the parties involved in the construction project	$\frac{0.74}{0}$	$\frac{0.822}{0}$	$\frac{0.439}{0.231}$	$\frac{0.577}{0}$	1

* Correlation is significant at the 0.05 level (2-tailed).

As shown and illustrated in Table 12, some values are rejected as they are not considered Significant which are $\frac{0.903}{0.019}$ and $\frac{0.439}{0.231}$ while most of the other values are considered very significant. Furthermore in general there is a very good correlation between the values and variables tested which is a good indication.

5.6.4 Hypotheses Testing

Hypotheses testing were to test the top three significant correlations found in the relative important test. Each hypotheses has two hypotheses for the test; the first is a null hypothesis (H_0) and the other is an alternative hypothesis (H_1). The three significant correlations.

Provide two hypotheses to be tested which are as follow:

The first hypothesis assuming the following:

H_0 : There is a significant interaction between the awareness of FIDIC contracts and the hostility between parties.

H_1 : There isn't a significant interaction between the awareness of FIDIC contracts and the hostility between parties.

The hypotheses are generated and test via SPSS and the results are shown in the Table 13 also obtained by SPSS:

Table 13: T-test for the first hypotheses (hostility due to claims and awareness of

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig (2-tailed)	Mean Diff	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Scale	Equal variance assumed	0.021	0.886	-0.046	56	0.96	-0.0155	0.3363	-0.689	0.6581
	Equal variance not assumed			-0.046	55	0.96	-0.0155	0.3362	-0.689	0.6583

FIDIC

As the Significance in Levene's method is 0.886 which is larger than 0.05 then the hypotheses is rejected and the t-test is carried out. In the T-test (2-tailed) the value is 0.963 which also rejects the alternative hypotheses thus the result is that the null hypotheses is proven right. As a result hostility between different parties does not have a significant interaction with awareness of FIDIC contract, clauses and sub-clauses.

The second hypothesis assuming the following:

H₀: There is a significant interaction between the record keeping access and the hostility between parties.

H₁: There isn't a significant interaction between the record keeping access and the hostility between parties.

The hypotheses are generated and test via SPSS and the results are shown Table 14 also obtained by SPSS:

Table 14: T-test for the first hypotheses (hostility due to claims and easiness to access record keepings and proper documentation system)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig (2-tailed)	Mean Diff	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Scale	Equal variance assumed	0.172	0.68	0.047	56	0.96	-0.0155	0.3289	-0.674	0.6432
	Equal variance not assumed			0.047	54	0.96	-0.0155	0.3298	-0.677	0.6455

As the Significance in Levene's method is 0.68 which is larger than 0.05 then the hypotheses is rejected and the t-test is carried out. In the T-test (2-tailed) the value is 0.962 which also rejects the alternative hypotheses thus the result is that the null hypotheses is proven right. As a result hostility between different parties does not have a significant interaction with easiness to access the record keeping and a proper documentation system.

At the first glance the results look very odd and unrealistic but after a thorough inspection, the results are very realistic and representative of the real situation. This is because the main object of the construction projects are to make an investment somehow thus the Employer, Engineer and the Contractor are mainly motivated by money. Construction claim is the assertion of an ostensible right by a claimant demanding either additional payment or/and time as a result or circumstance not stated in the contract. As a result the party that loses the claim will have a money deducted from it or a possible chance of addition money that is now denied.

Since it's in human nature to always acquire money, it tackles the moral and ethics of engineers and contractors which greatly vary from an individual to another. Thus the reason behind the values isn't co-relation or mathematical models but basic human nature that is greed and need of money. As a result there awareness of FIDIC and ease of access will not affect the human nature and the relationship is considered insignificant.

5.5.5 Respondents Personal Information

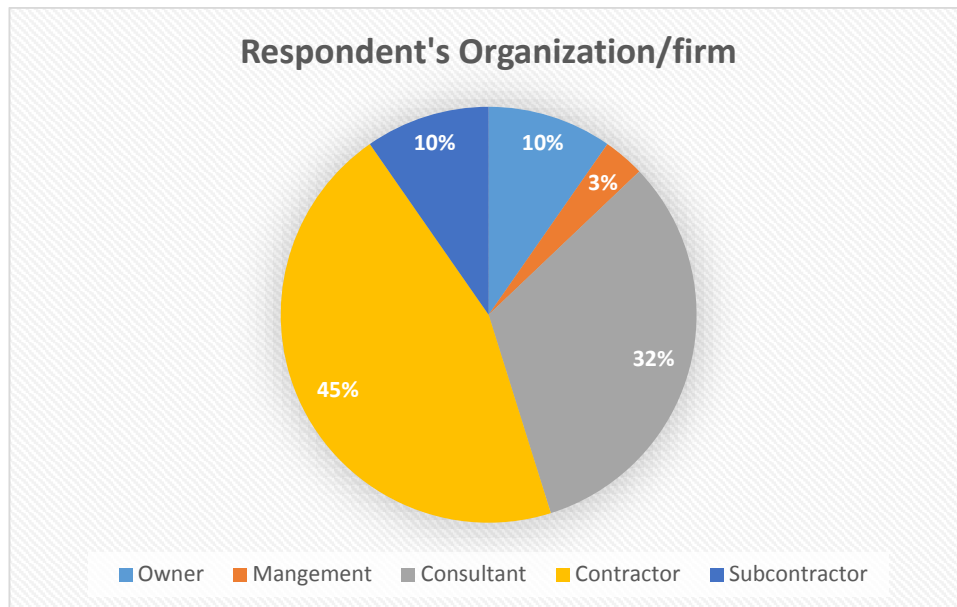


Figure 13: Respondent's Organization/firm

The shows diversity between the firms that are included in the project. Somehow it is a typical distribution as contractors are the most dominant and present firm in the construction market in the UAE and it was the main focus of the research. The second most noticeable amount is the consultant which is somehow predictable. The Owners, Sub-contractors and Management personnel are not as dominant because they are few in the construction sector and they were not mainly directed with the research interest.

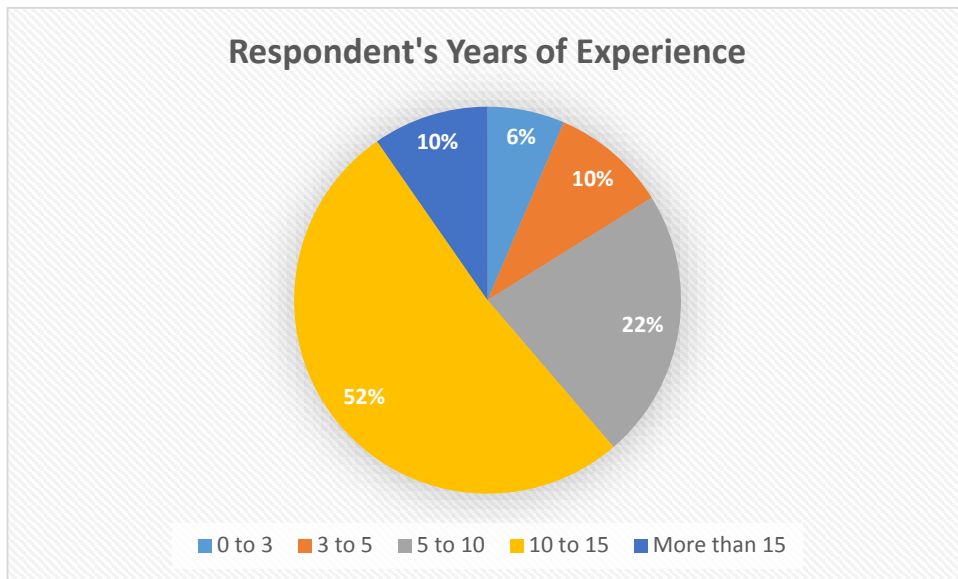


Figure 14: Respondent's Years of Experience

The questionnaire result are encouraging as the majority over 84% of the respondents have at least 5 years of experience. This means that they might have at least the slightest idea or indirect involvement in claim management.

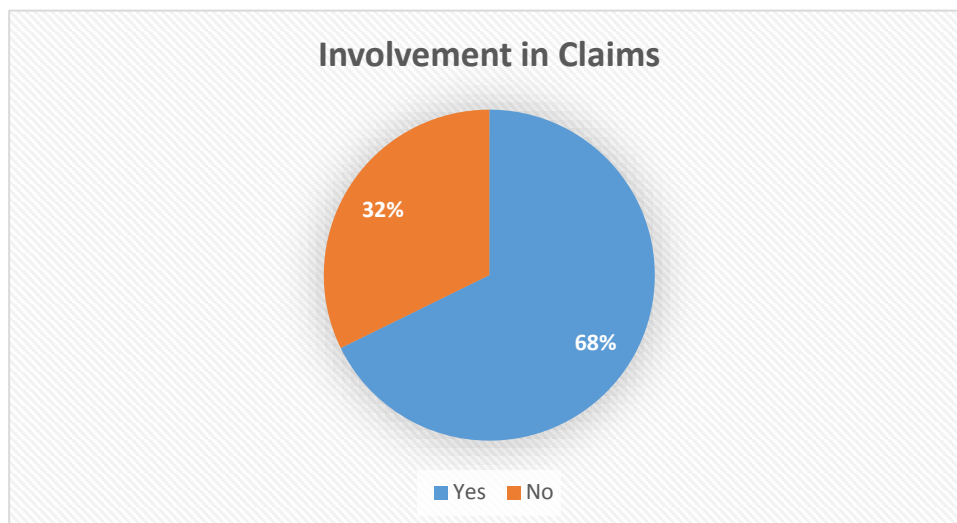


Figure 15: Respondent's Involvement in Claims

This stresses on the point discussed above and is a good indication as roughly 70% of the respondent are directly involved in claims.

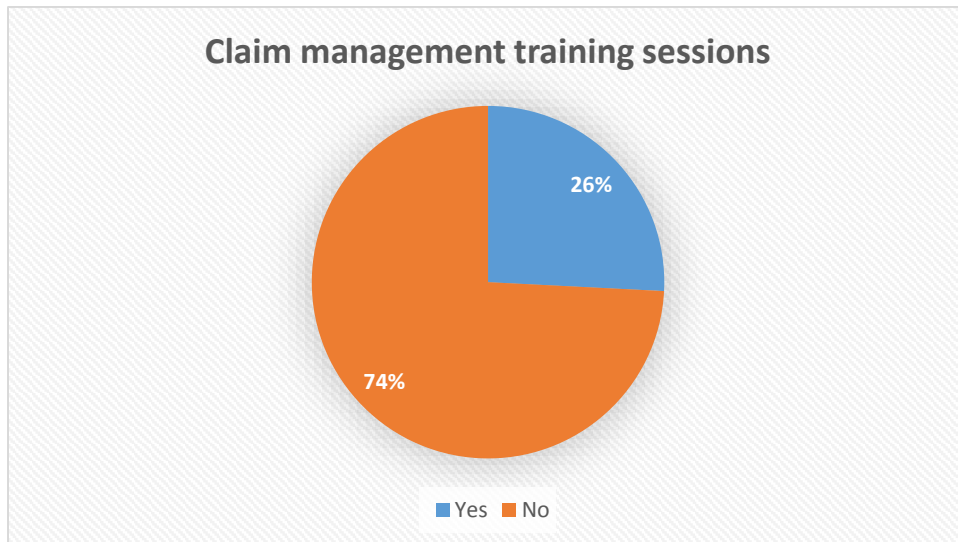


Figure 16: Respondent's whom has obtained claim management courses

This ratio can be considered alarming low as it shows that even though there is a high amount of respondents that are involved in claims but the fact remains that not all have proper understanding of claim management and formulation due to lack of training.

5.6.6 FIDIC Contracts and Role of Engineers

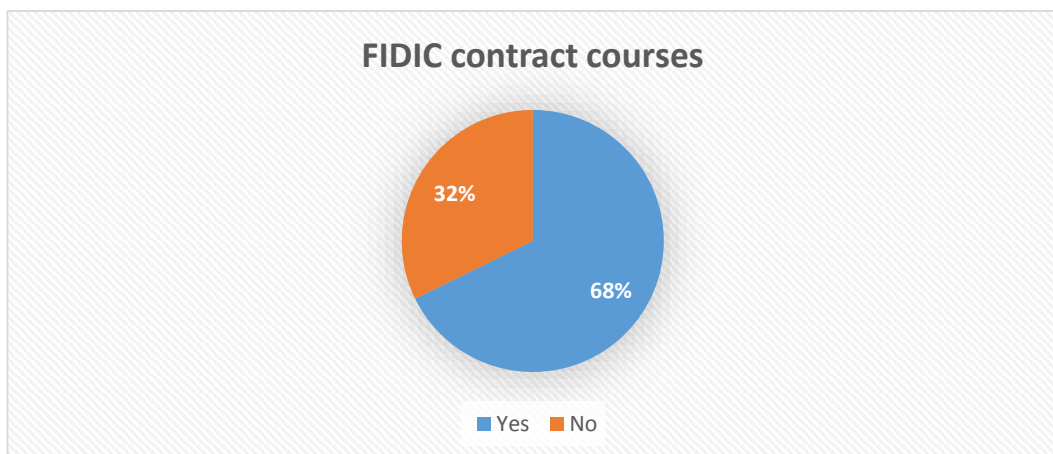


Figure 17: Respondents whom has attended FIDIC contract courses

As shown above most the respondents are well informed in FIDIC contract and its clauses thus they have a general understanding of the contracts that are used in the UAE.

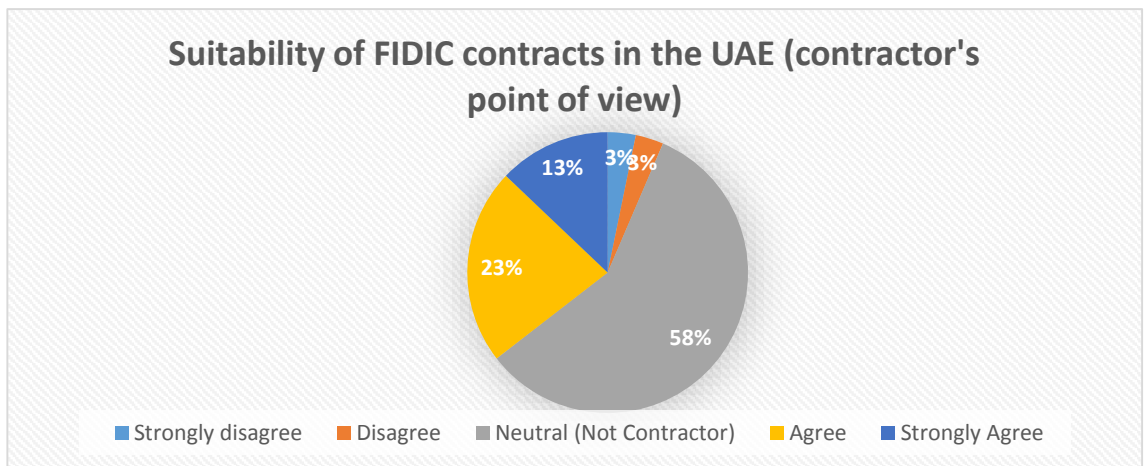


Figure 18: Suitability of FIDIC contracts in the UAE overall responses (contractor's point of view)

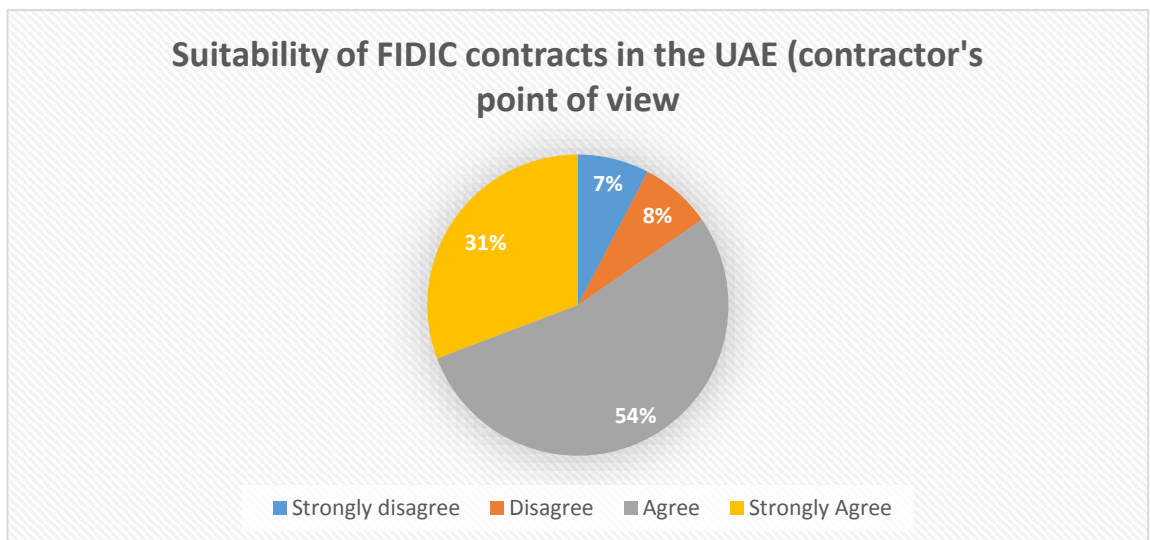


Figure 19: Suitability of FIDIC contracts in the UAE exclusive responses (contractor's point of view)

Figure 18 and Figure 19 show that the FIDIC contracts are suitable for the contract and construction system followed in the United Arab Emirate. This is due to the fact that

most Engineers have worked with FIDIC contracts only and have got accustomed to it as the other forms of contracts outside the FIDIC system are rarely used.

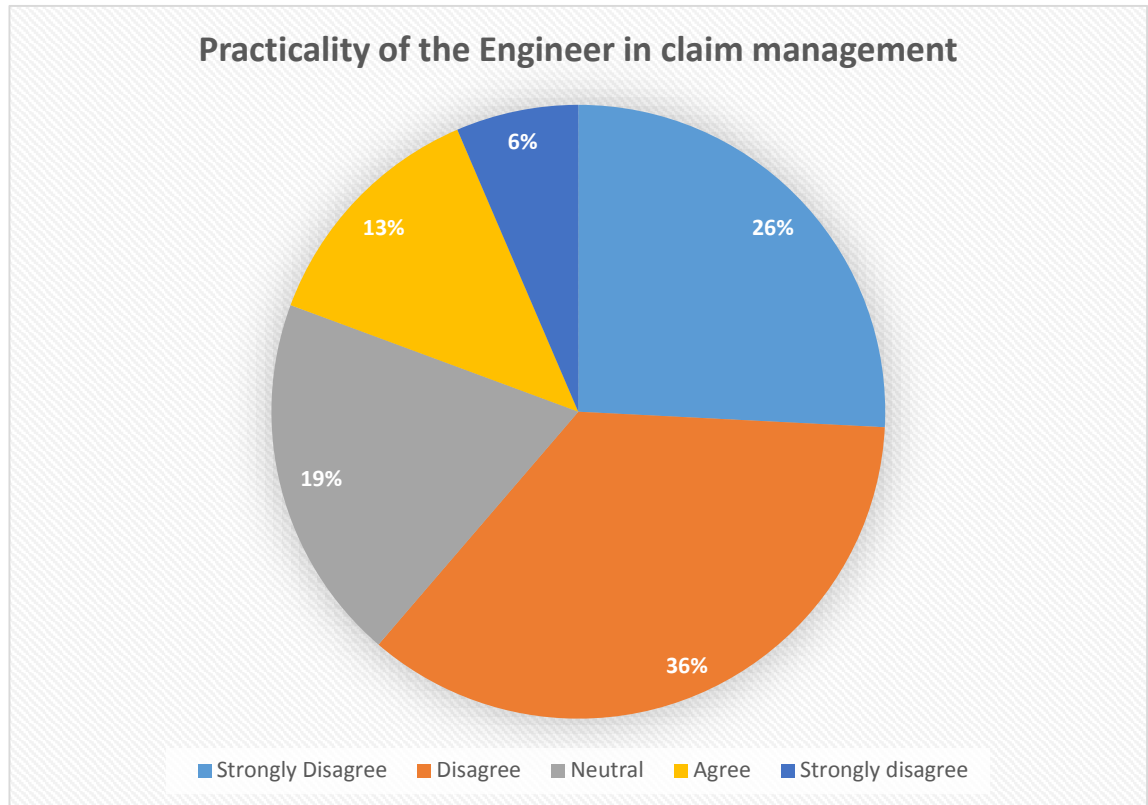


Figure 20: Practicality of Engineer in Claim Management

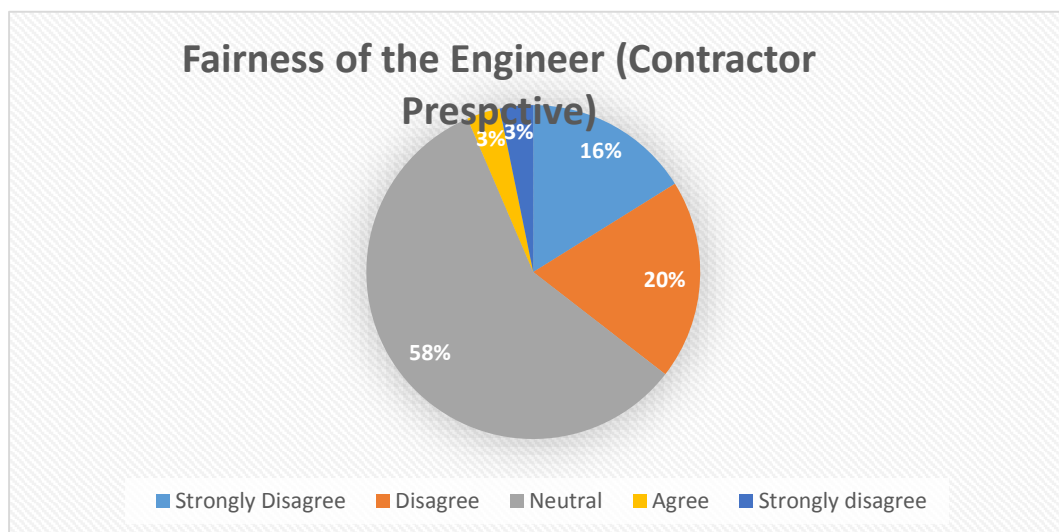


Figure 21: Fairness of the Engineer overall responses (Contractor Perspective)

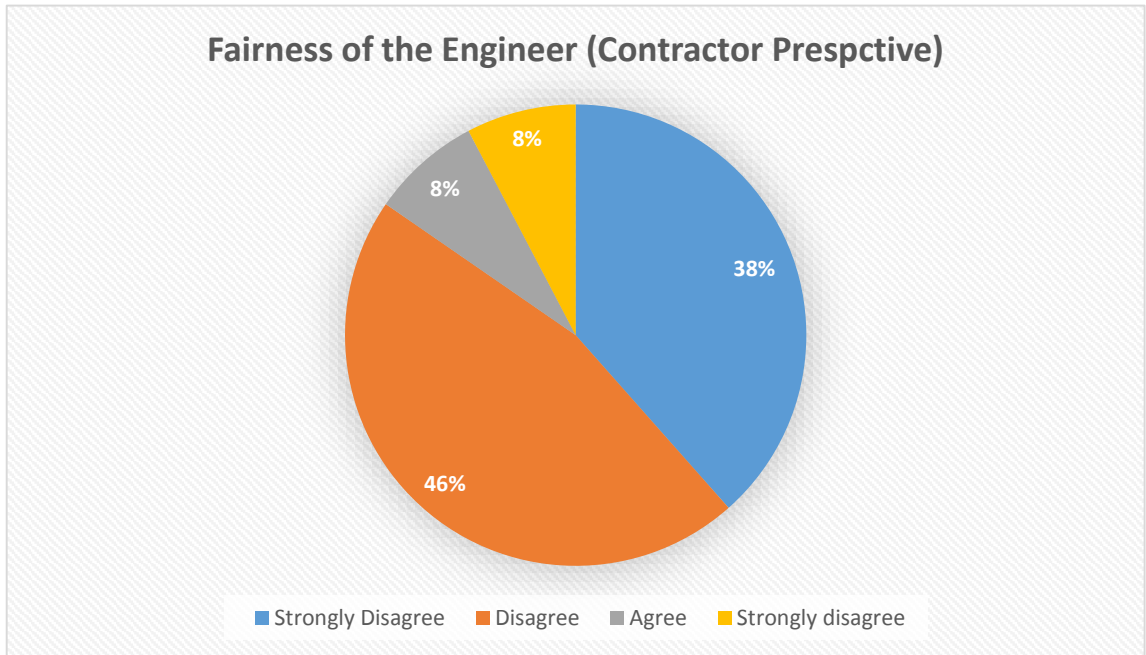


Figure 22: Second Fairness of the Engineer exclusive response (Contractor Perspective)

These specific questions show the dominance of the Employer over the Engineer and how tight is his authority when it comes to claim management and claim evaluation. This also goes to emphasis how the Engineer does not practice fairness and unbiased views in the construction projects.

5.6.7 Claims and Claim Management

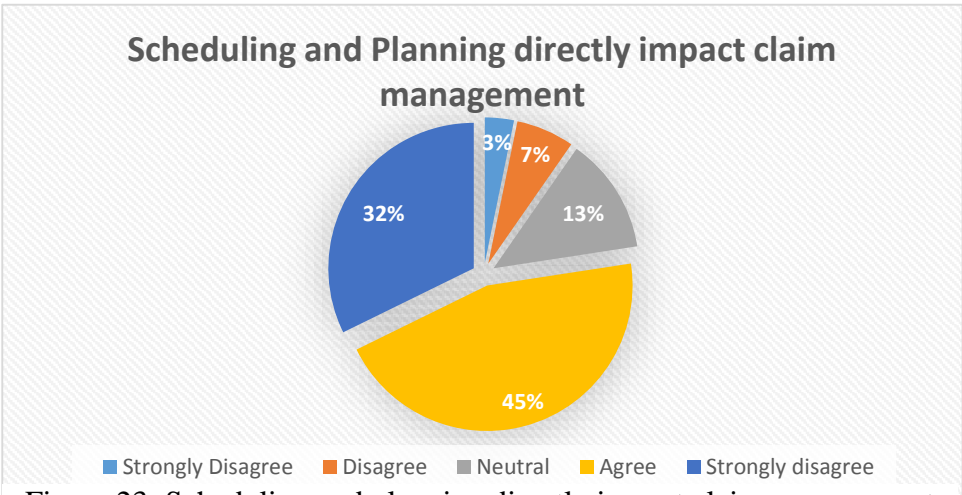


Figure 23: Scheduling and planning directly impact claim management

Figure 23 illustrates the importance of proper planning and scheduling has on a claim dispute. Moreover it shows the direct impact caused by the Planning Department and how essential it is to be involved with the project updates of a regular intervals.

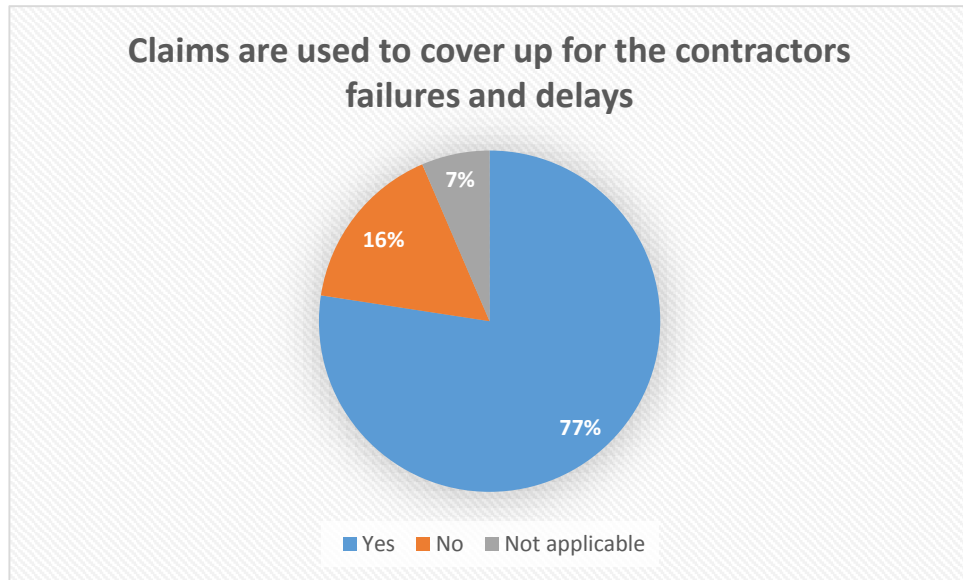


Figure 24: Types of claims in construction projects

It comes in no surprise that EOT and prolongation claims are the most ones that occur at almost equal intervals because they usually come in hand in hand.

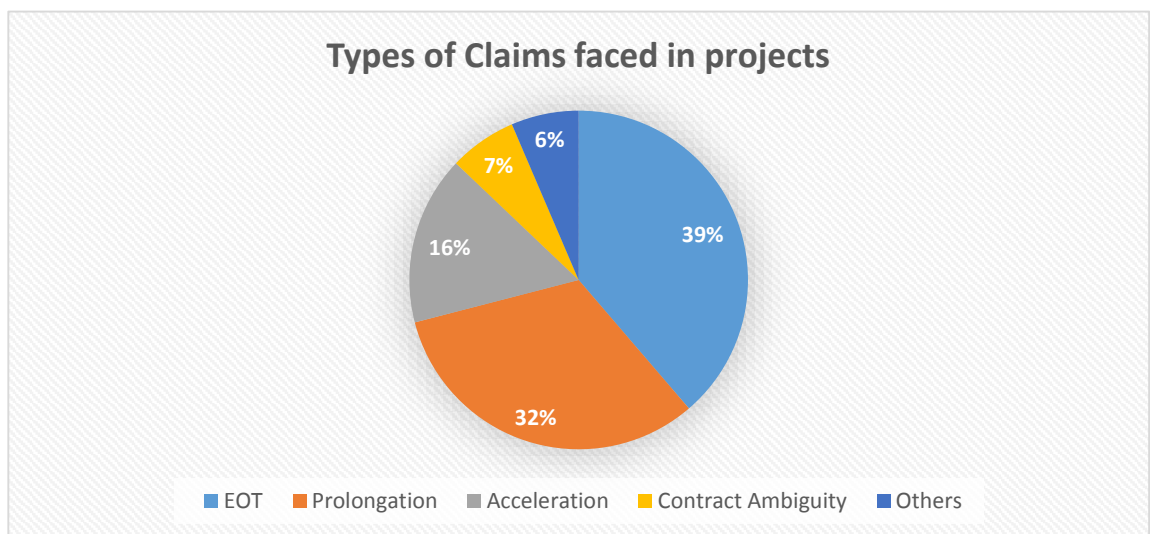


Figure 25: Claims are used to cover up for the contractor's failures and delays

As it has been seen in the case study most of the contracts use claims to turn under budget projects into a profitable ones. While other contractors use claim in a way to cover him for his delays and additional costs during the execution of the project.

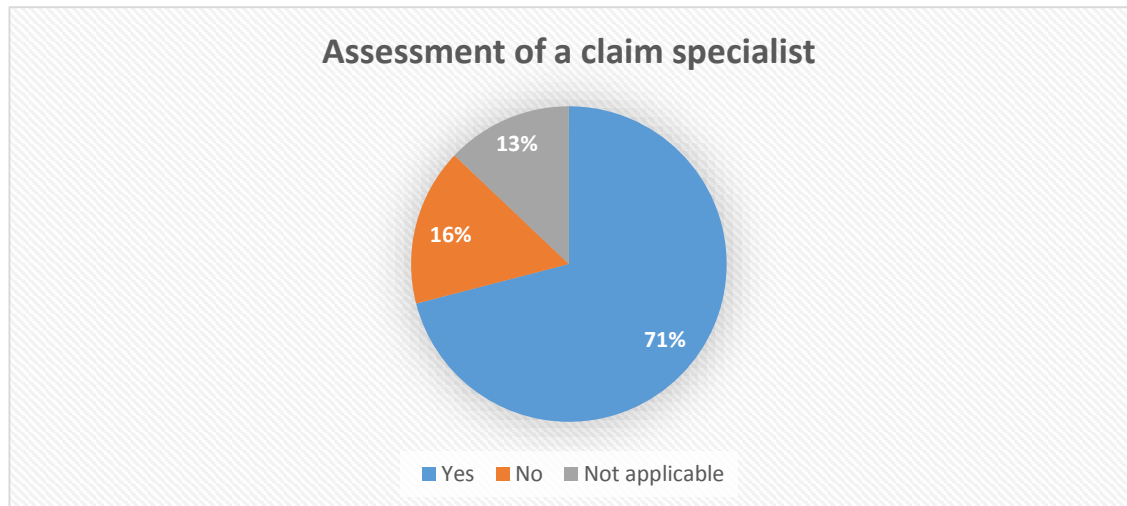


Figure 26: Assessment and help of claim specialist

Most parties hire claim specialist because many claims get rejected due to simple mistake and technical errors. The claim specialist have experience with claim management thus help the party avoid such denials.

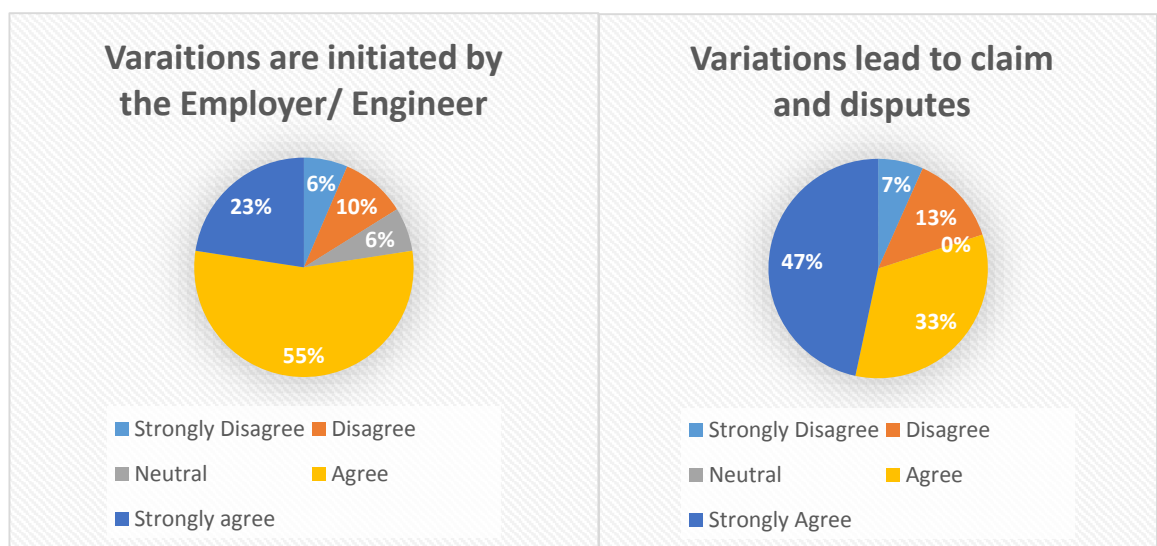


Figure 27: Variations are initiated by the Employer/ Engineer

Almost all of the different parties involved believe that the number one reason for variations and change orders is the Employer or his representative. Also most of the parties believe the claims occur mainly due to variation orders requested by the Employer.

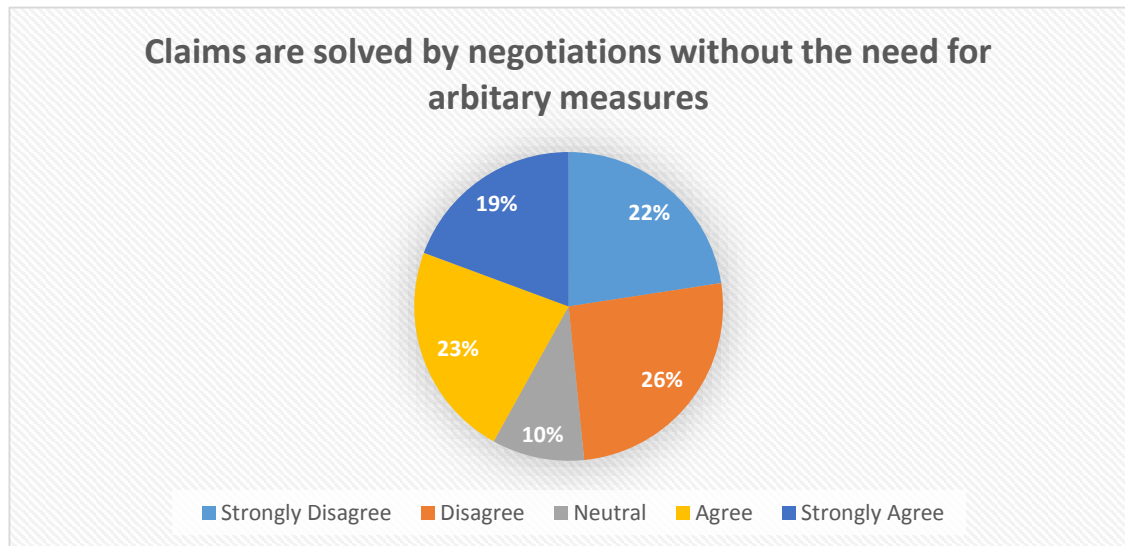


Figure 28: Claim solved by negotiation or arbitrary measures

This shows the claim disputes do not follow a certain system as that different types of processes are formed for solving the disputes. Since they are various and different each method has its advantages and disadvantages which mainly focus on time taken to solve the claim and the costliness of the method used.

5.6.8 Record keeping and documentations

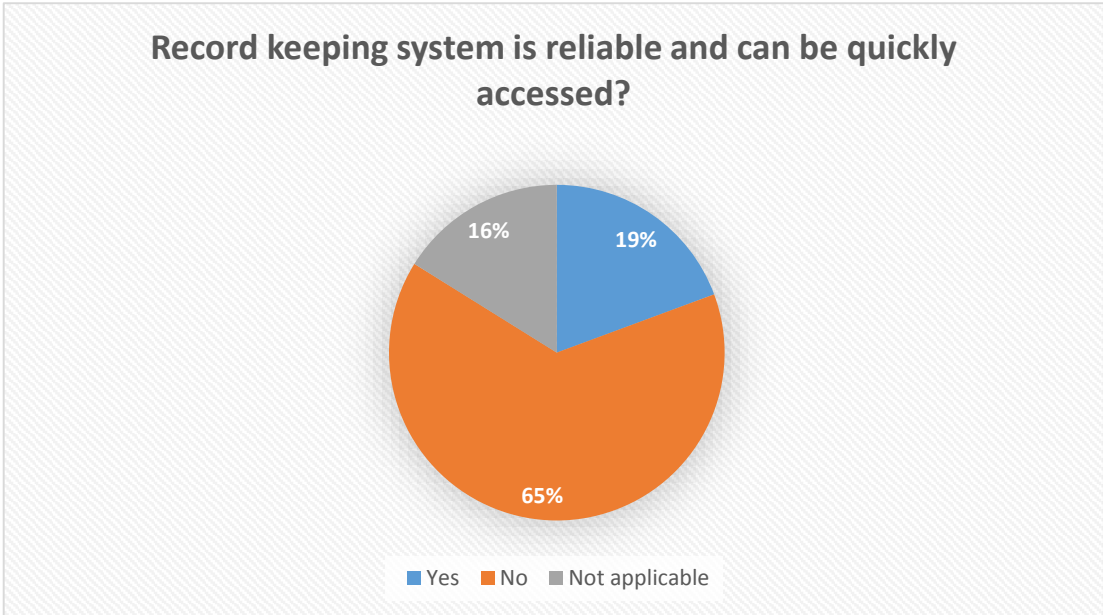


Figure 29: Documentation and Record Keeping system inquires

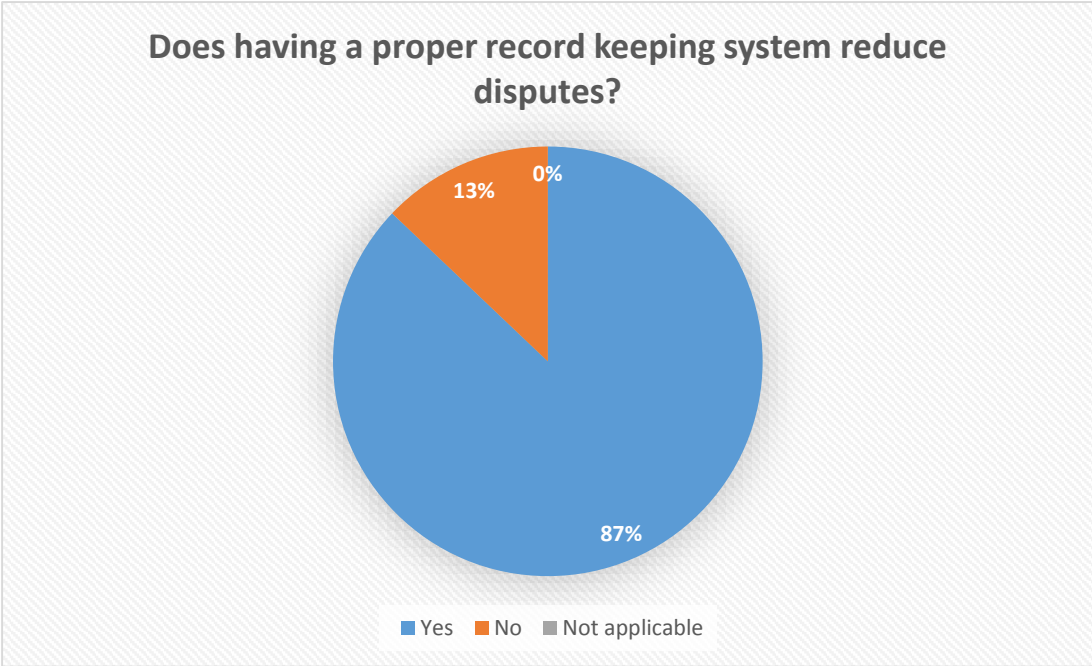


Figure 30: Impact of record keeping on claims

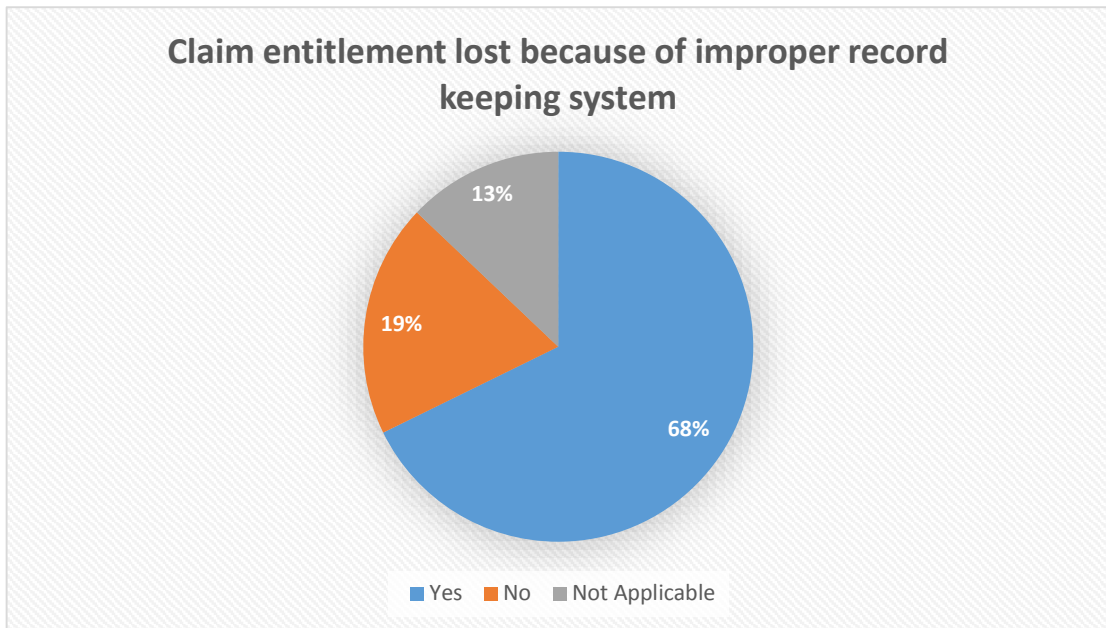


Figure 31: Claim entitlement lost because of improper record keeping system

Figure 29, Figure 30 and Figure 31 show the impact record keeping system has on all the parties' involved in construction project. It is given that the record keeping system can be considered a fundamental in most companies and is most definitely essential in all construction projects. It goes without saying that the current systems need to be upgrade and the companies without one need to invest in a record keeping system.

5.7 Summary

As explained earlier in the introduction the analysis of the cases studies done will under the following procedure: categorizing information, identifying patterns and connection between the identified categorizes, interpretation of data through cutting and sorting and lastly by making a choice after considering all the possible alternative. The same procedure was followed and the outcomes obtain is as follow:

- 1- All contractors understand the nature of the contract and the regulation followed through the FIDIC contract and clauses.
- 2- Contractors have general understanding of the nature of claims, different types of claims and causes and effect of claims.

- 3- For a claim formulation the project manager, construction manager along with the assistance of the planning department and claims specialist are needed to avoid errors and technical problems that might cause the claim to be reject.
- 4- Although variations and change orders are usually beneficial to the contractor, they consider it the most tiresome.
- 5- Engineers were found to be almost biased and practice partiality in most of the projects and have little impact in claim resolution and negotiations.
- 6- Record keeping and documentation systems were emphasized to be essential and fundamental factor in claim management.

While the secondary source of data was the questionnaire and the answers used by the respondents gave similar results and outcomes after analysis but no connection was made between different factors of claims such as better record keeping will reduce hostility or awareness of FIDIC regulations will reduce hostility. General indication was done from the answers obtain by the respondents of the questionnaire distributed which was used to compare to the data obtained from the interviews conducted regarding claim management.

After studying all the above data, result and outputs it was necessary to find solutions for the claim management in the UAE's construction industry. Using the main causes illustrated in chapter 3, Figure 32 was developed as to list the factors required to avoid claims and find solution if disputes occur. The flow chart is shown in Figure 32 below:

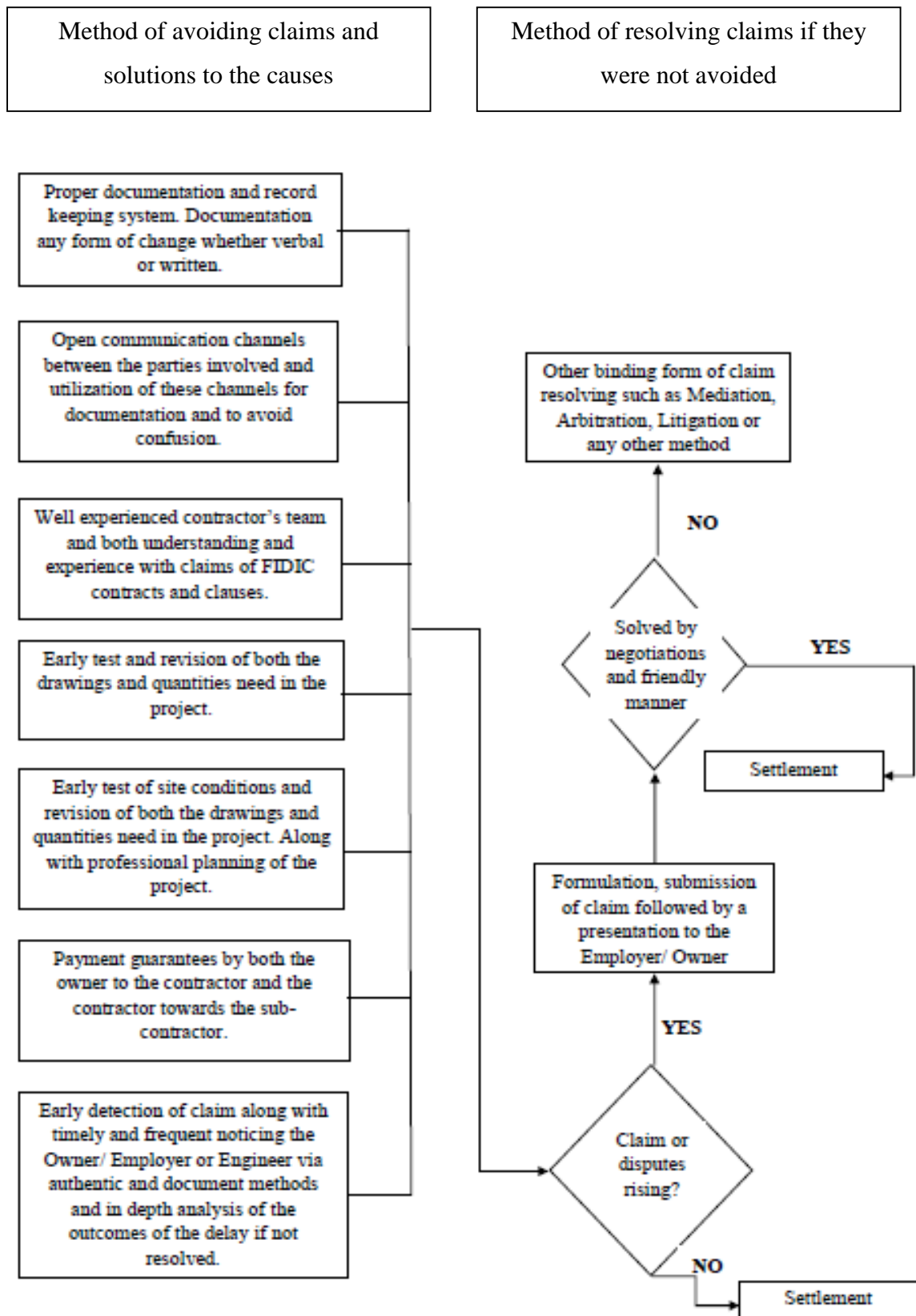


Figure 32: Claim management framework for the UAE construction Industry

Chapter 6

CONCLUSION AND RECOMMENDATION

In the beginning the problem was first defined with the objectives and aims of the research which was followed by an in-depth study of the previous research, studies and scholars view of the claim management and related topics. After understanding the present problem and available resources a brief analysis was done on the UAE industry and the required assessment method that will be followed. After choosing the methodology for data collection and analysis along with the assessment method; the data was analyzed as described in the methodology while understanding and deducting generalizations regarding the problems at hand and testing them through a statistical assessment.

The research outcomes have been obtained after analyzing the literature review, case studies and the questionnaire. The case study was the most fundamental part which focus on drawing the conclusion while the questionnaire refined that.

6.1 Conclusions

The outcomes of the research are listed below:

- ✓ Most of the personnel directly involved with claims do not have proper training in that field but compromise with experience. Although experience is enough but claims are very complex and intense topic that required in-depth understanding of the natures of claims.

- ✓ FIDIC contract forms are the typical and most common type of contracts between the Employer and Contractor used in the UAE but not all the clauses are comprehended by all parties while other clauses are ignored for the benefit and dominance of one party over the other.
- ✓ The construction contracts terms and conditions should have slight interference from the government binding few clauses and modifying other to guarantee the entitlements of the rights of all the parties involved.
- ✓ The engineers have minimal role in claim management and disputes as they are dominated by the Employer. Furthermore the Engineer does not show fairness and impartial to the Contractor because of his relationship with the Employer.
- ✓ Since in most cases the owner seems to be directly involved in the project especially in the UAE, it leads to many variations as it is a must to make a limit to the number of variations submitted on timely basis or per request. Moreover the Employer has to submit the variations via the Engineer and not directly to the contractor.
- ✓ There is a very high dependency on a 3rd party which specializes in claims in order to avoid the claim being redeemed improperly or rejected due to minor mistake and technical errors. This also shows that the project managers do not have full comprehension of claims and how to deal with them.
- ✓ Settlement of claim can take time and might cause financial problems to some companies. Moreover this impact will be worsened if negotiation failed and arbitrary methods and mechanism are followed.
- ✓ Contractors find claims beneficial as it can be used to cover up for their delays and turn an under budget project into a highly profitable one.

- ✓ Documentation and record keeping system are not developed which could lead to delays in claims to be resolved due to disappearances of important papers. Also some companies have a system that requires time and cannot be easily accessed by the individuals directly involved with the claim. While other companies do not have a proper record keeping system which leads to loss of entitlement due to lack of important documents and proofs.

In summary the achieved objectives are:

- ✓ Understand the nature and types of the claims faced in the UAEs' construction industry.
- ✓ Figure the causes that lead to claims and the subsequent effects and impact claims have.
- ✓ Comprehend the role of Contractor, Engineer and Owner in claim management and disputes.
- ✓ Methodology of claim resolution and the possible alternatives.
- ✓ Study the present data regarding claim management in the UAE and related to the literature review.

6.2 Recommendation for Future Researches

The research could be improved by considering the ignored factor in claim management and disputes. In other words, consideration of the Employer and Engineer need to be considered and the claim management perspective need to be elaborated. Another improvement that can be made is to see the perspective of claim specialist and how do they deal with claims. Moreover their opinion as in what's the correct method and procedure of submitting a claim and negotiating can

be explained and demonstrated. Furthermore the role of the government should be considered and its impact of the claims.

Since most of the mega-projects in the UAE are under the government administration taking a different approach and considering the public construction projects and how disputes does occur between private companies and government agencies in the construction industry. It is necessary to understand the causes of claims in governmental projects, how claims against government agencies are formed and submitted. More elaboration and in depth analysis of the questionnaire can be done in order to understand the situation in the construction sector after expanding it and taking more respondents from all over the UAE.

REFERENCES

- Abd El-Razek, M., Bassioni H., & Abd El-Salam, W. (2007). *Investigation into the causes of claims in Egyptian building construction.*
- AGCAS, (2008). Construction overview, accessed from: *Association of Graduate Careers Advisory Services (AGCAS)*. Arain F.M., & Pheng L.S. (2005). *The potential effects of variation orders on institutional building rejects.* Journal of National University of Singapore.
- Awad M., (2001). *Analysis and management of change orders for combined sewer flow construction projects*, Unpublished Dissertation, Wayne State University.
- Bin, A.A. (2008). *Causes and steps to minimize variations in construction projects, unpublished Master thesis*, University of Technology Malaysia.
- Bu-Bshait, K., & Manzanera, I. (1990). *Claim Management*. Butter worth Heinemann Ltd.
- Chappell, D., Powell-Smith, V., & Sims, J. (2005). *Building Contract Claims. 4th Edition: Blackwell Publishing Ltd.*
- Chappell, D., (2011). *Building Contract Claims. 5th Edition: Blackwell Publishing Ltd.*

Cheung, S. (1999). Critical factors affecting the use of alternative dispute resolution processes in construction. *International Journal of Project Management*.

Corbett, E., (1991). *Is the NEC going to succeed? An examination of the engineering and construction contract (Alias the NEC 2nd Ed.)*. The international Construction Law review.

FIDIC (1999). *Conditions of Contract for construction*.

Gebken, R. (2006), *Quantification of transactional disputes resolution costs for the U.S. construction industry*, University of Texas.

Gebken R., & Gibson, E. (2006). Qualification of costs for disputes resolution procedures in the construction industry. *Journal of Professional Issues in Engineering Education and Practice*.

Gibson, R. (2008). *Construction Delays Extensions of time and prolongation claims*. Published by Taylor & Francis Group.

Greenstreet, B., Greenstreet K., & Schermer, B. (2005). *Law and practice for architects*. 1st Edition: Architectural Press and imprint of Elsevier.

Harris, A., & Scott S. (2004). *UK practice in dealing with claims for delay*. Engineering Construction and Architectural Management.

- Hegazy S. (2011). *Causes of Delay Claims in UAE construction projects and the effect in Choosing delay analysis methodology.*
- Hegazy S. (2012). *Delay Analysis Methodology in the UAE construction project Delay claim.* literature review.
- Hughes G., & Barber, J. (1992). *Building and civil engineering claims in perspective.* 3rd Edition: Longman scientific & technical.
- Hwang, B., & Low. L. (2011). Construction project change management in Singapore: Status, importance and impact. *International Journal of Project Management.*
- Ibbs W., Nguyen, L., & Lee, S. (2007). Quantified impacts of projects change. *Journal of Professional Issue in the Engineering Education and Project.*
- Ingram, P. (2004). *The importance of maintaining adequate records for prolongation claims.* Surveyors Times.
- Itani, H. (2009). *The consequences of belated determination of extension claims under FIDIC contracts.* Cost Engineer.
- Kartam, N., & Kartam, S. (2001). *Risk and its management in the Kuwaiti construction industry: a contractor's perspective.*

Kumaraswamy, M. (1997). *Common categories and causes of construction claims*. Construction Law Journal.

Kumaraswamy, M. (1997). *Conflicts, claims and disputes in construction Engineering*. Construction and Architectural Management.

Kumaraswamy, M., & Yogeswaran, K. (2001). Substantiation and assessment of claims for extensions of time.

Lancaster, G. (2005). *Research Methods in Management a concise introduction to research in management and business consultancy*.

Lihong, L. (2011). *Study on the present condition of construction claims and counter measures*.

London K., & McGeorge, D. (2008). *Dispute avoidance and resolution: A literature review*.

McDonald, P. (1994). *Construction claims costing for owner and contractors*.

Moazzami, M., Dehghan, E., & Ruwanpura, J. (2011). *Contractual Risks in Fast-track projects*.

Molly, K. (2007). *Six steps for successful change order management. Cost Engineering*.

Monsey, A. (1993). *Estimating Construction Claims- A different problem*. AACE
International Transactions.

Moselhi, O., Assem, I., & El-Rayes K. (2005). Change orders impact on labor
Productivity. *Journal of Construction Engineering and Management*
ASCE.

Ndekugri, I., & Braimah, N. (2007). Factors influencing the selection of delays
analysis methodologies. *International Journal of Project Management*.

Ndekugri, I., & Hughes, W. (2007). The engineer under FIDIC's conditions for
contract for construction. *Construction Management and Economics*.

Nelso D., (2011). *The Analysis and Valuation of Disruption, senior vice president*
& regional Managing director.

Project Management Institute, (2008). *A guide to the project management body of*
knowledge.

Ren, Z., Anumba, G., & Ugwu, O. (2001). *Construction claims management:*
towards an agent-based approached. *Engineering, Construction and*
Architectural Management.

Reynolds, W., & Fisks, F. (2010). *Construction Project Administration*. ASCE
International Transactions.

Riberio, R. (1996). *Engineering Contract*. 1st Edition: Butterworth Heinemann.

Thomas, R. (2001). *Construction Contract Claims*. 2nd Edition: Palgrave
Houndmills, Basingstoke and Hampshire.

Tuner, B., & Solicitors, C. (1995). *Contractual and practical aspects of
managing in construction project.*

White, C. (2005). *Strategic Management*. 1st Edition: Published by Palgrave
Macmillan.

Williams, T. (2003). Assessing Extension of time delays on major Project.
International Journal of Project Management.

Winkler, G., & Chiumento, G. (2009). *Construction Administration for
Architects*. 1st edition: McGraw Hill Companies, Inc.

Wood, R. (2006). *Budding and Civil Engineering Claims*. The estates Gazette
Limited, London.

Yin, R. (2003). *Case Study Research: Design and Methods*. 3rd edition: Applied
Social Research Methods Series Vol. 5 Sage Publications.

Yin, R. (2011). *Qualitative Research from Start to Finish*. 1st edition: Published
by The Guilford Press.

Yitmen, I., Sevay, H., Taneri, C., & Yalciner, H. (2011). An expert system for quantifying the impact of change orders on project performance. *Joint International Conference on Computing and Decision Making in Civil and Building Engineering*. Montréal, Canada.

Zubaida, N. (2012). *Claims Management and Substantiation in the United Arab Emirates Construction Sector*.

Zaneldin, E. (2006). Construction claims in United Arab Emirates: Types, causes, and frequency. *International Journal of Project Management*.

Zaneldin, K (2005). Aoa-Based Modelling and Simulation of Construction Operations. *International Journal of Simulation Modelling* 4(4), 184 – 195.

APPENDIX

Appendix A: Research Questions

A- General Information Questions		
1-	Type of firm/ organization you're working with	<ul style="list-style-type: none"> ○ Owner ○ Management ○ Consultant ○ Contractor ○ Subcontractor ○ Other/ please specify
2-	What is the area of specialty of the project you worked on	<ul style="list-style-type: none"> ○ Construction ○ Transportation ○ Infrastructure ○ Management ○ Others, please specify
3-	Your position in the organization/company?	<ul style="list-style-type: none"> ○ Company/organization Manager ○ Project Manager ○ Planning Engineer/ Designer ○ Senior Engineer ○ Site Engineer
4-	The city where you most recent project or current project is	<ul style="list-style-type: none"> ○ Abu Dhabi ○ Dubai ○ Sharjah ○ Ajman ○ Other, please specify
5-	Years of experience in the construction industry	<ul style="list-style-type: none"> ○ 0-3 ○ 3-5 ○ 5-10 ○ 10-15 ○ More than 15 years
6-	Your recently project price?	<ul style="list-style-type: none"> ○ Below 0.5 Million AED ○ 0.5 -5 Million AED ○ 5 -10 Million AED ○ 10 -50 Million AED ○ Over 50 Million AED

7-	Do you have a certificate that shows understanding of project management?	<input type="radio"/> Yes <input type="radio"/> No
8-	Are you one of the involved personnel in claim management in your previous or current project?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not applicable
9-	What is the most type of claim that you have encountered in the UAE's construction industry?	<input type="radio"/> Extension of Time Claims <input type="radio"/> Prolongation Claims <input type="radio"/> Acceleration Claim <input type="radio"/> Contract ambiguity claims <input type="radio"/> Other/ please specify
10-	How many claims were you involved with during your career	<input type="radio"/> 0 - 5 <input type="radio"/> 5-15 <input type="radio"/> 15-30 <input type="radio"/> 31+
11	Did you take courses and or training session in regards of claim management?	<input type="radio"/> Yes <input type="radio"/> No
12-	Did you take course, training session or attend seminars with relevance to FIDIC contract or clauses claims	<input type="radio"/> Yes <input type="radio"/> No
B- Questions Regarding the Role of the Engineer and FIDIC contracts		
13-	You are will-aware with FIDIC contract, clauses and sub-clauses	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
14 -	FIDIC contracts that are currently used in the UAE are very suitable for the construction sector from the contractor's point of view	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral/ Not a contractor <input type="radio"/> Agree <input type="radio"/> Strongly Agree
15-	FIDIC contracts that are currently used in the UAE are very suitable for the construction sector from the engineer/owner point of view	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral/ Not a contractor <input type="radio"/> Agree

		<ul style="list-style-type: none"> ○ Strongly Agree
16-	The Engineer solves claims and disputes between different parties involved in the project in a professional and impartial manner	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Neutral ○ Agree ○ Strongly Agree
17-	The Engineer is unfair, biased or impartial with the contractors' demands. From the contracts point of view	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Neutral/ Not a contractor ○ Agree ○ Strongly Agree
18-	During the negotiation or assessment of the claim engineer was being fair and impartial with a you as a contractor	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Neutral/ Not a contractor ○ Agree ○ Strongly Agree
19-	During the negotiation or assessment of the claim engineer was being fair and impartial with a you as a Employer/ Owner	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Neutral/ Not a contractor ○ Agree ○ Strongly Agree
20-	As an engineer, what hardships do you find during disputes and claims	
C- Questions of organization, management and planning for a claim		
21-	Scheduling and Planning of the constructions baselines and milestones, will have a direct impact and link to claims	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Uncertain ○ Agree ○ Strongly Agree
22-	Do you think Regular Meeting can minimize the claims?	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Uncertain ○ Agree

		<ul style="list-style-type: none"> ○ Strongly Agree
23-	How often should check up meeting be held	<ul style="list-style-type: none"> ○ Daily ○ Weekly ○ every 2weeks ○ Monthly ○ Irregular intervals whenever the need arise
24-	The claims in your project were resulted due to the delay of your organization and are used to cover any kind of delay or ask for an extension of time	<ul style="list-style-type: none"> ○ Yes ○ No ○ Not applicable
25-	Is you company or firm dependent on a 3 rd party when it comes to claim formation and/or claim evaluation before submitting the claim documents?	<ul style="list-style-type: none"> ○ Yes ○ No ○ No Applicable
D- Questions regarding effect of change on claim management		
26-	Were variation and change orders beneficial to the project you were most recently or current working on?	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Uncertain ○ Agree ○ Strongly Agree
27-	Changes / change orders are initiated or requested by Employer/ Engineer	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Uncertain ○ Agree ○ Strongly Agree
28-	What type of claim did your most recent or current project face? (More than one choice can be selected)	<ul style="list-style-type: none"> ○ Extension of Time Claims ○ Prolongation Claims ○ Acceleration Claim ○ Contract ambiguity claims ○ Other/ please specify
29-	Claims lead to disputes, disagreement, friction or hostility between the parties involved in the construction project?	<ul style="list-style-type: none"> ○ Strongly Disagree ○ Disagree ○ Uncertain ○ Agree ○ Strongly Agree

30	The claim/s you have most were most recently involved in were solved in a professional manner between the parties involved without the need of involvement of specialist or court issues.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Uncertain <input type="radio"/> Agree <input type="radio"/> Strongly Agree
31	If you were involved in a claim that reach the court how long was did it take to be solved?	<input type="radio"/> 0-3 months <input type="radio"/> 3-6 months <input type="radio"/> 6-9 months <input type="radio"/> 9-12 months <input type="radio"/> More than a year
32	The value of the most recent claim you have been involved with is	<input type="radio"/> less than 100,000 AED <input type="radio"/> 100,000 - 250,000 AED <input type="radio"/> 250,000 - 500, 000 AED <input type="radio"/> 500, 000 - 1,000,000 AED <input type="radio"/> More than 1,000,000 AED
33-	Variations and change orders have a direct relationship with claims and dispute?	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Uncertain <input type="radio"/> Agree <input type="radio"/> Strongly Agree
E-Documentation in claim management:		
34-	Is there a record keeping system that documents all correspondence that have been issued and received in the project you worked on?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable
35-	Are the archives and documentation systems easily accessed as anytime and are the document reserved and saved in a professional manner?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable
36-	Do you think you company needs to upgrade the documentation and record keeping system to one that would be more efficient?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable
37-	Do you think that all parties involved in the construction project require to have a documentation and record keeping system	<input type="radio"/> Yes <input type="radio"/> Not <input type="radio"/> Not Applicable
38	Do you feel that proper documents and record keeping systems can reduce claim numbers and help solving disputes	<input type="radio"/> Yes <input type="radio"/> No

		<input type="radio"/> Not Applicable
39	Have you lost your entitlement to a claim due to improper documentation and record keeping system	<input type="radio"/> Yes <input type="radio"/> Not <input type="radio"/> Not Applicable