Sudan University of Science and Technology
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A study on Causes and Management of Claims in the Sudanese Construction Industry

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الإستهلال

قال تعالي :

{ فَاسْأَلُوا أَهْلَ الذِّكْرِ إِنْ كُنْتُمْ لَا تَعْلَمُونَ }

صدق الله العظيم

[النحل: 43]

Dedication

I dedicate my work to all those who have stood beside me and they are…

My Grandmother Gamer...

Who enhance spirit of patience and tolerance.

My Parents Mohamed Elfatih ALI and Salma Bushra...

Who have been a source of motivation and inspiration over all my life.

My beloved husband Abdalrahman...

For his constant moral support, love and encouragement during my studies.

And my precious daughter Gamer...

Whose joy and laughter lightened my burden immeasurably when the going got tough!

My brothers Khalid, Amin, Mamoun…

For their love, Constant attention and continued support to me throughout my life.

My Dearest Friend Mushtaha…

I would also like to dedicate my work to my dear friend for just being there with me whenever I need her help….

Azza Mohamed Elfatih

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My gratitude is further extended to my colleagues in Dams Implementation Unit for their constant support and understanding through the duration of my studies. The years of experience gained under them provided me with valuable insight into the works of project management and helped me greatly.

Abstract

Most of the construction companies in Sudan face many of constraints which are, negatively, affect the performance of projects. Such constraints have direct effect on the cost and time factors of the project. Independent of the constraints perceived, the difficulties in completing projects on a timely manner lead contractors to formulate claims to maintain their contractual rights they always attempt to avoid penalties specified in the contracts.

This research aims at develop claims management system which can be used by contractors to ensure that their claims were substantiated adequately. To gain a better understanding of claims, types of claims and factors to be reviewed in an attempt to enable contractors the necessary knowledge of the elements of success and elements of failure in claims management.

Certain research questions have been raised from the main conceptual framework and literature related to claims management and substantiation, these questions are as follows:

- What is the concept of claims and why do they need to be managed mainly by the Contractor in the construction industry?
- What are the shortcomings of the current claims management practices?
- What critical success factors which can contribute to the improvement of claims management, confirmation and presentation?
- What are the elements of well-structured claims management?
- What are the advisable recommendations for avoiding claims arising from insufficient plans and specifications?

The research hypothesizes were limited to some points which are Claims are common in the construction industry in Sudan, Having good contract clauses could

minimize claims and disputes and the contract parties always are flexible and tend to solve their claims amicably.

The data of the research was collected from the research population was held with professionals working in construction organizations and who were directly involved in claims area such as a group of construction companies, a group of engineers and site managers in Khartoum State. A questionnaire tool was adopted to obtain the data needed for the research.

The study concluded the necessary elements which construction firms need to take into consideration when formulating their claims. The managerial aspect was the focus of the study rather than the legal aspect.

Some of the findings revealed in this research were the importance of records keeping, formal notifications and significance of change and change orders in the context of claims management and other key aspects relevant to the field of claims management and substantiation.

المستخلص

تواجه العديد من شركات الإنشاءات العاملة في السودان قيوداً تؤثر سلباً على تنفيذها للمشاريع وتؤثر هذه القيود مباشرة في عاملي الوقت وتكلفة المشروع ، علاوة على القيود المرئية فإن المصاعب في إكمال المشاريع بأوقاتها المحددة دعت المقاولين لصياغة مطالبات من أجل حفظ حقوقهم الإنشائية وتفادي أية أضرار قد تنجم عن الغرامات المنصوص عليها في العقود.

هدفت هذه الدراسة إلى تطوير نظام لإدارة المطالبات حتي يستخدمه المقاولون لضمان تثبيت مطالباتهم كاملة، من أجل فهم أفضل لهذه المطالبات لقد تمت مراجعة العديد من هذه المطالبات والادلة المقدمة لإثباتها كعوامل لتمكين المقاولين من المعرفة اللازمة بعناصر النجاح وعناصر الفشل في إدارة المطالبات.

وقد أثيرت أسئلة بحثية معينة من الإطار المفاهيمي الرئيسي المتعلقة بإدارة المطالبات والأدلة، وهذه الأسئلة هي على النحو التالي:

- ما هو مفهوم المطالبات ولماذا تحتاج إلى أن تدار بشكل رئيسي من قبل المقاول في صناعة البناء والتشييد؟
- ما هي أوجه القصور في الممارسات الحالية لإدارة المطالبات؟
- ما هي عوامل النجاح الحاسمة التي يمكن أن تسهم في تحسين إدارة المطالبات، وتأكيدها وعرضها؟
- ما هي عناصر إدارة المطالبات المؤسسة بشكل جيد؟
- ما هي التوصيات التي ينصح بها لتجنب المطالبات الناشئة عن الخطط والمواصفات غير الكافية؟

كانت فرضيات البحث تقتصر على بعض النقاط وهي أن المطالبات شائعة في صناعة البناء والتشييد في السودان، وأن وجود شروط جيدة للعقد يمكن أن يقلل من المطالبات والمنازعات، وأن أطراف العقد دائما مرنين ويميلون إلى حل مطالباتهم ودياً.

تم جمع معلومات هذه الدراسة من عقد مقابلات مع مهندسين يعملون في هيئات البناء المنخرطة كلياً بالمطالبات التي ظهرت في مشاريعهم ومجموعة من شركات التشييد, ومجموعة من مهندسي ومدراء المواقع داخل ولاية الخرطوم, وذلك لتطوير الإستبيان في مراحله الأولي للحصول علي البيانات اللازمة للدراسة.

قدمت هذه الدراسة في النهاية كل العوامل اللازمة لشركات البناء والتي ستستخدمها عند صياغة هذه المطالبات, لقد كان الجزء الإداري محور بحث هذه الدراسة وليس العامل القانوني.

من أهم النتائج التي توصلت اليها هذه الدراسة هي أهمية حفظ السجلات, التبليغ الرسمي، وأهمية التغيير والأوامر التغييرية في صلب إدارة المطالبات والعديد من الجوانب الأخرى في مجال إدارة المطالبات والدلائل الثبوتية.

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Abbreviations:

ADR	Alternative Dispute Resolution
CHP	Claim Handling Process
CMS	Claims Management System
CFF	Critical Failure Factors
CSF	Critical Success Factors
EOT	Extension of time
FIDIC	Fédération Internationale Des Ingénieurs-Conseils
LD	Liquidated Damages
PMI	Project Management Institute

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CHAPTER ONE-INTRODUCTION

1.1 Introduction

In the recent years, the Sudan construction industry has witnessed remarkable progress. The demand for housing, infra-structure and entertainment projects lead to the appearance of mega projects which were complex and of great value. With this complexity came the need for fast tracking which usually results in rework, change orders and site modifications (Moazzami et al., 2011). Accordingly there was a need to have proper contracts put forward to allocate the risk between the owner, the contractor, and the designer (Arditi and Patel, 1989).

The majority of construction projects comprise of binding agreements or contracts that are drawn up for the sake of minimizing conflicts and disputes at the execution level or post completion of these projects. These contracts are usually signed between the two main parties: an employer and a contractor who undertakes the execution of that particular project. Such a contract includes general clauses and specific clauses which govern the relationship between the employer and the contractor.

Once the works are awarded to the contractor via the proper form of a letter of acceptance and signed contract document, the contractor engages within a duration of 14 days in providing what is defined by (FIDIC,1987) as clause 14 baseline program. This work program is a very crucial document that is subsequently used to evaluate delay caused, regardless of the party responsible, and becomes the basis on which the claim put forward by the contractor against the client or vice versa is substantiated. The process involves the investigation of the reasons behind the delay whereby a comparison is conducted between the impacted program and the baseline to determine the amount of time the contractor might be entitled to.

At the initiation and execution phases of the project, the contractor engages in monitoring his progress against the baseline program. Whenever a delay occurs, the planning department signals an alert to the project manager on the occurrence of the delay, and accordingly, a recovery plan is determined and the baseline is updated if

deemed necessary by the contractor, in order to get the approval of the engineer and the employer.

Construction claims are common in almost every construction project and are direct results of the rapid growth in the construction industry (Zaneldin, 2005). Therefore, the occurrence of claims is a commonality perceived in many construction projects and can be attributed to a set of factors which can cause considerable delays in a project and consequently result in a rapid increase in that project costs.

Claims seem to be almost inevitable in mega construction projects executed within short durations. This is because almost all construction projects are either cost or time overrun due to many factors or reasons which can either be a breach resulting of the employer or the contractor or both . Claims therefore may occur as the result of cost overrun, design errors and omissions, delay damages, numerous change orders, construction rework and modifications, and overlooked work assigned to no party (Moazzami et al., 2011).

The causes of claims identified by (Moazzami et al., 2011) will be further examined in the literature review chapter and conceptual frame work of this dissertation. The emphasis on causes of claims will also be reiterated in the analysis chapter due to the importance of this element on claims management and substantiation.

1.2 Statement of the Problem

As mentioned earlier in this chapter, almost all construction projects of considerable contract values and significance face delays and cost overrun. This is due to the fact that during all phases of a project, certain constraints are imposed by the Employer, Engineer or the Contractor's ineffectiveness which lead to the occurrence of delays. These delays urge the contractor to tender claims which are either related to time, cost or both. This is due to the dominance of the Employer as a contract party, who leaves the Contractor with no other option but to protect his interests by preventing any liquidated damages or sanction imposed by the Employer due to fear or doubt that the delivery of the project within the agreed time frame and budget may not be achieved. Regardless of the resulting impact, a claim will surface and the Contractor will need to

substantiate and justify his claim. In most contract forms, the entitlement made by the Contractor is valid if the Contractor is able to establish his case with proper support and substantiation.

Management and substantiation of claims is considered as very essential and fundamental in the construction industry. This may be attributed to the fact that few research projects have been reported, which target the auditing of an overall claims management process in the context of identifying deficiencies, ranking their significance and proposing solutions.

1.3 Aims and Objectives

The prime aim of this research is to investigate the reasons behind increasing number of construction claims, and how to manage them toward minimizing disputes in Sudan. This aim can be constituted by the following objectives:

1- Investigating features of enhanced claim management systems and current practices by construction professionals.

2- Reviewing and investigating the various types of claims known to construction practitioners and the nature of each type.

3- Investigating the shortcomings of the current practices in claims management and ways of their enhancement and betterment.

4- Suggestions for avoiding claims arising out of differing site conditions

5- Offer conclusions and recommendations for future researches based on the analysis and severity of claims

1.4 Scope of the Research

The importance of this research is determine and assess the reasons behind construction claims currently being used within the construction industry and to provide a map road for the Contractors regarding methods by which contractual claims could be formulated and consequently managed in the construction sector.

Two perspectives will be considered for claims management. They are the legal/contractual perspective and the managerial perspective. An integrated approach will be introduced to allow for an enhanced claims management system which can operate throughout the lifecycle of the project rather than towards the conclusion of that particular project. This research targets the construction sector and involves three main stakeholders who represent the parties in a construction project, and are defined in (FIDIC 1999):

1. The Employer.
2. The Engineer / Design Professional.
3. The Contractor.

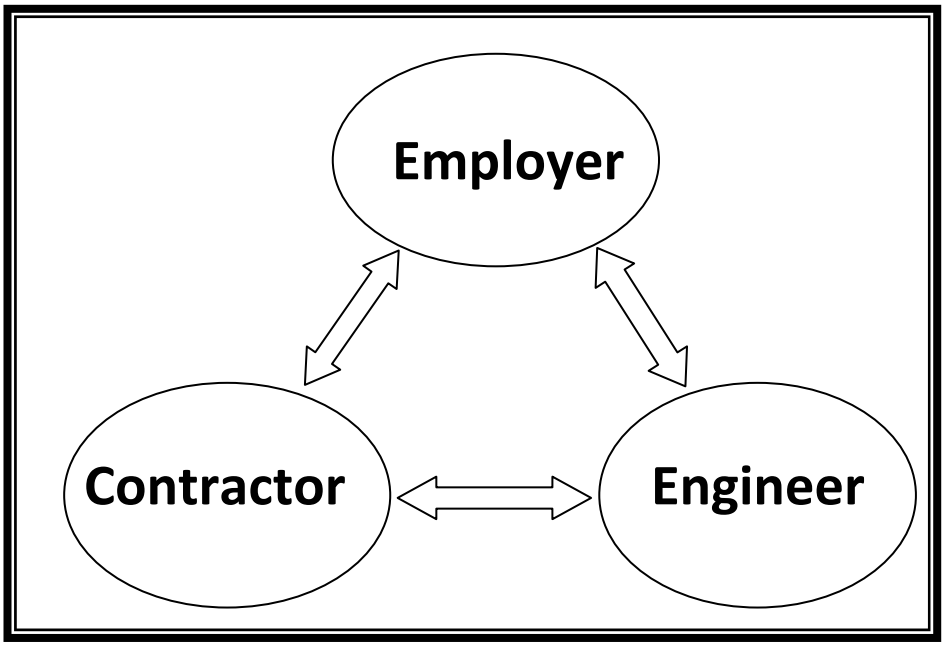

Figure 1-1: The Employer, Engineer, and Contractor triangle (Source: FIDIC 1999)

1.5 Research hypothesis

1. Claims are common in the construction industry in Sudan.
2. Having good contract clauses and management could minimize claims and disputes.
3. The contract parties always are flexible and tend to solve their claims amicably.

1.6 Research Questions

Certain research questions have been raised from the main conceptual framework and literature related to claims management and substantiation, these questions are as follows:

1- What is the concept of claims and why do they need to be managed mainly by the Contractor in the construction industry?

2-What are the shortcomings of the current claims management practices?

3- What critical success factors which can contribute to the improvement of claims management, confirmation and presentation?

4- What are the elements of well-structured claims management?

5- What are the advisable recommendations for avoiding claims arising from insufficient plans and specifications?

By addressing the above mentioned research questions, the framework of this research can be structured to ensure an effective approach to the implementation of claims management in construction projects, and the successful accomplishment of the aim of this research.

1.7 Research Methodology

The research covering causes of claims, claims management and substantiation handles managerial problems faced by construction professionals. Therefore, this research is intended to increase existing knowledge on claims management practices. The nature of this dissertation may appear to be exploratory yet it may be followed by descriptive and explanatory approaches since research design may apply more than one approach

This research work has been conducted into two parts which are:

1. The theoretical part components of topics related to the scope. This was established from books, journals, and related researches.

2. The practical part which comprises from the data collected from the field of the study using a research tools, namely, a formal questionnaire in order to analyze this data and then present the results, and interpreted with respect to the theoretical part to end up with research assisting solving the practical problems.

CHAPTER TWO -LITERATURE REVIEW

2.1 Introduction

One of the first stages of almost all researches is to explore literature and theories which are relevant to that particular research area. The literature review chapter presents an extensive study of claims and the types of claims identified by various scholars in an attempt to seek what previous scholars have found and theorized. Moreover, a look into concepts related to construction claims such as contracts, construction laws and managerial approaches to claims is important and cannot be overlooked while describing construction claims.

In this chapter, claims are initially defined. And then describing the types of claims is presented. With this understanding of claims, further expansion is given into the process of claims management and substantiation by reviewing the various essential tools and factors as identified by claim specialists, which have contributed to the enhancement of claims management in the current practices in construction projects.

2.2 Definition of Claims

Many scholars have written deeply on the topic of claims in construction. Among these scholars is (Scott ,1991) who defined claims as “the assertion of a right”. Other researchers such as (Monsey ,1993) have stated that construction claims are “change orders which have not been accepted by the various parties of the contract”. However, the most technical definition of claims is the one presented as the assertion of an alleged right by a claimant, commonly by the Contractor requesting additional time and/or payment as direct result or circumstance implied in the terms and conditions of the contract (Chappell, 2011).

It is clearly that, despite the new innovations in administering construction contracts, the circumstances that cause claims on most contracts will continue to appear (Harris and Scott, 2001). Similarly, In Sudan, construction projects are frequently faced by delays which tend to be very similar to the ones perceived in global construction projects. These delays usually result in unsought results such as claims, and disputes which tend to be time exhausting and of considerable costs which may be solved only through litigation (Chen, 2008). With the frequent occurrence of claims, it becomes important to study claims management and substantiation as a daily practice in the life cycle of projects.

Among the other reasons which make claims of great importance in construction projects are the ones identified by (Lihong, 2011) who clearly suggests three main aspects of construction claims. These aspects are:

1- The construction claim is an efficient path for the Contractor to reduce the risk loss in engineering project's implementation process.
2- The project claim is an important means for the Contractor to maintain its contract rights and interests.
3- The project claim reflect the Contractor managerial and administrative expertise is a main driver for claims from a Contractor’s perspective which is to make profit.

2.3 Types of Claims

Claims tendered by Contractors versus Employers usually fall under four different categories which are contractual claims, common-law claims, quantum merit claims and ex-gratia claims (Chappell, 2011). Such claims are based on a clause or clauses in the contract which specifically allow the Contractor to put in a claim in certain imposed circumstances (Chappell, 2011).

In construction projects, the tendency for the occurrence of claims in construction projects is high, given the fact that most projects are shifted towards the fast track approach (Faridi and El-Sayegh, 2006). Thus, contractual claims can be further divided to include extension of time (EOT).

With the review of each type of claim, a clear vision can be then established on claims management and substantiation of each type.

2.3.1 Extension of Time Claims (EOT)

The extension of time claims occurs in projects where time risk is passed on to the contractor who executing the project. Mainly, delays beyond the predicted time of completion in the contract may result in the Contractor having to bear liquidated damages (LD) as a sanction of the delay.

However, if delays are caused by the Employer, it is important for the Contractor to assure he claims for adequate additional time beyond the date of the contract expiry (Williams, 2003). Moreover, extension of time claims help reduce or mitigate liquidated damages and establishment of the contractor's right to additional cost for the period granted post contract expiry (Yogeswaran et al., 1998)

Where so ever liquidated damages are concerned, it is important to note that if the extension of time granted by the employer covers the entirety of the delay period, then the Contractor is no more liable for this delay.

On the other hand, if the extension of time granted by the Engineer and Employer recover a period less than the full period of the delay or reasonable time required for completion, then the period difference remains the liability of the Contractor (Ribeiro, 1996). In other words, it is imperative for the Contractor to demonstrate his entitlement by the proper methods of substantiation for additional time in order to rightfully transfer all liabilities to the Employer or other parties responsible for the occurrence of delays.

Every EOT claim formulated in any construction project goes through its unique lifecycle and passes through various stages which are identified by (Keane & Caletka 2008,) as shown in the figure (2-1), which is a diagram compiled by the researcher to summarize the authors' points :

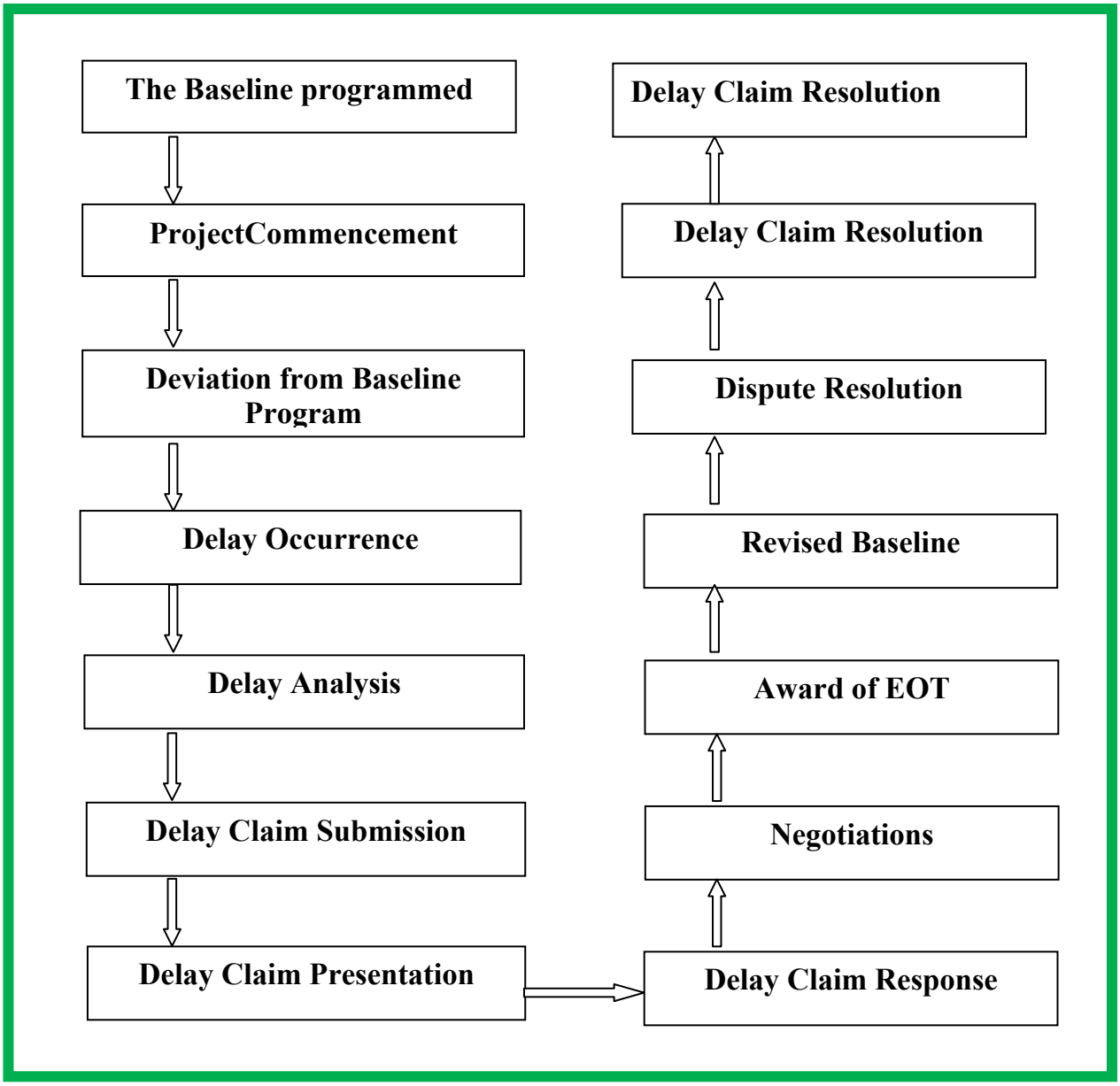

Figure 2-1: EOT Claims Formulation
(Source: Keane & Caletka 2008)

When the Contractor has to submit his EOT claim to the Employer and Engineer, certain factors have to be taken into contemplation. These factors are divided in to five main points which are crucial to any EOT claim. These are:

1- The status of the material if extension of time arises.

2- The source of causation or event which calls for EOT.
3- The relevancy and the cause of claim in the contract documents.
4- The potential effect of the delay on the overall work progress.
5- Likelihood of the event having impact on the specified date of completion of various dates of completion if the contract implies more than delivery date.

Once the claim is ready and submitted by the Contractor, the next step will be to present the claim inclusive of certain elements. These elements or claim structures are stipulated by (Thomas, 2001) as follows:

1. Detailed description of the cause of delay and any supporting contractual provisions in the contract which are being relied upon for the request for EOT.
2. Dates of when the delay occurred and the total time interval of delay.
3. The date of the formal notification of delay to the Engineer/ Employer and the supporting document of notification.
4. Appendices to the EOT claim which include all the backup documents and records.
5. A cause and effect study of the delays.
6. Diagrammatic exemplification demonstrating the position of the baseline program, with respect to the new dates of completion taking into consideration the arising delays.
7. Delay analysis showing the effects of the delay on the critical path and effects on the float per activity and total float.
8. A formal statement requesting an EOT with full substantiation and supporting documents.

Finally and upon the submission and receipt of the claim from the Contractor, the Engineer has to reply to the Contractor's claim expressing content or discontent within a period of 42 days after receiving the claim or the particulars it is supported by (Ndekugri et al., 2007).

2.3.2 Prolongation Claims

Followed by justification of the claim, the succeeding challenge is to propose the quantity of the claim, by including both the direct costs and delays resulting of the unpredictable circumstances and their accumulative effects (Ren et al., 2001).

In other words, the concept of EOT and extending cost are strongly linked with each other. After the EOT claim takes place and is approved through the Engineer expressing his consent and granting the Contractor additional time for completing the project, prolongation claims develop. Therefore, prolongation claims are usually formulated towards the end of the project and that is constantly the period when prolongation claims are formulated by the Contractor (Ingram, 2004).

In prolongation claims, Contractors have the privilege to request recovery of additional off site overheads in the event where the works at site had been expanded due to excusable delays which allow for additional cost entitlements (Ingram, 2004). However, the payment is not limited to the overheads, but it is also extended beyond to include many other costs during the extended period of time acknowledged by all parties.

2.3.3 Acceleration Claims

Acceleration measures come around in projects where high risk, time contingency loss, disruption and exposure to more delays exist (Sun and Meng, 2009). Acceleration by definition means the process of taking measures to recover for time loss by attempting to complete the scope by specified durations or as a remedial recovery of delays (Gibson, 2008). Such measures usually have a tendency to increase the overall cost of the project. On the other hand, acceleration can be defined as the process of increasing the speed and thus, in the context of construction contracts, an early closeout (Chappell, 2011). However, the question raised in the case of acceleration is

"finishing before what?" The completion can be either before the contract end date or before the excusable delay duration exceeding the contract time limit.
Keane and (Caletka, 2008) categorize acceleration to be either *instructed* or *constructive*. On the other hand, (Green street et al, 2005) state that instructed acceleration refers to the actual acceleration at the contractor's discretion and may provide the basis for increased costs. Also, (Rider and Long, 2009) attribute the occurrence of acceleration to numerous factors which are summarized by them as being either late change orders, nominated contractors or late approvals on submittals and untimely changes. It is important to understand the situations in which acceleration usually takes place by agreement.

Regardless of the reasons which cause acceleration to occur, projects costs will be increased. These are usually presented by the Contractor to the Employer in the form of a claim. Once the acceleration measures are justified as being constructive and fall as part of the mitigating time factor, the Contractor will be eligible to claim his costs for the measures he has taken. These costs to which the Contractor is usually entitled are classified by (Haidar, 2011) as five different costs, which are:

1. Cost for extra manpower and plant due to the loss of productivity resulting from exaggerated thrust of resources and machinery.
2. Cost of extra logistics needed or additional working hours.
3. Cost of expanding site services and facilities.
4. Other costs seen necessary to expedite works.
5. Staff and engineering overtime and incentives.

2.4 Causes and Effects of Claims in Construction

Claims in construction projects tend to have a set of causes for their occurrence and effects. The Contractor needs to identify these causes carefully so as to substantiate his claim in the right way. The causes of claims in construction projects are usually known and pre-identified. If these causes are not evoked by the contractor, then they do not fall under his liability. (Longbottom and Rawling, 2008) summarize the causes of

claims into a few which can be either excusable, compensable or both. This Figure 2-2 clearly shows the type of events resulting in a claim:

Event / Cause	Excusable (Clause 23)	Compensable (Clauses 11/24)
'Act of God' (e.g. earthquake)	✓	
Inclement weather	✓	
Discrepancies in information	✓	✓
Variations	✓	✓
Postponement of project	✓	✓
Late information	✓	✓
Inspections / tests	✓	✓
Antiquities	✓	
Employer's direct contractors	✓	✓

Figure 2-2: Causes of Claims
(Source: Long Bottom and Rowling, 2008)

(Long Bottom and Rowling's) table tends to include some of the causes of claims in construction projects. However, these are a few sources from which claims can arise.

A direct outcome of claims as mentioned earlier would be completion schedule delay, assuming the Contractor is able to establish his entitlements to additional time post contract expiry (Hwang and Low, 2011). If the claim is managed appropriately, the contractor can further ensure the award of cost compensation.

The strong link between claims and time delays can also result in cost escalation. In other words, the increase in the amount of money required to construct the project far beyond the initial allocated budget (Kabila et al., 2009). Both time and cost claims in fact can lead in most situations to unsought consequences. On the level of relationships between the contract parties, they can have a very undesirable effect. This is attributed to the fact that in most occasions, claims have a relevantly high tendency to cause disputes, conflicts and alienation between the various key stakeholders or contract

parties. Consequently, disputes in most situations result in expensive and remorse proceedings like arbitration and litigation (Cheung and Yeung, 1998).

In summary of the above, claims in construction projects are direct causes of schedule overrun. With the schedule overrun, cost escalation can consequently appear leading to disputes and conflict between the various contract parties. These consequences come as a result of certain events and causes identified by various scholars in the field of claims and project management.

In light of such complexity of time and cost factors resulting of claims, the contractors need to consider the implementation of claims management as a well-structured discipline along with other project management relevant areas of knowledge.

2.5 Claims Management

The importance of claims management does not only exist in the fact that this field of management is part of project management. Another aspect of importance in this managerial field is the risk contained within construction projects which has become the focus of attention since risk is strongly linked to the cost and time overruns (Kartam, 2001). Hence, the uncertainty found in construction projects is greatly linked to time and cost overrun and subsequently is related to claims which need to be conservatively managed by the Contractor to ensure his rights.

With the existence of high risk in construction projects, claims are considered as an efficient path for the Contractor to reduce the risk loss in the engineering project's implementation process; various risks concealed in engineering project's implementation process, like economic risks, contract risk, natural condition risk as well as construction's risk (Lihong, 2011).

The claim management process like any other system undergoes a life cycle. This life cycle has been identified by (Levin 1998; Ren et al., 2001) to follow a standardized form which is illustrated in the Figure (2-3) to contain 7 processes leading to claims management and they are the recognition, notification, accurate documentation, time and cost, pricing, negotiation and dispute resolution:

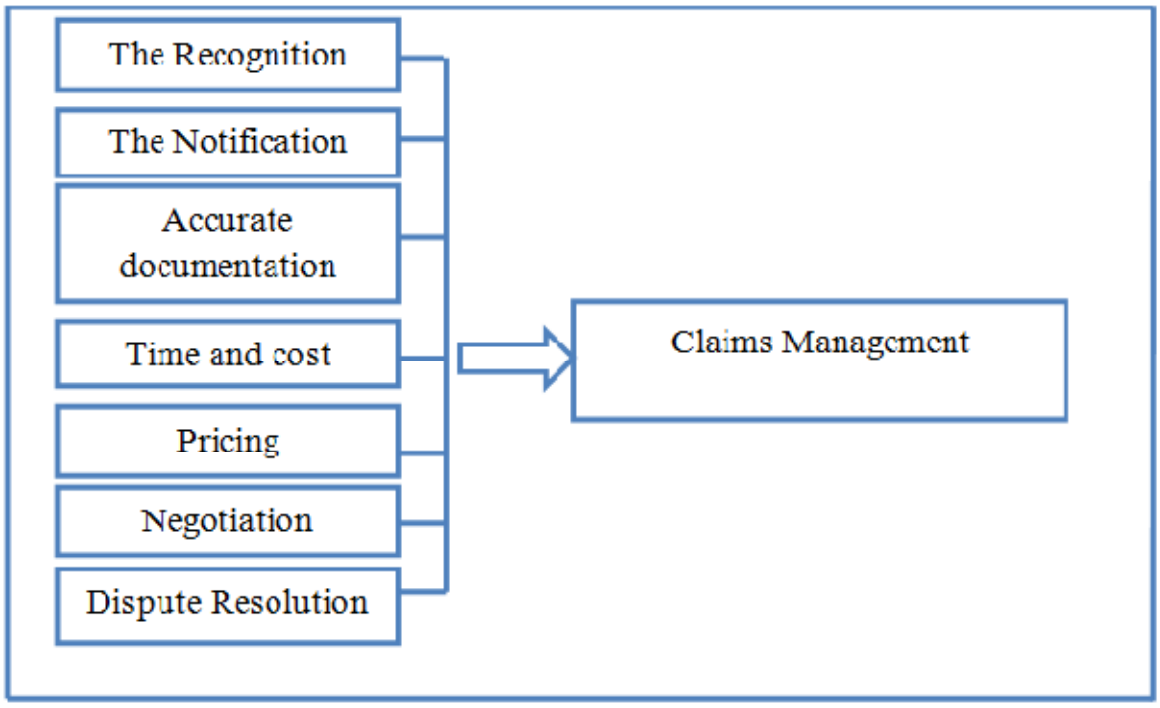

Figure 2-3: Claims Management Lifecycle
(Source: Levin 1998; Ren et al., 2001)

On the day to day claims management process, certain tasks need to be considered by the Contractor's claim management team involved. These have been identified by (Apte and Cavaliere, 1992) as three main tasks which are necessary for the Claim Handling Process (CHP):

1. The initial challenge is to decide on the quality and quantum of resources actually needed for the handling claims.
2. Monitoring and control over the handling process of claims by ensuring the implementation of remedial acts if and when found necessary.
3. The last task is to specify CHP procedures, which includes training and means of research and development in the field.

Another indispensable dimension of a proper claims management system is good planning. (Winch and Kelsey, 2005) imply that project planners have basic and fundamental duties which are common in almost all construction projects. These duties as stipulated as being the recognition of the full site construction work programmed, the entire procurement logs, necessary dates which affect procurement of material such

as design data, the drawings preparation and submission by the Contractor and finally the duty of approving these drawings and submittals in timely manners by the Engineer (Winch and Kelsey, 2005).

Strategy is another vital dimension in respect to claims management. In a simplified construct, strategy is looked on as a consolidative approach which can link the intended purpose with the course of action (White, 2005). In consolidated claims management, the idea of developing a claim is strongly linked to procedures and mechanisms of claims development and substantiation.

Teams and team awareness are the last identified essences of claims management. This is ascribed to the fact that teams who hold extensive experience are needed to tackle complicated work which may require tools such as innovation, creativity, and a plenty of knowledge bring about positive effects (Loo, 2003). Features such as creativity and abundance of knowledge increase the team's awareness towards proper reporting of claims drivers to the management. In conclusion effective team practices which ensure the team worked towards achieving its goals and was receptive to collaboration with other teams is therefore an advantage for the management of claims (Baiden and Price, 2011).

2.6 Change and Change Orders

Change is considered as inevitable on almost all construction projects due to the uniqueness of each project and the limited quantum of resources available for completing the project (Hanna et al., 2004). (Barnard, 2005) defines change in construction projects as "the situation where the contractor is directed by the Employer to carry out works not part of the original work brief and plans realized by the contract. The ineluctability of changes is assigned by (Yitmen et al., 2006) to the fast-track construction nature, where construction commences prior to the completion of design, and the scope of work keeps changing throughout the project's different phases.

On the other hand, (Motawa, 2003) specifies the reasons behind change as being lack of information at the initial stages of the project variables which lead to insufficient

knowledge of future circumstances and impreciseness arising from equivocalness in the project criteria

The appearance of changes has been strongly linked to claims by (Han et al, 2011) who believe that design and construction of projects are greatly affected by design changes which are a main contributor to schedule delays and cost overruns in projects. Changes in construction projects are usually followed by change orders or formal directed change, as presented by (Molly, 2007). These are instructions from the Employer or Engineer to the contractor to implement these changes.

A direct result of change is usually additional cost. Wherever the cost of change is involved, the contractor is entitled to recover costs associated with change orders in the form of a claim in certain cases. These cases are highlighted by (Jergeas et al, 1994) as being the cases of direct labor cost, direct material cost, overheads and profit and tools and plant.

With the occurrence of changes and change orders, the direct impacts of change orders surface and have been identified as having an undesirable impact on construction productivity, resulting in a drop in the labor efficiency (Moselhi et al, 2005). All of these impacts can either be overcome by extending the duration of the contract through granting the Contractor an EOT or through acceleration measures to eliminate the time factor at the account of cost or by allowing for both.

On the other hand, and from a contractor's perspective, the importance of change management is derived from the fact that change management is inherent in project management and is considered as one of the best ways to deal with changes (Zhao et al., 2011). Management of change is also in dispensable in accordance with the contract and compensates the Contractor for changes authorized by the Employer and the Engineer when quantities increase is a result of change (Bunni, 2005)

2.7 Records and Documentation

The basis of any strong claim management system greatly depends on the presence of a well-structured documentation system. When the contractor's claim team meets up to

prepare the project claim, the first step they take is to read the documentation available and the level of detail these documents bear (Baram, 1992).The documents may include and are not limited to the delivery notes, personal diaries, minutes of meetings, reports, progress photos at various stages, correspondence and a variety of other sources in the site (Scott, 1990).

(Ingram, 2004) emphasizes that it is of high importance that records are kept from the outset of a project, especially if the likelihood of claims occurrence exists. An overall maintenance of such records is likely to speed the financial and time related claims formulation and substantiation.

Notice letters are other features of good claim documentation in which the Contractor can estimate the time delay and cost by reporting the event to the Engineer and Employer upon occurrence (Dobbin, 2006). Conversely, verbal instructions by the Employer or Engineer are regarded as indicators of poor documentation and record keeping which are often neglected by the contractor's project manager. The scenario which usually takes place is that the instructions are carried out by the contractor during the execution stages without the proper documentation or official notification by the contract administrator. Such an act usually endangers the contractors' entitlement for time and cost.

(Turner, 1995), on the other hand, summarizes the aspects of record keeping in context to claims management as five major areas which need to be considered as part of a proper claim support documents. These are:

1. Accumulating comprehensive records of the relevant documents and data which may help in a retroactive analysis.
2. Daily, weekly and monthly issuance of progress reports inclusive of :
    - The work progress containing figures, facts and dates.
    - Descriptions of the conditions at site such as the weather circumstances.
    - Delays in deliveries, hold-ups due to Employer interference or breach.
    - Requests for information and the dates of reply by the Engineer.
    - Elaboration on the works accomplished.

3. Emails, phone conversations and verbal directives made by the Employer or his representative the Engineer.
4. Minutes of Meetings which should not be allowed to pass unanswered or uncommented since silence on a matter of dispute will result in moving the burden on to the contractor.
5. Photographs which include dates and time of the photos pose an essential source of substantiation, especially when these are taken at various stages of the project.

Conversely, and in the terms of poor record keeping, (Jergeas et al, 1994) assume certain factors to be sources of failure. These are identified by them as the failure to document delays and their impacts and proceeding with change orders without written consent by the concerned parties.

In summary, proper and improper records keeping can result in advantages and disadvantages respectively to the process of managing and substantiating claims.

2.8 Contract Administration

Contract Administration falls under the broader concept of Construction Administration which involves all the day to day duties of which are monitoring the communications, business systems, procedures, responsibility, authority, duties of all of the parties, documentation requirements, construction operations, planning, scheduling, payment administration, change orders, extra work, dispute procedures, claim handling, negotiations and administrative closeout (Fisks and Reynolds ,2010).

For any construction contract to be professionally administered, the Engineer is considered as a key player. The duty of the contract administration is usually assigned by the Employer to the Engineer.

(Ndekugri et al. 2007) find that in addition to the duties assigned to the Engineer, he is considered as a neutral and independent party who as a professional is trained to maintain a balance between the Employer and Contractor. Hence, fairness is an essential characteristic which the Engineer should practice and have the freedom to

express. In conclusion, the contract administration role played by the Engineer is of great importance.

2.9 FIDIC Views on Claims

FIDIC was formed in the year 1923 by three national associations of consulting engineers in Europe (FIDIC, 1998). The establishment of FIDIC came as an attempt to maintain the rights of the parties involved in construction contracts by offering general clauses and conditions which can be applied to many forms of construction contracts.

The design of FIDIC was initiated by the Employer and his representative, the Engineer, and has been applied in many countries worldwide (FIDIC, 1999). FIDIC includes certain clauses related to claims which are rather generic and abrupt. However, these clauses have been strictly adhered to by Employers and Contractors in addition to the particulars of the contract. In the event the Contractor is the claimant, FIDIC (1999) defines certain clauses which have to be strictly abided by.

2.9.1 FIDIC 1999, Clauses related to Claims Clause reference

No	FIDIC 1999, Clauses related to Claims	Clause reference
1.	An extension of time for any such delay, if completion is or will be delayed.	Sub-Clause 8.4
2.	The Contractor shall give a further notice if he incurs Cost as a result of a failure of the Engineer to issue the notified drawing or instruction within a time which is reasonable	Sub-Clause 20.1
3.	*"Variation"* means any change to the Works, which is instructed or approved as a variation under	Clause 13
4.	Take over certificate	Clause 10
5.	"Cost" means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.	Definition 1.1.4.3

Table 2-1: FIDIC 1999, Clauses relevant to claims

In modified versions of FIDIC, the Engineer is not authorized to practice the right to agree or determine the extension of time or additional cost to which the Contractor is entitled to in event of excusable delays (Ndekugri et al., 2007). Thus, the Engineer is no longer the determinate party and the direct contract parties have to exercise other forms of dispute resolution techniques identified and known as Alternative Dispute Resolution techniques (ADR).

(ADR) may start with direct negotiation, conciliation and mediation or winding up in arbitration to litigation (Cheung, 1999). These are illustrated in figure 2-4 by (Groton 1992 ; Cheung, 1999) in the forms of steps, whereas each step is associated with a degree of hostility. It can be actualized from that costs tend to escalate with the failure of one step of resolving a dispute and ascend to the next step of resolution:

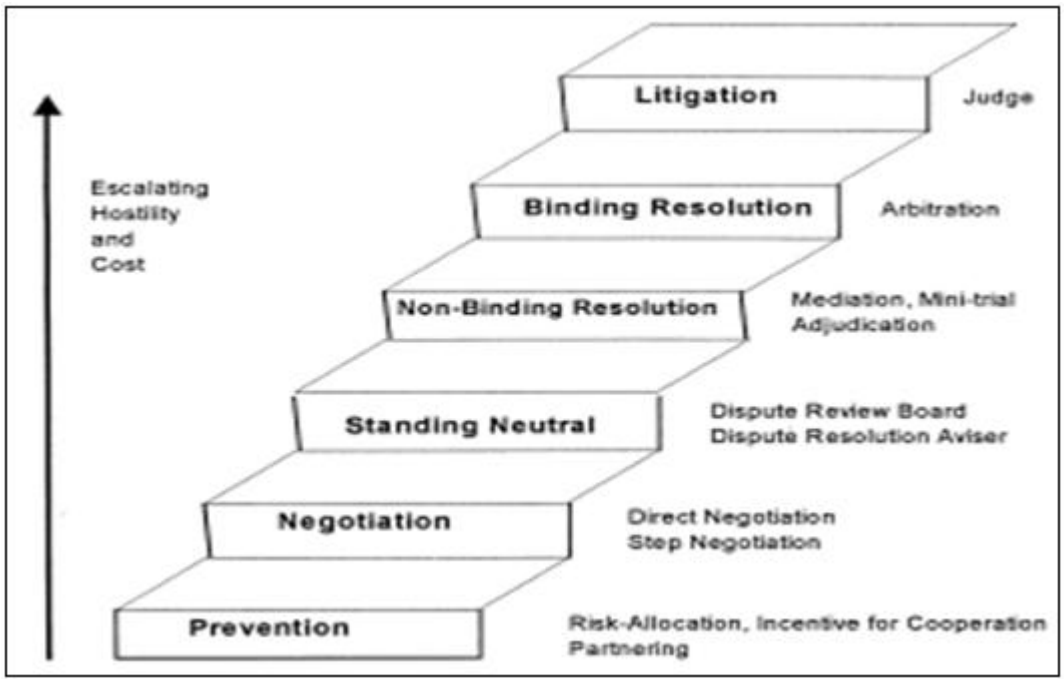

Figure 2-4: Construction Dispute Resolution Steps
(Source: Groton 1992; Cheung 1999)

CHAPTER THREE - CONCEPTUAL FRAMEWORK

3.1 Introduction

The main purpose of the conceptual framework chapter is to align the aim of this dissertation with the literature related to claims management and substantiation. In other words, the exploratory and descriptive nature of this work makes it obligatory to review the concept of claims and the main stakeholders involved in a construction claim in an attempt to capture the main concepts such as claims, types of claims, delays, and disputes prior to engaging in exploring management of claims and methods of substantiation.

3.2 Claims Management Conceptual Framework

With the review of the literature which explores the types of claims and their nature, a link can be identified between the causes and effects of claims. However, the essential link is the one which indicates the current practices in claims management in construction projects and the ideal practices which need to be considered by construction professionals.

A comprehensive claims management system is then the one that will include all that is needed to substantiate a claim as adequately as possible. In order to develop the conceptual framework, the current industry practices need to be reviewed. Only then can a claims management system be developed to meet the expectations of construction projects and contractors. These practices are later identified within this chapter as failure factors. The research has been designed to consider these concepts as the core of the conceptual framework and was reviewed in both the literature and in the analysis chapters to try and achieve the success factors across this chapter.

3.3 Current Claims Management Practices

In order to properly survey the issue of claims and methods of enhancing claims management, the current industry practices need to be reviewed. This data can be

collected from interviews conducted with industry professionals. Simultaneously, the current practices need to be compared and contrasted with the literature and suggested practices scholars have applied or concluded in their research.

Moreover, the failure factors have to be highlighted with regard to current industry practices in claims management. With this in view, the following factors have been developed to define the various failure drivers which impose an obstacle on the proper management and substantiation of claims or which are considered as problematic to the process of claims management and substantiation. The same can be considered as pre-implementation aspects of a successful claims management system.

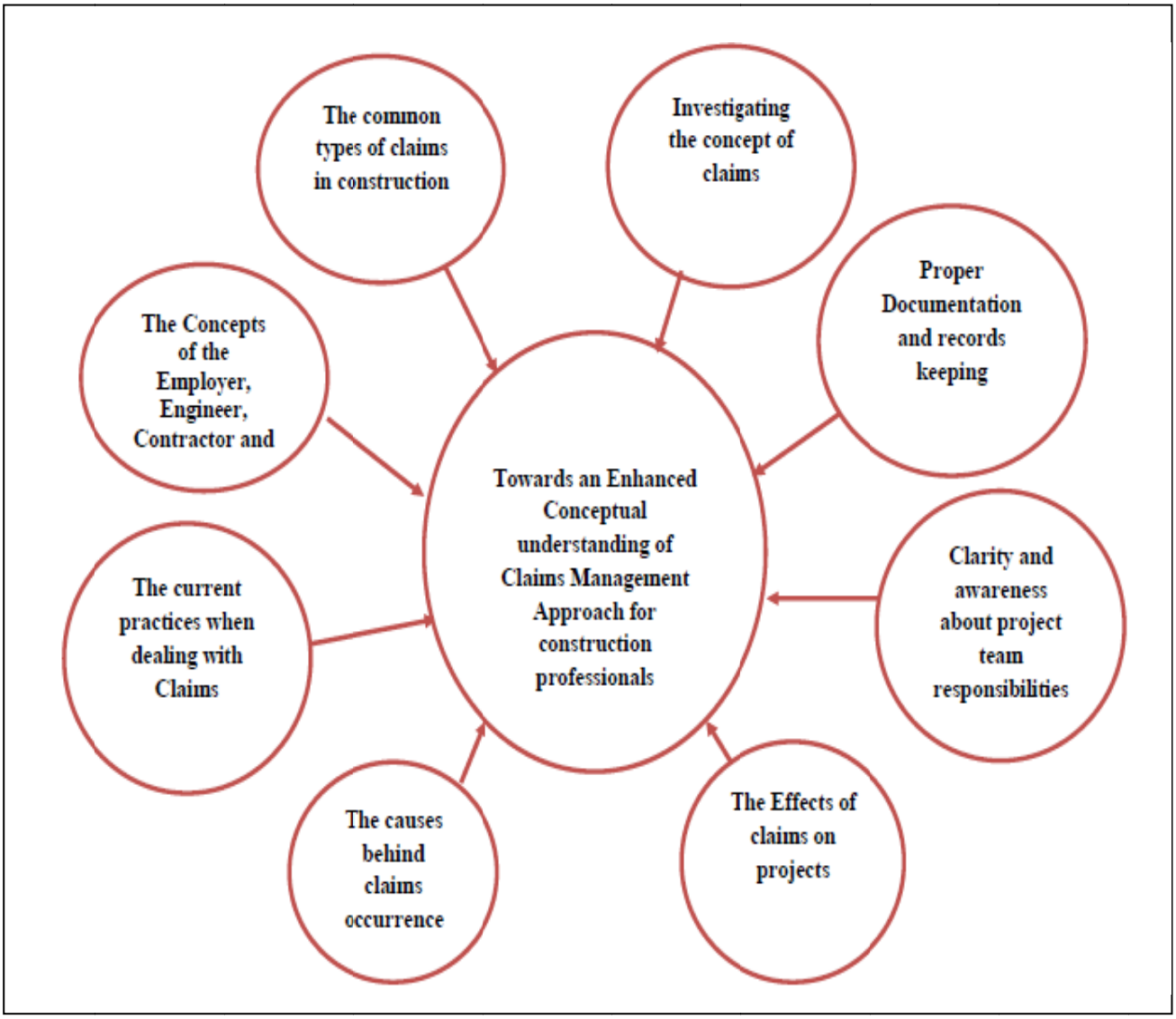

Figure 3-1: Concepts Reviewed in the Research Of Claims Management

Figure 3-1 includes some of the necessary terminology and concepts which has been explored in this research. These concepts are crucial for the understanding of the study and conceptual framework it encapsulates.

Critical Failure Factor (1): Ignorance of the impacts of change & change orders

Ignorance of change and change order impacts. This accordingly leads to acceptance of change without study of the impacts and evaluation of the consequences. Documented and well proven changes are an essential component of a Contractor's claim for additional cost and times which need to be addressed at all times.

Critical Failure Factor (2): Lack of Strategy

The lack of a clear strategy and strategic project management principles leads to loss of objectives and focus within the Contractor's organization. Furthermore, poor strategic planning and management result in the absence of a mission and vision for the project as a whole and not just the management of claims.

Critical Failure Factor (3): Team Weakness and Lack of Awareness

Team weakness and lack of clarity on the reporting of issues, in addition to confusion in matters of what needs to be conveyed to management and what does not. Lack of competency leads to mismanagement of the project and can have reversal effects where claims are concerned.

Critical Failure Factor (4): Poor Project Planning

The failure factor of poor planning and program updates occurs in the event of deviation from the master program (baseline) without providing updated recovery plans or necessary as-built work program in the claim summary. Baselines, updates and as-built programs are all fundamental aspects used by claims specialists in substantiating claims and demonstrating delay analysis.

Critical Failure Factor (5): Failure of the Contractor to identify Concurrency of Delays

Concurrency of delays may result in rejection of additional claim for money if one of the delays is caused by the Contractor's failure. Concurrent delays are two or more delays occurring at the same time when one or more delays maybe due to the Employer's failures rather than the Contractor's defect.

Critical Failure Factor (6): An unfair Engineer

An unfair Engineer can cause a misconception to occur of the Contractor's claims and entitlement and loss of right. The Engineer who does not administer the contract impartially at all times is considered as a failure factor to the Contractor's claim. If the Engineer tends to be biased to the client, the interests of the Contractor can be endangering.

Critical Failure Factor (7): Improper claim formulation

Improper claim formulation may lead to the rejection of the Contractor's claim and consequently create dispute and conflict among the parties concerned. This situation may also arise due to the incompetence of an appointed specialist who is not well-experienced in handling and formulating claims.

3.4 Critical Success Factors for Claims Management

The main factors of success where claims management is concerned are the ones which reflect to what range the claim is substantiated adequately. These factors can be taken as the basis necessary for structuring claims management systems.

Critical Success Factor (1): Proper understanding of the objectives at the project initiation phase

The project commencement phase is one of the most important stages in projects as far as claims are concerned. The very early stages of a project are the stages when claims begin to arise due to various reasons such as delay, change and design issues. At this stage, ambiguity tends to create a series of risk due to improper information and unclear objectives which result in changes and consequently end up in claims for EOT and extra costs.

Critical Success Factor (2): Project Documentation and Record Keeping

A key success factor in claims management and substantiation is the project documentation system and the maintenance of proper records. The better the documents related to the project are maintained, the easier the task is for the claims managers to formulate their claims. With the ease of access and availability of the data needed for substantiation, claims managers can accelerate the process of development and presentation of the claim to the Employer.

Critical Success Factor (3): Team Members Role Identification & Awareness

Another important success factor in claims management is the identification of every individual's role within the project organization. The common understanding is that claims need to be handled at the managerial level only and that the construction team has little to contribute.

The misconception of the duties and roles of the team members in claims is recognized by (Dobbin, 2006) as one of the deficiencies which impact the proper record keeping of claims. It is essential for each individual within the organization of a project to be aware of his duty with regard to claims. The Project Manager is therefore obliged to clarify to his team the various tasks they need to complete in order for the potential claims to be well-structured.

Critical Success Factor (4): Monitoring the Work Program

The master program of any construction project is usually referred to as the baseline program (FIDIC, 1989). A baseline program is very essential since it allows the program of work to be conveyed to all parties. This program includes all the activities which equal to the project lifecycle.

Furthermore, this program includes what are known as the milestones of the project. PMI (2008) defines a milestone as a significant point or event in the project. During the execution of works, any change in a milestone due to a variety of reasons needs to be accurately monitored and managed. This task is usually assigned to the planning department, who report such deviations or delays in milestone achievements to the

project management. The importance of monitoring a work program comes as an essential step so that the reasons behind delays can be duly recorded and used later to substantiate the claim.

Critical Success Factor (5): Changes and Change Orders

Change and change orders are among the clearest and most common drivers for the claims submitted by the Contractor. Change orders are approved change order requests, where the consultant and owner have agreed that the contractor is entitled to an increase in the contract sum (and sometimes additional construction time as well). It is then clear from this definition that change orders are acknowledged sources of delays and can greatly contribute to the reformation of a claim and entitlement for time as well as cost. The proper formalization of changes by the written consent of the Engineer is a critical success factor in claims management.

Critical Success Factor (6): Timeliness of Notification

Timely notification of claims to the Engineer and Employer is an essential factor to be considered at every stage of the project. The Contractor's project manager is thus supposed to conduct periodic reviews of the project progress and transfer formally to the Engineer the intention to claim for either additional time or money or both in the event in which a cause for a claim arises.

Non-timeliness of notification can lead in many instances to the Contractor's right being denied by the Employer who can simply justify his rejection to non-awareness of the circumstances or events. For this reason, the Contractor is required to be timely by notifying the Engineer about his intentions prior to submitting his claim. According to scholars like Bunni (2005), this procedure needs to be done with a written notification of the delaying event to the Engineer with a copy to the Employer within a specified period or a reasonable time.

Critical Success Factor (7): The Formulation of the Claim

Once the components of the claim are available, only then can the Contractor start formulating his claim. The formulation of a well-structured claim is thereafter the

responsibility of the appointed claims specialist or in house claims personnel who undertake the task of substantiating the claim.

Critical Success Factor (8): Strategic Project Management

Strategic project management is probably the foremost of the factors of success to be considered in any claims management process. This is attributed to the fact that strategic project management combines project management techniques along with business or corporate strategy to achieve the overall goals of a project (Grundy and Brown, 2002). This statement can be explained in the context of claims as claims which not only have an impact on the progress of the works and internal project issues, but also have an overall impact at the corporate level and upon the well-being of the Contractor's business affairs.

3.5 The Chapter Summary

The conceptual framework chapter has provided an insight into the success factors which can be considered critical to claims management implementation and substantiation. It has also reviewed the current practices of construction professionals whilst handling claims of these current practices demonstrated as the critical failure factors.

With the foundation created by conducting the literature review, the framework can be further explored by investigations and interviews were held with professionals working in construction organizations and who were directly involved in the claims which surfaced in their projects which can consolidate the concept of claims management and substantiation from the data to be analyzed in further chapters. The following figure is a model developed to summarize how the ideal claims management system needs to perform, by defining the contractual framework of claims management.

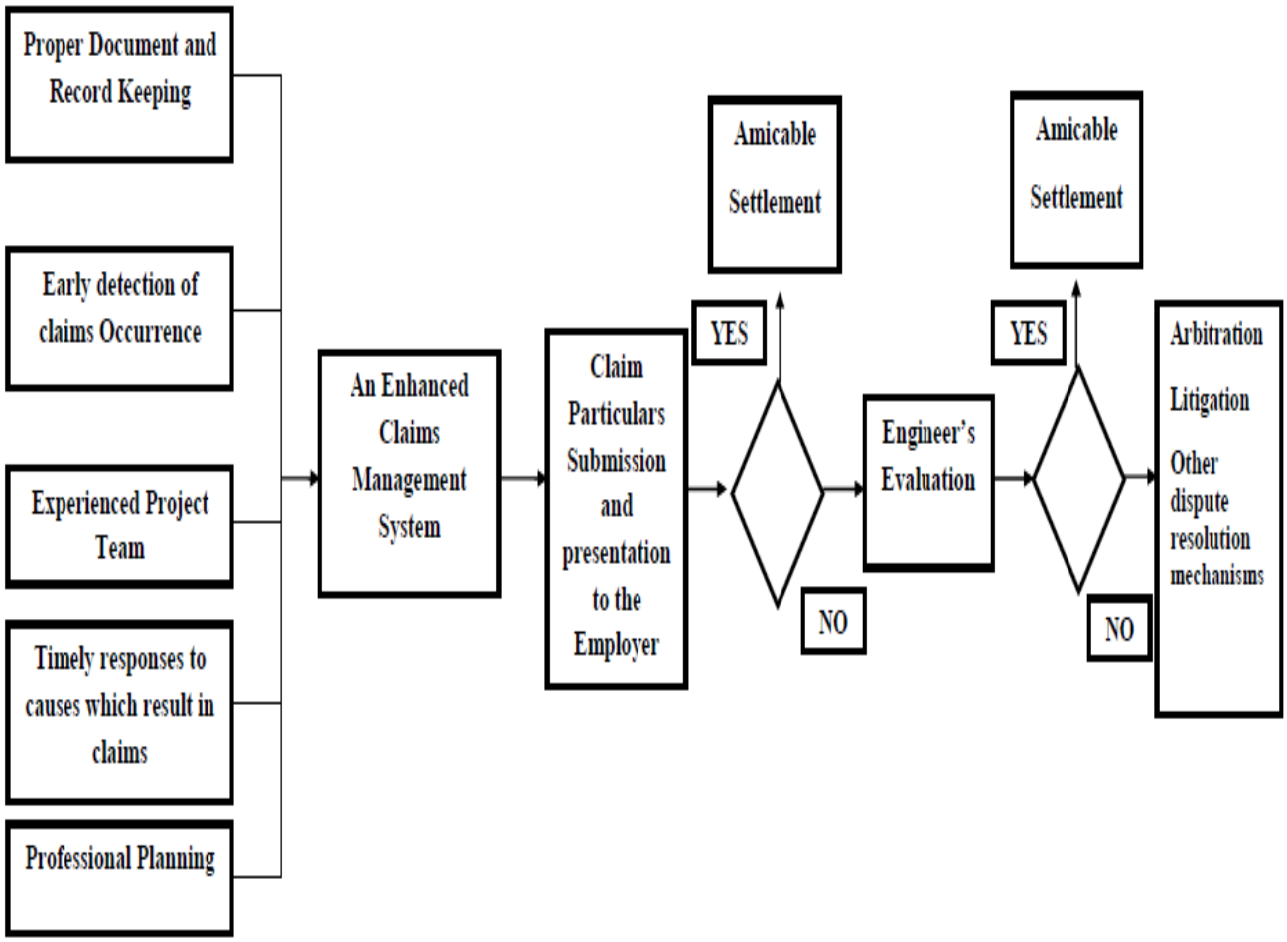

Figure 3-2: The Contractual Framework of Claims Management

The model is constituted of the inputs to the claims management system. Following the formulation and presentation of the claim, the claim is then either settled amicably or not. In the circumstance that it is not settled, the Engineer is required to prepare his determination of the claim worth. Should the parties agree to the resolution presented by the Engineer, the claim is then settled. Otherwise, the claimant resorts to other methods of resolving the dispute with the Employer by either arbitration, litigation or other known mechanisms.

CHAPTER FOUR-RESEARCH PROBLEM AND PRESENTATION OF RESULTS

4.1 Introduction

Certain concepts will arise in this research through field research conducted in real life projects. An attempt will be made through the methodology used a questionnaire system to obtain the data needed for research from which certain findings can be deduced, and conclusions and recommendations can be drawn on the issue of causes of claim and the claims management in Sudan.

4.2 Questionnaire Design

A Questionnaire was structured as a research tool in order to compute data from the research population. The questionnaire comprises of two parts, part one concerns general informations about the audients, while part two consists of questions related to the research hypothesis and questions. The data is compiled to achieve the purpose of the research.

4.3 Research Population

The research population is assumed to be the groups of engineers, contractors, and clients who work at construction organizations and construction sites and such projects in the construction field.

The targeted population also consists of key persons who are wellfamiliar about the construction works, such as project managers, site managers, site engineers and consultants

4.4 Sampling Procedure

The sampling procedure which was adopted to process the research investigations is a systematic random method. The questionnaire (attached as an appendix 1 to this research) was analyzed using statistical analysis program (SPSS) to obtain opinions about reasons behind construction claims and how claims are managed in construction

projects. The questionnaire was responded in ranking answers reflecting the audient opinion such as strongly agree, agree, neutral, disagree, and strongly disagree.

80 copies of the questionnaire were distributed and the returned copies were 69. The analysis range used a 5-point scale, for example, strongly agree answer Indicates the highest effect and a value of 5 was attached to it; while strongly disagree answer has the lowest effect and a value of 1 was given to it.

4.5 Results Analysis and Discussion

4.5.1 First part of the questionnaire (personal information's of the audients):

The first part of the questionnaire was about personal information about the responses personal information such as (the organization sector, years of experience and the range of age).

Table 4-1 : Distribution Of Organization Sector

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Private sector	33	47.8	60.0	60.0
Government sector	22	31.9	40.0	100.0
Total	55	79.7	100.0	
Missing System	14	20.3		
Total	69	100.0		

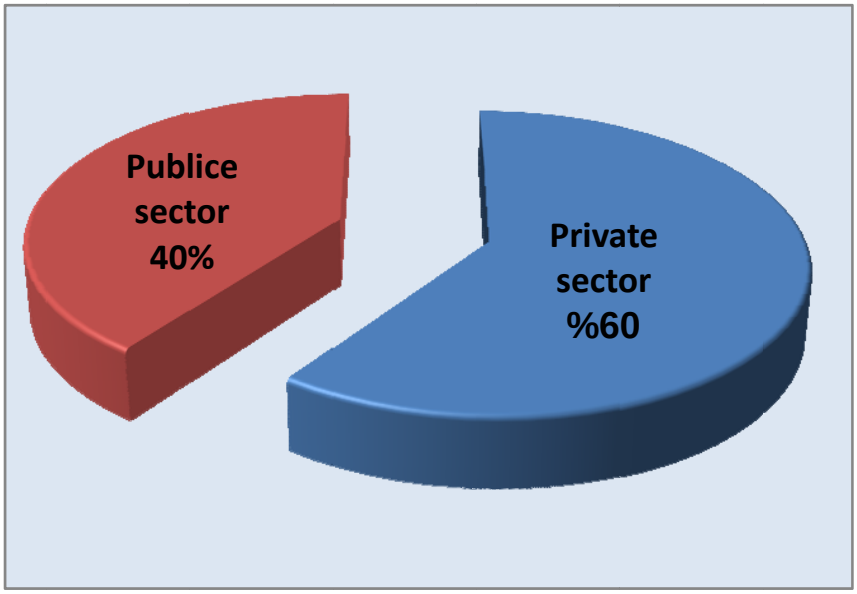

Figure 4-1: Distribution of Organization Sector

- (Table 4-1) shows the distribution of the audients between the public and private sectors. The result shows that (60%) of them from the private sector, while (40%), of them belong to the public sector.

Table4-2: Distribution of Experience

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1-5 years	24	34.8	38.7	38.7
5-10 years	22	31.9	35.5	74.2
More than 10 years	16	23.2	25.8	100.0
Total	62	89.9	100.0	
Missing System	7	10.1		
Total	69	100.0		

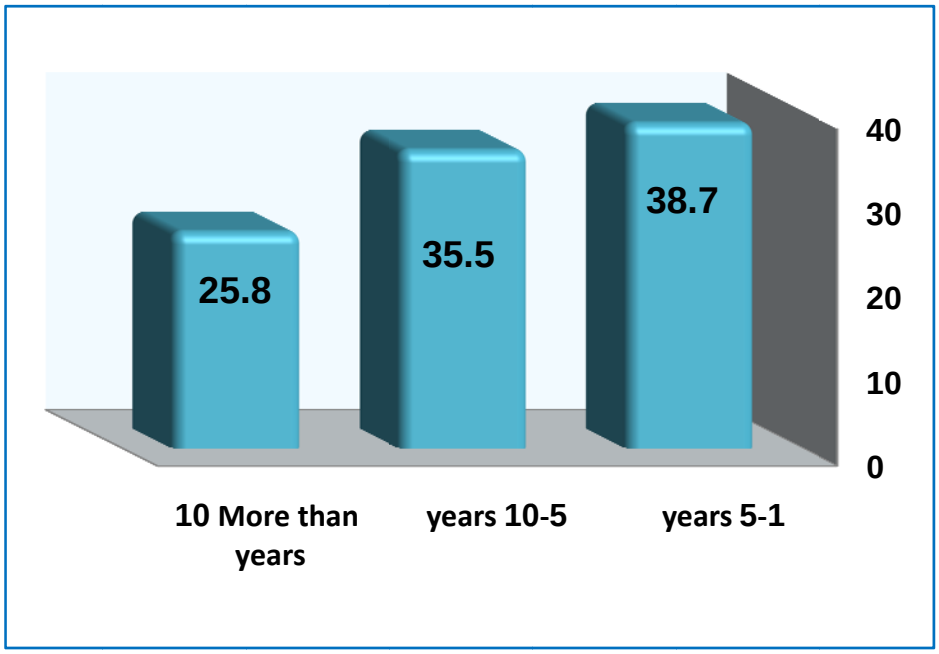

Figure 4-2: Distribution of experience

- (Table 4-2) shows the distribution of respondents experience which affect deeply in their answers. 38.8%of the audients experience is between (1-5) years, while 25.8% of them have experiences more than 10 years.

Table4-3: Distribution of Age Range

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
From 20-40 years	51	73.9	89.5	89.5
From 41-50 years	6	8.7	10.5	100.0
Total	57	82.6	100.0	
Missing System	12	17.4		
Total	69	100.0		

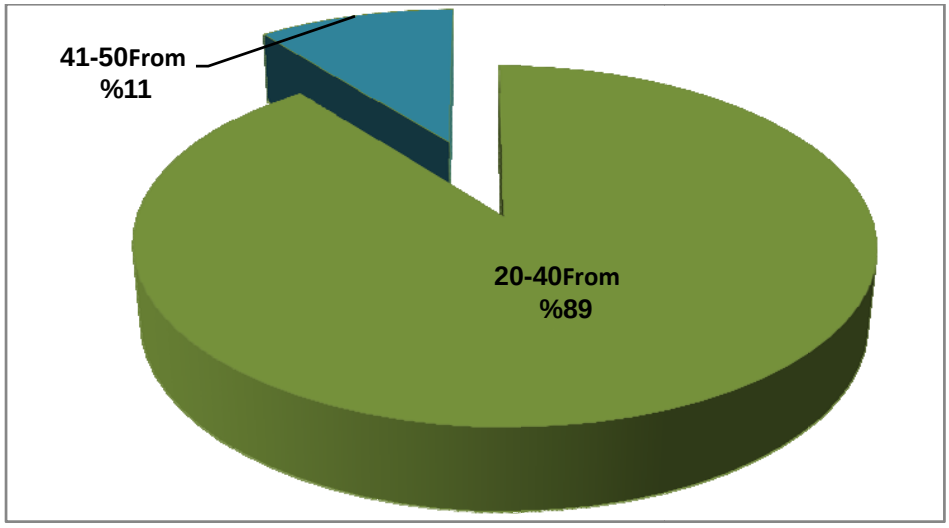

Figure4-3: Distribution of Age Range

- On the other hand there is a relationship between the experience and the age. (Table 4-3) shows the distribution of respondent's age, 89.47% of them are of ages more than 20 years and less than 40 years. And 10.53%of ages are more than 40 years.

4.5.2 Second Part of the Questionnaire:

The second part of the questionnaire was comprises of many questions about the causes of claims and how claims are managed during the different project phases and who is submitting claims and who is affected by claims.

All questions were derived from the scope of hypothesis and of research problem in order to collect data that tend to answer the research questions and to test hypothesis.

Table4-4: Distribution of the most party of Contract who submit claims

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Client	25	36.2	36.2	36.2
Consultant	3	4.3	4.3	40.6
Contractor	41	59.4	59.4	100.0
Total	69	100.0	100.0	

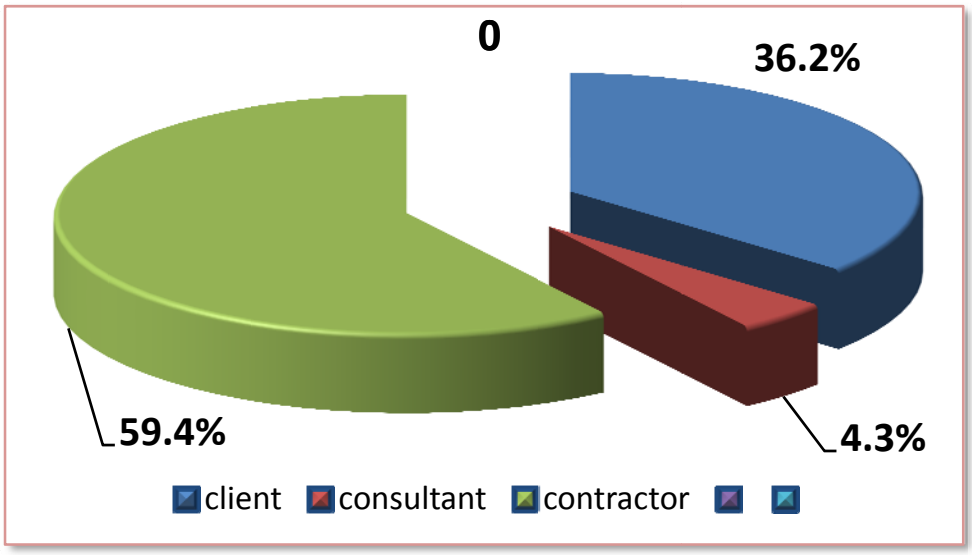

Figure4-4: Distribution of the most contract party who submit claims

- (Table 4-4) shows the opinion of the sample about the most contract party who always submitting claims. After the analysis of the responses opinions (36.2%) of them belief that the client is the most contract party who always submitting claims, while (59.4%) adopted the contractor and only (4.3%) referred to the consultant..

  From this results it's clear that the contractor is always submitting claims in the projects and is assured to be the party of more claims cases.

Table4-5: Distribution of which person is mostly affected by the claim

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Client	22	31.9	31.9	31.9
Consultant	31	44.9	44.9	76.8
Contractor	16	23.2	23.2	100.0
Total	69	100.0	100.0	

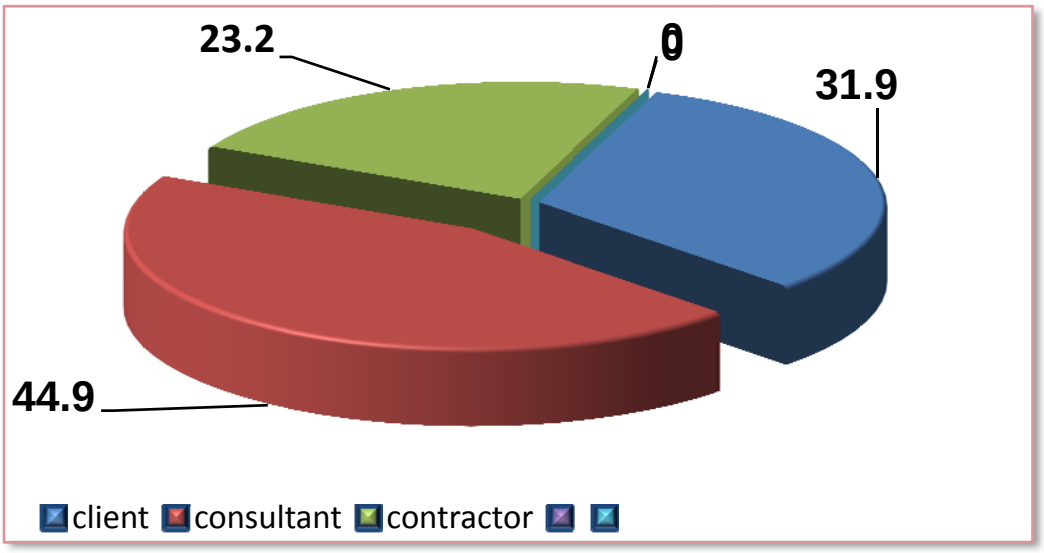

Figure4-5: Distribution of the person who is mostly affected by the claims

- After knowing who is always submitting claims, the next step is to make investigations about the contract party who mostly suffer from the claims. (44.9%) of the answers were directed to the consultant, the second level to the client by(31.9%) , and (23.2%) for the contractor.

Table 4-6: Distribution of occurrence of claims due to delays in project time

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strong agree	14	20.3	20.3	20.3
Agree	23	33.3	33.3	53.6
Neutral	12	17.4	17.4	71.0
Disagree	20	29.0	29.0	100.0
Total	69	100.0	100.0	

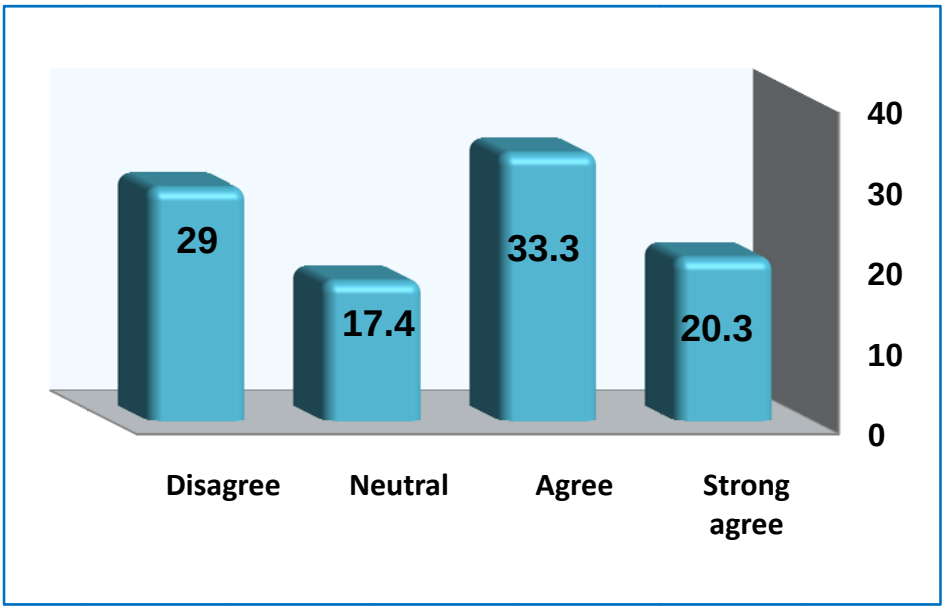

Figure 4-6: Distribution of occurrence of claims due to delays in project time

- Most of claims occur due to delays in project time the questionnaire results as in (Table 4-6) showed that (53.6%) of the audiences were agreed, while (29%) of the options were disagreed.

Table 4-7: Distribution of changes and change orders

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strong agree	21	30.4	30.4	30.4
Agree	39	56.5	56.5	87.0
Neutral	7	10.1	10.1	97.1
Disagree	2	2.9	2.9	100.0
Total	69	100.0	100.0	

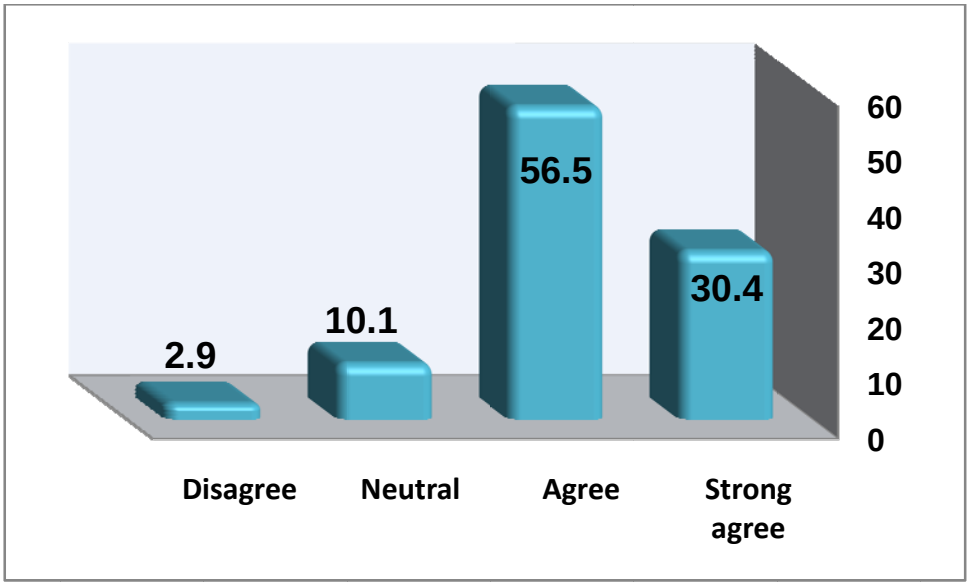

Figure 4-7: Distribution of changes and change orders

- Changes and change orders are one of the main factors in constituting claims which affect in project cost and time. The results as in (Table 4-7) shows (86.9%) of opinions were agreed that changes and change orders are major causes of claims, and (2.9%) were disagreed with that.

Table 4-8: Distribution of cases of delay that exceeded the original contract duration and cost

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strong agree	35	50.7	50.7	50.7
Agree	30	43.5	43.5	94.2
Neutral	4	5.8	5.8	100.0
Total	69	100.0	100.0	

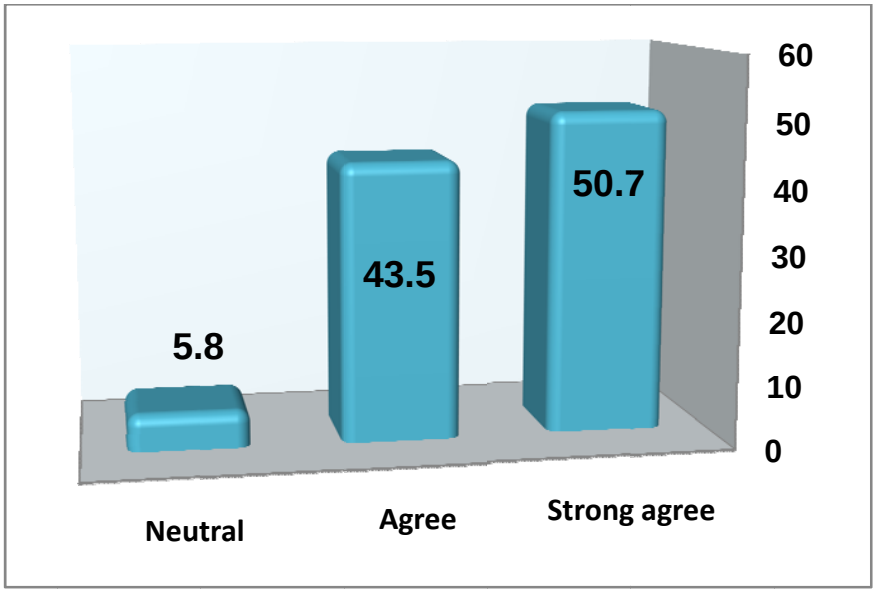

Figure 4-8: Distribution of Cases of Overrun That Exceeded the Original Contract Duration and Cost

There are Many cases of delay that may overrun the original contract duration and cost. (Table 4-8) shows the results of the analysis where (94.2%) of the opinions were agree with delays and overrun of the project cost, and almost no answers for disagree.

Table 4-9: Distribution of contractor's right to claim Compensation for damage

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strong agree	27	39.1	39.1	39.1
Agree	33	47.8	47.8	87.0
Neutral	3	4.3	4.3	91.3
Disagree	5	7.2	7.2	98.6
Strong disagree	1	1.4	1.4	100.0
Total	69	100.0	100.0	

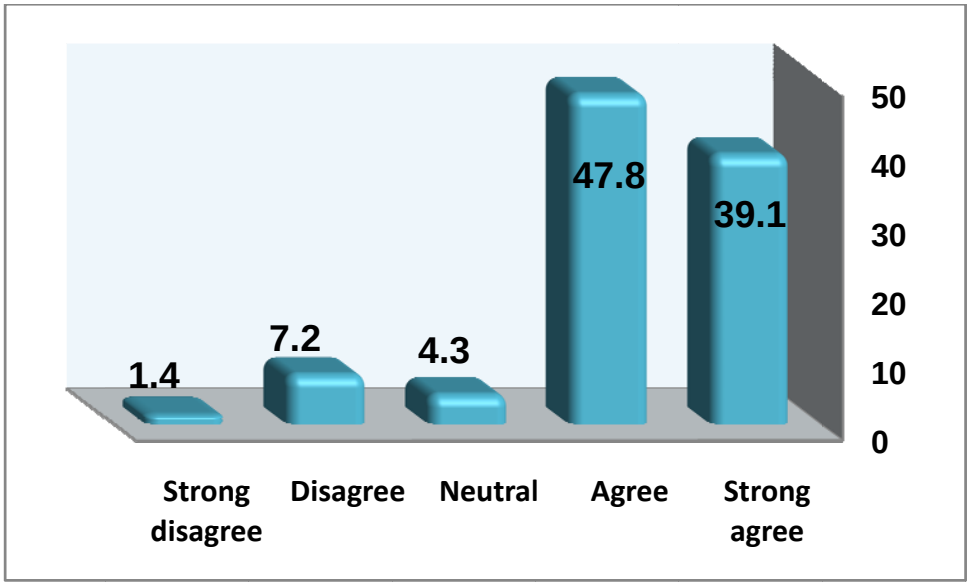

Figure4-9: Distribution of contractor's right to claim Compensation for damage

- The answers to the previous question stated that the contractor is the most one of the contract parties who is submitting claims. The question is the contractor now has the right to claim compensation for the damage? (Table 4-9) shows that (86.9%) are agreed on that.

Table 4-10: Distribution of if the owner has the right to claim damages which resulted from the contractor delay?

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strong agree	26	37.7	37.7	37.7
Agree	34	49.3	49.3	87.0
Neutral	5	7.2	7.2	94.2
Disagree	2	2.9	2.9	97.1
Strong disagree	2	2.9	2.9	100.0
Total	69	100.0	100.0	

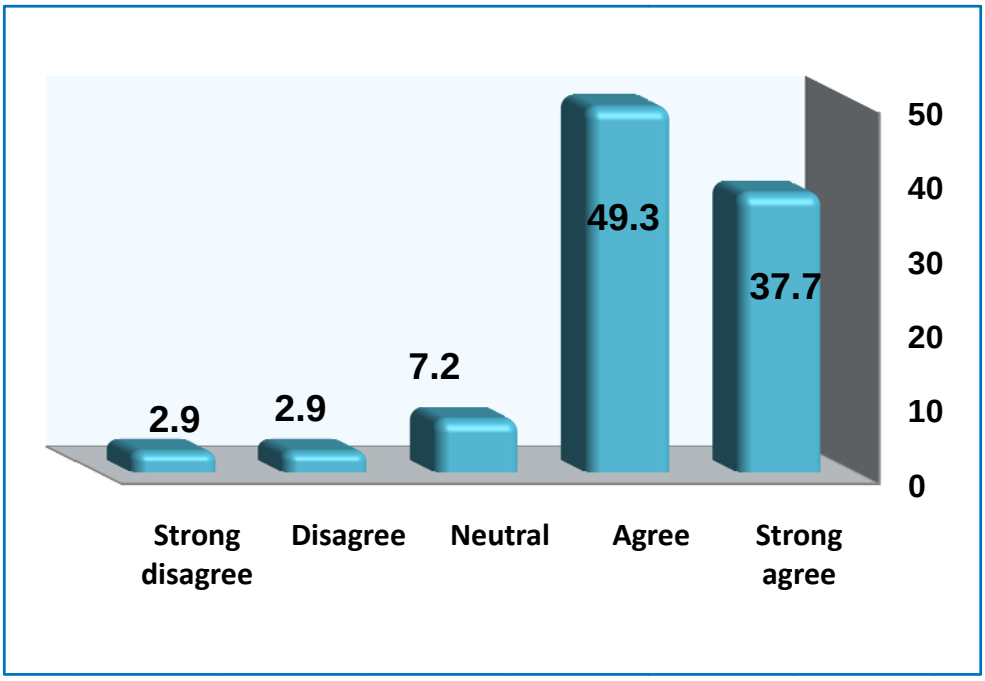

Figure 4-10: Distribution of if the owner has the right to claim Damages which resulted from the contractor delay

- On the other hand, the owner has the right to claim damages which resulted from the contractor delay. (Table 4-10) shows that (87%) of the sample were agree on that, while only (5.8%) were disagreed.

Due to different phases of the construction projects and the complexity of project implementation process, a good environment for having different types of claims could be created. (Table 4-11) shows the order of claim types according to their occurrence.

Table 4-11: order of claims types according to the most occur

No	Types of claims	N	Minimum	Maximum	Mean	Std. Deviation
1	Change and Change Order Claims	69	1	6	3.03	1.534
2	Extension of Time (EOT) Claims	68	1	6	3.04	1.588

3	Damage Claims	69	1	6	3.26	1.633
4	Extra-work Claims	69	1	6	3.32	1.702
5	Acceleration Claims	67	1	6	3.73	1.780
6	Prolongation Claims	67	1	6	4.46	1.636

regarding to previous questions it's clear that all contract parties (owner, contractor, and consultant) can submit claims, the issued claims from the contract parties are of different causes, the differences in their causes are due to the different responsibilities and roles that stipulated by the contract for each party, (Table 4-12, Table 4-13, and Table 4-14) shows causes of claims due to the owner, the contractor and the consultant. Also claims may occur from nature of the contract document. As shown in (Table 4-15)

Table 4-12: Causes of claims due to owner

No	Causes	N	Minimum	Maximum	Mean	Std. Deviation
1.	Sequence of work directed by owner	66	1	6	3.94	1.76
2.	Irrelevant milestone dates in documents	67	1	6	3.60	1.69
3.	Slow change order processing	67	1	6	3.52	1.55
4.	Failure to obtain permits	68	1	6	3.50	1.86
5.	Delayed approval of schedules and change orders	69	1	6	3.48	1.52
6.	Failure to finance the works	68	1	6	2.40	1.75

Table 4-13: Causes of claims due to contractor

No	Causes	N	Minimum	Maximum	Mean	Std. Deviation
1.	The absence of occupational health and safety system	67	2	6	4.85	1.40
2.	Government regulations	67	1	6	4.24	1.59
3.	Contractor financial problems	67	1	6	3.21	1.51
4.	Planning errors	67	1	6	3.13	1.47
5.	Changes or Variation orders	67	1	6	2.78	1.59
6.	Delay in payments by owner	67	1	6	2.24	1.45

Table 4-14: Causes of claims due to consultant

No	Causes	N	Minimum	Maximum	Mean	Std. Deviation
1.	Inadequate record keeping	67	1	4	3.48	.80
2.	On-site coordination	66	1	4	2.17	1.08
3.	Lack of expertise in schedule management	68	1	4	2.16	.97
4.	Inadequate schedule updates and progress monitoring	68	1	4	1.97	.96

Table 4-15: Causes of claims due to contract documents

No	Causes	N	Minimum	Maximum	Mean	Std. Deviation
1.	Power of individual party vaguely specified	67	1	6	4.58	1.73
2.	Coordination Inadequate specified	67	1	6	4.15	1.41
3.	Permitting responsibilities vague	67	1	6	3.70	1.46
4.	Milestone dates and interface clauses unreasonable	67	1	6	3.01	1.47
5.	Inadequate scheduling clauses	67	1	6	2.94	1.58
6.	Drawings not indicating work interfaces	68	1	6	2.16	1.51

Table 4-16: Distribution of increasing project cost resulted of establishing claims and managing them

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strong agree	6	8.7	8.7	8.7
Agree	38	55.1	55.1	63.8
Neutral	14	20.3	20.3	84.1
Disagree	10	14.5	14.5	98.6
Strong disagree	1	1.4	1.4	100.0
Total	69	100.0	100.0	

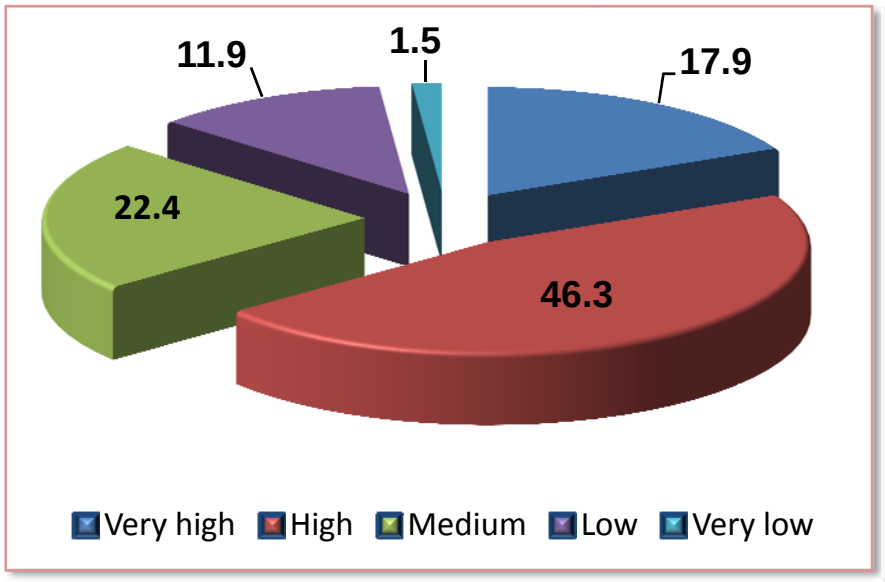

Figure 4-11: Distribution of increasing project cost resulted of establishing claims and managing them

- The increasing in project cost is resulted from establishing claims and managing them which is considered critical economic impact of claims. (55.1%) are agree with that as shown in (Table 4-16), while (14.5%) of them are disagree with it.

Table 4-17: Distribution of the level of applying the concept of claims management in companies

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very high	12	17.4	17.9	17.9
High	31	44.9	46.3	64.2
Medium	15	21.7	22.4	86.6
Low	8	11.6	11.9	98.5
Very low	1	1.4	1.5	100.0
Total	67	97.1	100.0	
Missing System	2	2.9		
Total	69	100.0		

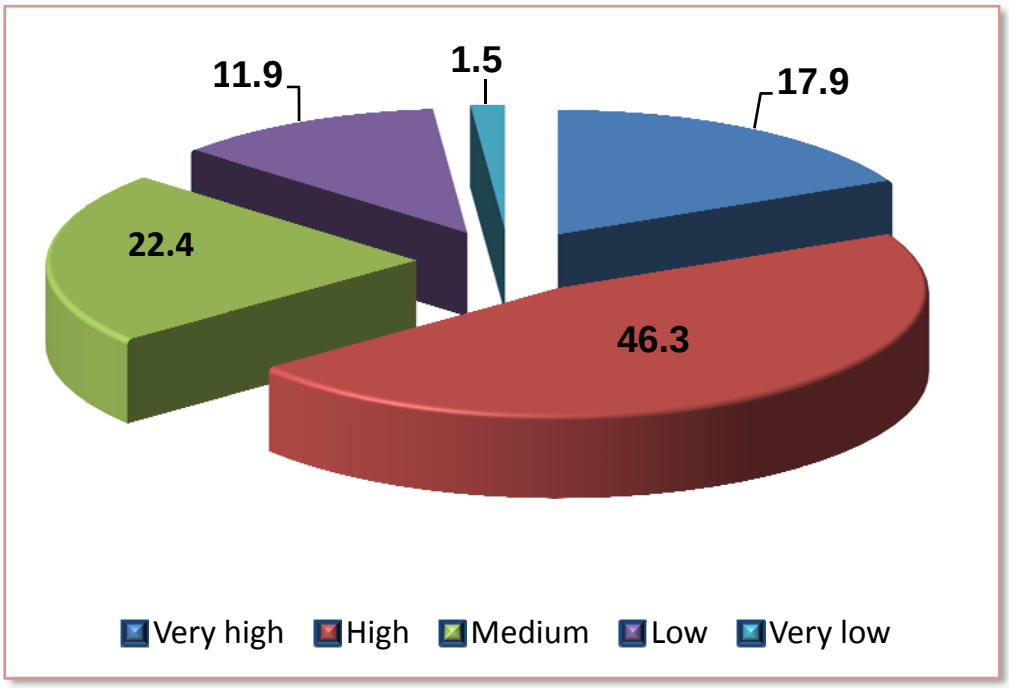

Figure4-12: Distribution of the level of applying the concept of claims management in companies

- The level of applying claim management concept has strong impact on avoiding the occurrence of claims and then it protects the economy and profits of the company, (Figure 4-17) shows (46.3%) of the responses agree that companies are applying the concept of claim management.

CHAPTER FIVE‑CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions:

The conclusions for this research have been deduced after the analysis of the questionnaire. Furthermore, the collected data and interviews obtained from engineers, project managers, and professionals in construction industry which helped to draw the following conclusions:

1. There is a lack of attention given to the process of record keeping and document management, which leads to losses in valuable information and here loss of money to contractors.
2. If well managed, changes and change orders can be beneficial to the Contractor in performing his claim by recording them and accepting written changes by the party which has the power to issue them under the contract.
3. Project managers are often not fully aware of the procedures needed to establish and manage claims.
4. Lack of awareness became a general symptom among other team members within the Contractor's organization. This greatly contributes in producing a state of ambiguity and loss of direction senses.
5. Non settlement of claims in an amicable manner leads the parties in most cases to resort to dispute resolution mechanisms such as arbitration or litigation.

5.2 Recommendations from The Study

The recommendations set out of this research have been derived in a feasible manner, tangible and can be acquired as steps and procedures for project managers and construction claims practitioners to follow in order to their claims stages. The following recommendations maybe generalized to an extent to construction projects within the same industry in Sudan:

1- The need to establish a proper record management system, which acts as a backup to the document controller, who on his part may retrieve documents easily and whenever needed.
2- Early and formal notifications of delays to the Engineer and Employer are necessary since contract forms call for the necessity of timely notifications.
3- The level of awareness of the effects of changes and especially of unreported or unrecorded changes needs to be increased. This can be done by implementing management of change and identifying risks.
4- The Contractor's Project Manager has to establish a strategy on how claims need to be handled once they arise. This can be achieved by involving key personnel in the project in the Claim Handling Processes (CHP) as well as continuous reporting to senior corporate management
5- Avoidance of disputes and sources of ongoing problems between the contract parties are found to be necessary in claims management. This can be achieved by keeping channels of communication and negotiation open at all times.

5.3 Other Recommendations

1. Project managers are often not fully aware of the procedures needed to establish and manage claims.

5.4 Recommendations for Future Researches

It would be recommended for future researchers to approach the topic of claims and claims management from a two way approach rather than a single approach. The first would be the contractual point of view and the other a managerial approach. This hybrid approach would be useful along with the use of the quantitative method to gather data relevant to the field by holding surveys involving all the stakeholders.

Furthermore, the research encapsulated the process of claims management and substantiation from a managerial approach. It would be recommended to complement such a research with a construction law view by going further into the concepts of dispute resolution and mechanisms to resolve disputes resulting from claims.

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APPENDIX (A): English Questionnaire

Research Objectives:

This questionnaire is designed to restrict the majority of reasons that causes claims in construction industry. We can define the claim as "change orders which have not been accepted by the various parties of the contract.

The prime aim of this research is to explore how construction claims are managed. And then the result which expected from the study is such suggestions for avoiding claims arising out of differing site conditions toward minimizing disputes between the contract parties.

Part: Personal Information

Name: ……

Organization: …….

Job description: …….

Experience: ……

Age: ……

Part 2 : Questions of Questionnaire

1. The claim is submitted by :

   ☐ Engineer ☐ Employer ☐ Contractor

2. Which person from the contract parties is mostly affected by the claim :

   ☐ Engineer ☐ Employer ☐ Contractor

3. Most of the claims are occur due to delays in project time

   ☐ Strong agree ☐ Agree ☐ Neutral ☐ Disagree ☐ High disagree

4. Changes and change orders are one of the main factors in occurrence of claims.

☐ Strong agree ☐ Agree ☐ Neutral ☐ Disagree ☐ High disagree

5. Many cases of delay may exceeded the original contract duration and cost

☐ Strong agree ☐ Agree ☐ Neutral ☐ Disagree ☐ High disagree

6. The contractor is entitled to claim compensation for the damage

☐ Strong agree ☐ Agree ☐ Neutral ☐ Disagree ☐ High disagree

7. The Employer can claim damages which resulted from the contractor delay

☐ Strong agree ☐ Agree ☐ Neutra ☐ Disagree ☐ High disagree

8. Order these types of claims according to the most occur :

No	Types of claims	Order ascending
1.	Extension of Time (EOT) Claims	
2.	Prolongation Claims	
3.	Acceleration Claims	
4.	Change and Change Order Claims	
5.	Damage Claims	
6.	Extra-work Claims	

9. In your opinion & experience how can you order these causes of claims due to Employer :

No	Causes	first	second	third	fourth	fifth	sixth
1.	Failure to finance the works						
2.	Sequence of work directed by owner						
3.	Delayed approval of schedules and change orders						
4.	Slow change order processing						
5.	Failure to obtain permits						
6.	Irrelevant milestone dates in documents						

10. In your opinion & experience how can you order these causes of claims due to Contractor :

No	Causes	First	second	third	fourth	fifth	Sixth
1.	Changes or Variation orders						
2.	Delay in payments by owner						
3.	Contractor financial problems						
4.	Government regulations						
5.	Planning errors						
6.	The absence of occupational health and safety system						

11. How can you rank the following being causes of claims due to Employer :

No	Causes	first	second	third	Fourth
5.	Lack of expertise in schedule management				
6.	Inadequate record keeping				
7.	Inadequate schedule updates and progress monitoring				
8.	On-site coordination				

12. How can you rank the following being causes of claims due to contract documents

No	Causes	first	second	third	Fourth	Fifth	Sixth
1.	Inadequate scheduling clauses						
2.	Drawings not indicating work interfaces						
3.	Permitting responsibilities vague						
4.	Milestone dates and interface clauses unreasonable						
5.	Coordination Inadequate specified						
6.	Power of individual party vaguely specified						

13. In your opinion do you think the increase of projects cost is a result of establishing claims and managing them?

☐ Strong agree ☐ Agree ☐ Neutral ☐ Disagree ☐ High disagree

14. What is the level of applying the concept of claims management in company?

☐ Very high ☐ High ☐ Medium ☐ Low ☐ Very low

APPENDIX (B): Arabic Questionnaire

- **أهداف البحث:**

تم تصميم هذا الاستبيان لرصد غالبية الأسبابالتي تسبب المطالبات في صناعة البناء والتشييد. وبصورة مبسطة يمكن تعريف المطالبة بأنها أوامر تغييرية تحدث أثناء المشروع وتكون غير مقبولة لدي أحد اطراف المشروع ويقدم الطرف المتضرر طلباً للطرف الإخر حتي يتمكن من إثبات حقه.

الهدف الرئيسي من هذا البحث هو استكشافكيفية إدارة مطالبات البناء، ومن ثم النتيجة المتوقعة من هذه الدراسة هي التوصل الي بعض المقترحات لتجنب المطالبات الناشئة عن إختلاف ظروف الموقع مما يسهم ذلك في تقليل حدوث النزاعات بين أطراف العقد.

- **الجزء الأول: المعلومات الشخصية**

الاسم : .....

مكان العمل : .....

المسمى الوظيفي : .....

الخبرة : .....

العمر : .....

- **الجزء الثاني : أسئلة الاستبيان**

1. صاحب المطالبة غالباً مايكون :

☐ المالك ☐ الإستشاري ☐ المقاول

2. الشخص الذي تقدم لهالمطالبة غالباً مايكون هو :

☐ المالك ☐ الإستشاري ☐ المقاول

3. معظم المطالبات تحدث نتيجة للتأخر في زمن المشروع

☐ أوافق بشدة ☐ أوافق ☐ محايد ☐ لا أوافق ☐ لا أوافق بشدة

4. التغييراتوالأوامر التغييرية تعتبر واحدة من العوامل الرئيسية في حدوث المطالبات.

☐ أوافق بشدة ☐ أوافق ☐ محايد ☐ لا أوافق ☐ لا أوافق بشدة

5. العديد من حالات التأخير في زمن المشروع تؤدي إلي تجاوز تكلفة ومدة العقد الأصلية

☐ أوافق بشدة ☐ أوافق ☐ محايد ☐ لا أوافق ☐ لا أوافقبشدة

6. يحق للمقاول المطالبة بالتعويض عن الأضرار

☐ أوافق بشدة ☐ أوافق ☐ محايد ☐ لا أوافق ☐ لا أوافق بشدة

7. يمكن للمالك المطالبة بالتعويض عن الأضرار الناتجة عن تأخيرالمقاول

☐ أوافق بشدة ☐ أوافق ☐ محايد ☐ لا أوافق ☐ لا أوافق بشدة

8. رتب تصاعدياً الأنواع التالية من المطالبات وفقاً للأكثر حدوثاً

الرقم	أنواع المطالبات	الترتيب تصاعدياً
.1	مطالبات تمديد الوقت	
.2	مطالبات الإطالة	
.3	مطالبات التسريع	
.4	المطالبات نتيجة للتغيير والأوامر التغييرية	
.5	المطالبات نتيجة لحدوث الأضرار	
.6	مطالبات العمل الإضافي	

9. في اعتقادك وحسب خبرتك كيف يمكنك ترتيب أولوية أسباب المطالبات المذكورة أدناه من جهة المالك

الرقم	أسباب المطالبات	أولا	ثانيا	ثالثا	رابعا	خامسا	سادسا
.1	عدم المقدرة علي تمويل الأعمال						
.2	تدخل المالك في كيفية تسلسل العمل						
.3	تأخر المالك في الموافقة علي الجداول الزمنية والأوامر التغييرية						
.4	البطء في عملية الأوامر التغييرية						
.5	عدم الحصول علي التصاريح اللازمة						
.6	تحديد تواريخ غير منطقية لنهاية بعض الأعمال						

10.في رأيك وحسب الخبرةالمهنيه كيف يمكنك ترتيب أولوية الأسباب التالية للمطالبات من جهة المقاول:

االرقم	أسباب المطالبات	أولا	ثانيا	ثالثا	رابعا	خامسا	سادسا
.1	التغييرات و الأوامر التغييرية						
.2	التأخر في تسديدالدفعياتمن قبل المالك						
.3	المشاكل المالية لدي المقاول						
.4	أخطاء في التخطيط						
.5	عدم وجود نظام الصحة والسلامة المهنية						
.6	الأنظمة والقرارات الحكومية						

11.في اعتقادك كيف يمكنك ترتيب أولوية الأسباب التالية لمطالبات الإستشاري

الرقم	أسباب المطالبات	أولا	ثانيا	ثالثا	رابعا
1	نقص الخبرة في إدارة الجدول الزمني				
2	عدم كفاية حفظ السجلات				
3	عدم متابعة الجدول الزمني وتقدم الأعمال				
4	تنسيق العمل في الموقع				

12.حسب معرفتك في الامور التعاقدية كيف يمكنك ترتيب أولوية الأسباب التالية من المطالبات المتعلقة بوثائق العقد

الرقم	أسباب المطالبات	اولا	ثانيا	ثالثا	رايعا	خامسا	سادسا
.1	عدم كفايةشروط الجدولة						
.2	الرسومات لا تشير إلى تفاصيل العمل						
.3	توزيع مسؤليات بصورة غامضة						
.4	تحديد شروط غير منطقية وتوقيت غير منطقي للأعمال						
.5	عدم تحديد كيفية التنسيق						
.6	إعطاء سلطة غامضة لأحد الاطراف						

13.غالبا مايكون ارتفاع تكاليف المشاريع هو نتيجته لضعف تأسيس المطالبات وعدم إدارتها؟

☐ أوافق بشدة ☐ أوافق ☐ محايد ☐ لا أوافق ☐ لا أوافق بشدة

14.ما هو مستوى تطبيق مفهوم إدارة المطالبات في الشركة أو المؤسسة التي تعمل بها ؟

☐ جيد جداً ☐ جيد ☐ متوسط ☐ ضعيف ☐ ضعيف جداً